iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VII Month of publication: July 2023

DOI: https://doi.org/10.22214/ijraset.2023.54643

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VII Jul 2023- Available at www.ijraset.com

MultiScale Object Detection in Remote Sensing Images using Deep Learning

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Abstract: ***With a rapid development in aerial technology, applications of Remote Sensing Images (RSI) have become more diverse. Remote sensing object detection is a difficult task due to complicated background, variations in the scales of the objects and proximity between objects of same scale. RSI's are commonly captured from satellites with wide views, which leads to large-scale images.***

The proposed model detects the objects at different scales. Feature Extraction and providing additional information about the object is done using Residual Neural Network101 (ResNet101) and ZFNet. Further, single scale and multiscale object detection is implemented using You Only Look Once (YOLOV5) and Faster Region based Convolutional Neural Network (Faster RCNN). A comparative study is done on all these techniques to evaluate the performance measures like Mean Average Precision and Accuracy.

Keywords: Remote Sensing Images, Feature Extraction, Multi Scale Object Detection

I. INTRODUCTION

Remote sensing object detection (RSOD) is the most researched topic in Remote Sensing Images (RSI). It locates the object regions of interest and classifies the multi objects present. Remote Sensing Object Detection still remains as a challenge because of complex scenarios and variations in the scales of the objects [1]. Remote Sensing Images are captured from satellites having wide views, which lead to the variations of scales in images and complex background. These are the main obstacles for object detection in Remote Sensing Images. They have many applications which include hazard response, urban monitoring, traffic control and many more [2]. Noise can be removed from grayscale and color photographs with a lot of techniques [4].

The algorithms that have been effective in natural scene images are not adapted to aerial images taken in wide view. Convolutional Neural Networks are used based on their performance with the natural images. The object detection algorithms can be classified into one stage and two stage object detector methods. The one stage method performs in a one step process whereas the two stages perform region extraction and classifying bounding boxes.

Faster RCNN involves the design of region proposal network. The one stage object detector method constitutes YOLO [11], Retina Net [14]. YOLO works by dividing the image into several cells through a single network.

Feature Pyramid Network (FPN) has been incorporated for multiscale object detection but these can only address the imbalances present at the feature level. To address the above issues and improve the detection accuracy and reduce computation time and adaptive network is proposed which consist of feature extraction techniques that contain additional information about the object and object detection algorithm that give a superior accuracy.

II. LITERATURE SURVEY

Machine Learning has been incorporated in the past times for remote sensing object detection. Any machine learning algorithm included feature extraction, selection and classification. Initially, Random Forest has been employed, later region based Convolution Neural Network (RCNN) has been used due to its feature extraction capability [12]. In order to enhance the detection performance feature fusion strategy is used [13]. Further, to deal with the complex background and noises leading to low resolutions linear regression has been employed [14]. Examining the differences and similarities between the concepts. Along with this scenes categorization and rectification has been used [15].

The methods that are used to remove noise and deal with complicated background images include: Histogram of Oriented Gradients (HOG) feature, latent support vector machine (SVM) to train deformable mixture models [2]. The object detection methods such as YOLOV3, Retina Net have used Feature Pyramid Network for multi scale object detection by coalesce feature maps [9]. Anchor Boxes design has been widely used with algorithms such as You Only Look Once, Single Shot Detector. Object detection algorithms have to predict bounding box with the class it belongs to and confidence scores [14].

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VII Month of publication: July 2023

DOI: https://doi.org/10.22214/ijraset.2023.54644

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VII Jul 2023- Available at www.ijraset.com

People Counting and Tracking System in Real-Time using Deep Learning Techniques

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Abstract: ***The aim of project is to automatically estimate the number of people at indoor and outdoor places. People counting systems can be used in retail environment such as determining conversion ratio, advertising and promotional evaluation. This system can be used for transportation management system and video surveillance. The number of customers is indispensable data for management and decision making in public places like large-scale markets, shopping centers, airports, stations, museums, laboratories, classrooms, cafeteria etc. In this system, firstly extract the frames from the video, then draw a desired reference line on the input frame, detect the people using MobileNet-SSD object detection model, mark the centroid on the detected person, track the movement of that marked centroid and calculate the direction of centroid movement whether it is moving upwards or downwards. If the centroid movement is downward direction, then we increment in counter, else if the centroid movement is upward direction, then we increment out counter. People counting is essential for retailers of any size, but it's especially important for small businesses that don't have the benefit of assaying data from multitudinous locales when making pivotal opinions. When used intelligently, people counting can shape businesses in multitudinous ways other than just furnishing information on nethermost business.***

Keywords: Deep Learning, MobileNet-SSD, Centroid Tracking

I. INTRODUCTION

The analysis of crowds is a popular research topic that has gained attention due to its various practical applications. Automated people counting systems are designed to estimate the number of individuals present in both indoor and outdoor environments. These counting technologies serve as the foundation for a range of advanced solutions, such as retail analytics, queue management, and space utilization. The use of real-time information on people flow is especially beneficial for applications related to crowd management and security, including the management of pedestrian traffic and visitor flow evaluations. It is widely acknowledged that tracking and monitoring the movement of people in an area is of significant importance. People counting and tracking systems have been used for many years in various applications. For example, in the early 20th century, manual people counting systems were used in retail stores to track the number of customers. Later, in the 1960s and 70s, mechanical and electronic systems were developed to automate people counting.

In the 1990s, video-based systems were introduced, and since then, there have been numerous technological advancements in computer vision and artificial Intelligence that have greatly improved the accuracy and efficiency of these systems. In today's world, it is crucial for companies to consider potential solutions that can ensure the safety of both staff and customers. This is especially important as new legislation is being introduced worldwide to regulate occupancy and social distancing. The importance of people has never been greater, and it is now possible to accurately count visitors using technology. Sensors connected to software can provide real-time occupancy data, which helps determine whether a location can safely accommodate more people or not. By using this technology, overcrowding can be prevented before it becomes a serious issue, ensuring that a location does not exceed its capacity. This is essential in keeping both customers and employees safe. Collecting data on the efficiency of a shop's operations is essential for maximizing a company's potential. By monitoring customer satisfaction, companies can implement ideas to enhance the consumer experience, which can lead to increased revenues and customer loyalty. People counters are a practical solution for counting and monitoring the flow of visitors in and out of a facility. The information gathered by these counters can be segmented and used to determine visitor arrival and departure times, as well as the level of engagement customers have with products and services. People counting technology can also reveal where visitors spend the most time in a shop and which products are most popular. This information is valuable for companies seeking to optimize their marketing efforts and increase sales. In the retail industry, people counting technology is used to determine the precise number of consumers who visit a shop. People counting technology can provide valuable insights to executives and organizers of events and exhibits.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VII Month of publication: July 2023

DOI: https://doi.org/10.22214/ijraset.2023.54645

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VII Jul 2023- Available at www.ijraset.com

Prediction of Mental Health Instability using Machine Learning and Deep Learning Algorithms

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Abstract: ***One's mental health instability can hinder the individual's life that leads to various health issues, like depression and anxiety that in turn results in mental imbalance or severe psychological instability. This psychological instability can lead to bipolar disorder. There are various reasons affecting one's mental well-being, the reasons can either be modifiable or non-modifiable. Bipolar disorder causes changes in a person's mood and energy. People will experience intense emotional states because of disorder. Proper diagnosis and treatment is required for the people with this disorder which lead to healthy and active lives. Determination of this psychological instability can be predicted using machine learning and deep learning algorithms and the accuracies will be compared for the same. The dataset used is a survey based real time dataset which identifies the everyday activities and conditions of various individuals. The survey questionnaire consists of various questions determining the stress and psychological feelings among the individuals. This dataset is used in training the models to determine the prevalence of any psychological instability. Comparison of various bipolar classification methods with their performance accuracy against the real- time dataset is done. Detection of psychological instability plays a key role in reducing the risk of severity.***
Keywords: Psychological Instability, Machine learning, Deep learning

I. INTRODUCTION

A wide variety of mental health conditions—disorders that impact your emotions, thinking, and behavior—are referred to as mental illnesses, sometimes known as mental health disorders. Depression, anxiety disorders, schizophrenia, eating disorders, and compulsive behaviors are a few examples of mental illnesses. Many people occasionally experience problems with their mental health. However, a mental health issue turns into a mental disease when persistent symptoms put you under a lot of stress and impair your capacity to perform daily tasks. Stress levels are rising as a result of modern lifestyles and ongoing work demands. As a result, many people experience mental disorders, which cause psychological issues. One of these, bipolar disorder, is one of the most incapacitating conditions, with alternating stages like manic and depressive moods rather than merely pleasant or terrible feelings. Mental health issues place a heavy burden on both individuals and society and have a considerable negative impact on many facets of life, including family, career, quality of life, and the larger social environment. [2–4, 19].

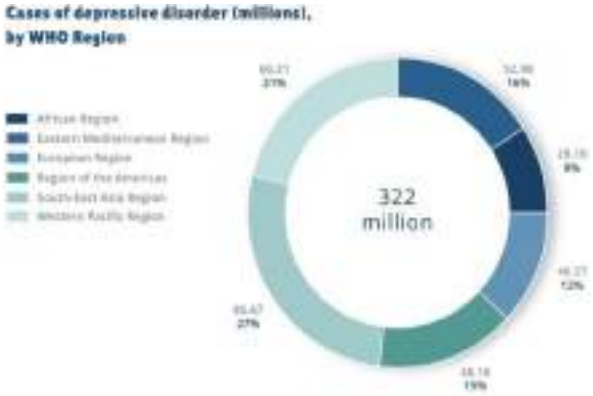

Fig.1.1 Cases of Depressive Disorder (in millions) by WHO region

According to the World Health Organization (WHO), depression is the most common mental condition, affecting more than 300 million people globally. Because of the severity of the problem, many health researchers have chosen to concentrate their research in this area.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** VII **Month of publication:** July 2023

DOI: https://doi.org/10.22214/ijraset.2023.54646

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VII Jul 2023- Available at www.ijraset.com

Prediction of Personality Traits and Suitable Job through an Intelligent Interview Agent using Machine Learning

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Abstract: ***Interviews play a crucial role in an individual's career. They are often a means through which recruitments are finalized in various companies. To effectively understand the suitability of the candidate for a particular job, the interviewer not only assesses the conceptual knowledge of the candidate but also tries to identify if the personality traits of the prospect match with the job requirements. Facial expressions are crucial in human communication since they assist in understanding others better and are commonly used to assess personality. The automation ensures that the procedure for selecting candidates in an objective manner is not tainted by the interviewer's bias and personal experiences. The proposed Intelligent Interview Agent uses video input of the interviewee to predict the Big Five Personality traits as seen by skilled human resource experts. To achieve this, the system uses VGG16 Convolutional Neural Network (CNN) Model. The system also predicts the suitable job role for the candidate depending on the scores predicted for the Big Five personality traits, by employing a machine learning (ML) model. The system serves the purpose of both the recruiter and the candidate. The recruiter can analyse the candidate's personality traits and assign him/her the predicted suitable job. On the other hand, the candidate can get an idea of his/her personality traits and know which profession suits the best.***

Keywords: Facial expressions, Machine Learning, Convolution Neural Network, Big Five Personality Traits

I. INTRODUCTION

Choosing a suitable career is a crucial part of a student's professional life and recruiting an efficient employee for a position is important for the success of an organisation. During interviews, recruiters determine whether a candidate's skills and personality match the organisation's needs and culture. One cannot overlook personality when it comes to recruitment through an interview [12]. One of the most tried-and-true methods to evaluate personality is the Big Five Personality Traits. Recent developments have demonstrated that deep learning and machine learning algorithms are getting better at addressing complicated problems, which call for finding hidden patterns in the data. Convolutional Neural Networks (CNN) are widely utilised in the realm of personality detection and are the best tools for analysing personality traits based on facial expressions[15]. Using the same insights, techniques such as CNN are employed to predict the values of the Big Five Personality traits while Machine Learning algorithms are employed to predict the most suitable profession using the scores of the Personality traits as input. Video of the interviewee is taken as input to predict the Big Five Personality traits as perceived by experienced professionals. These personality traits are then used to predict the most suitable job for the candidate. This ensures better job satisfaction [11][13].The automation makes sure that personal experiences and an inclined perspective of the interviewer do not cast a shadow on the process of selecting candidates in an unbiased manner. The figure 1 depicts the Big Five Personality traits.

Figure 1: Big Five Personality Traits

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54183

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Soil Fertility Analysis Using IoT

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Abstract: ***Soil is crucial for economic and social development as it provides the foundation for plant growth and life cycle. Agriculture heavily relies on resources like land and fertilizer to produce food. However, the National Academy of Agricultural Sciences (NAAS) reports that the annual soil loss rate in India is about 15.35 tonnes per hectare, which leads to the loss of 5.37 to 8.4 million tonnes of nutrients. This is due to intensive agricultural practices that cause nutrient imbalance and soil depletion, exacerbated by a lack of awareness about soil health. The declining soil health is one of the reasons for stagnant or decreasing crop yields, which will likely worsen in the future.***

To address this issue, this project aims to use IoT technology to test different types of soil and determine their macronutrient (NPK) and micronutrient values. The measured nutrient values are compared to a dataset of healthy soil samples' ideal nutrient values using an easy-to-use interface that displays pictorial representations. The farmer receives a detailed soil report that compares the soil's micro and macro nutrient values to the ideal values, much like a soil health report card.

Keywords: Internet Of Things[IOT], Agriculture, Soil Health, Macronutrient, Micronutrient, Arduino UNO, Nitrogen Phosphorus Potassium [NPK], Soil Health Report Card.

I. INTRODUCTION

For centuries, agriculture has been a crucial part of the Indian economy. Despite being a major contributor to the GDP, traditional farming methods are still widely used, resulting in inefficient and labor-intensive processes that harm soil quality, crop yields, and productivity. With the decline in farmland availability, it is necessary to implement modern farming methods to improve performance and yield.

Plant growth relies on three primary components: nitrogen, phosphorus, and potassium. Nitrogen is crucial for leaf and vegetation growth, phosphorus for root and physical growth, and potassium for regulating water and nutrients in plant cells, flowering, and fruiting. Proper management and maintenance of these components can enhance soil quality and crop growth.

Chemical fertilizers are commonly used in modern agriculture, but overuse can cause soil nutrient depletion, leading to reduced soil fertility and crop yield. By providing accurate soil nutrient measurements, farmers can optimize fertilizer use and reduce the risk of nutrient depletion. The project aims to promote sustainable agricultural practices by reducing the excessive use of chemical fertilizers and mitigating soil pollution.

The project will collaborate with farmers, agriculture experts, and researchers to study diverse crop types, soil types, and climatic conditions. Data collection will involve surveys, interviews, and field observations to evaluate the effectiveness of modern farming techniques and provide recommendations for farmers.

The main goal of this project is to promote responsible and data-driven soil management practices to support the sustainability of modern agriculture. By reducing the excessive usage of chemical fertilizers, the project can help ensure soil remains healthy and productive for future generations.

II. LITERATURE SURVEY

[1] Maximizing crop yields by ensuring ideal soil and plant conditions is crucial in India, where the economy is largely based on horticulture. Crop production is dependent on the organic, physical, and chemical properties of the soil due to their interdependence. To maximize crop yield, it is crucial to monitor and manage these factors. The use of sensor systems in agriculture is growing because they have a wide range of applications and can assist farmers in making informed decisions. These systems use sensors to gather information on a variety of factors, including temperature, humidity, soil moisture, nutrient levels, and crop growth. Afterwards, the information is transferred to a computer or mobile device, where it can be analyzed and used to decide on irrigation, fertilization, and other aspects that affect crop yield. Manual data collection for some variables can be sporadic and result in variations from inaccurate estimation taking, which can make it difficult to control any important factors. This may lead to below-average crop yields and financial losses for farmers. The quantity of data that can be gathered and analyzed may also be constrained by the time and labor requirements of manual data collection.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54181

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Malware Detection and Prediction System Using Advanced Machine Learning Algorithms

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Abstract: ***Given how many websites are now disseminating malware, malicious software is one of the biggest hazards in today's digital environment. Computer systems connected to the Internet increasingly require malware analysis and protection techniques. Without the user's knowledge, malicious software takes advantage of system flaws to steal important data and covertly send it to distant servers under the control of attackers.***
Static or dynamic analysis methods are used to analyse malware. These methods categorise and forecast distinctive patterns to effectively detect malware. Software assaults have the potential to corrupt or harm devices, compromise entire systems, steal information, change data, and deny service.
The detection and prediction system is implemented as a user-friendly website with a variety of admin and user-facing modules. The file that requires detection and prediction can be uploaded by the admin user. If there are any API calls used in the file with malware purpose, the system will examine them. This API can provide security dangers to the computer because it was designed with malware in mind; as a result, it must be found and immediately removed to prevent security difficulties.
The system that was built can determine the sort of malware that is encoded in the file and can assist users in determining the threat that such malware may pose to their computer.

I. INTRODUCTION

With an annual increase in the total number of known mobile malware cases, the large-scale Internet is no longer the primary target of malware attacks (i.e., viruses, spam bots, worms, and other harmful software). The cause is online data exchange, which unintentionally encourages malware. Malware that once resided on the wired Internet can now spread through the use of devices and networks. The complexity and exponential expansion of malware pose a serious threat to computer and network security. The reliance on computer systems has grown significantly over the last ten years. Practically all tasks, from those involved in daily living to those involved in business, have been mechanized.

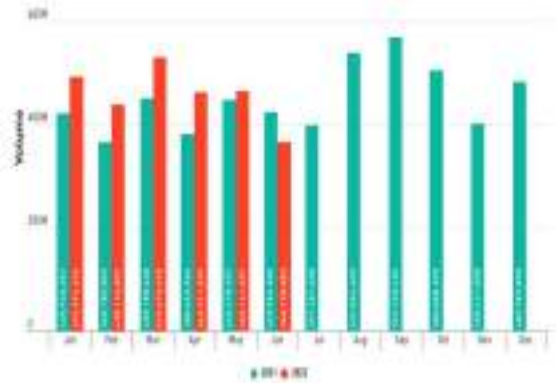

Figure 1 Global Malware Volume

The first half of 2022 saw 2.8 billion malware strikes worldwide, an 11% rise year to date over 2021, according to threat experts at SonicWall Capture Labs. This equals an average of 8,240 attempts to install malware per customer.
In 2020, there were 304 million reported ransomware attacks worldwide, according to Matthew and Woodward. This translates into roughly 37,700 ransomware attacks per hour, or about 578 per minute. The goals of two research communities are being pursued concurrently.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54174

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Classification of Brain Tumor as Benign or Malignant Using Image Processing and Deep Learning Techniques: A Comparative Study

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Abstract: ***In India, the dominance of brain tumors is 5-10 per 100,000 people. According to the International Association of Cancer Registries (IARC), over 28,000 cases of brain tumors are recorded each year in India, with over 24,000 individuals dying from them each year. The proposed approach includes pre-processing of the Magnetic Resonance Imaging (MRI) scans followed by the extraction of the Region of Interest (ROI) using image processing techniques. The extracted parts are then used as input to train a deep neural network model for classification. The Convolutional Neural(CNN) is trained on a large dataset of MRI images of brain tumors, and evaluated using various performance metrics. Deep Learning models like VGG16, ResNet50 are used for the classification of images. Deep learning model with VGG16 gives 98.5 % accuracy which is better than CNN and ResNet50.***

Keywords: Brain tumor, Convolutional Neural Network (CNN), VGG-16, ResNet50, Brain tumor classification, Image processing.

I. INTRODUCTION

Brain tumor is a serious medical condition that requires early diagnosis and treatment. The diagnosis of brain tumor involves the analysis of medical images obtained through various imaging modalities, such as magnetic resonance imaging (MRI). The accurate classification of brain tumors as benign or malignant is crucial for the selection of appropriate treatment options and prognosis. However, manual analysis of medical images is time-consuming and prone to errors due to subjective interpretation. Therefore, the development of automated methods for brain tumor classification is essential. In recent years, deep learning has emerged as a powerful technique for image analysis and has shown promising results in various medical imaging applications. In this paper, a deep learning-based approach for the classification of brain tumors as benign or malignant using MRI images is proposed. The proposed approach utilizes the ResNet50, VGG16 and Sequential CNN models for classification. Furthermore, the paper contains various image processing techniques, such as skull stripping and image normalization, to enhance the quality of MRI images. The remaining sections of this paper is organized as follows. Section 2 gives the related work in brain tumor classification. Section 3 discussed the methodology of the proposed approach. Section 4 presents the experimental results and analysis. Finally, Section 5 concludes the paper.

Dataset used: A brain MRI dataset from Kaggle [23] is used which contains three class labels. This dataset for brain tumor classification includes a set of medical images (MRI scans) of the brain, along with corresponding labels indicating the presence or type of tumor. The images are annotated by medical professionals to provide information on the location and size of the tumors. The dataset is divided into training, validation, and test sets to support the development and evaluation of deep learning models for brain tumor classification. The dataset consists of three class labels: No tumor, Benign and Malignant.

II. RELATED WORK

The existing systems for the classification of brain tumors using image processing and deep learning techniques are as follows. One of the earliest systems developed for this purpose was the system proposed by Marroquin et al. [8], which used a Bayesian method for the automatic extraction of brain MRI images. Y. Cheng et al.[22] suggested a deep learning-based approach for brain tumor classification. The proposed approach involves a deep belief network (DBN) and a convolutional neural network that are jointly trained to learn the discriminative features from the MRI images.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54175

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

A Comparative Study on Deep Learning Models for Plant Disease Detection and Organic Solutions

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Abstract: ***Farming is essential to the economy of each and every country. Consistently, ranchers grow many harvests. Crop and forest products for both food and non-food products are included in agriculture. [First, agriculture was an important part of the development of sedentary human civilization.***
One of the primary causes of crop devastation and inappropriate crop development is infection and disease. Several factors associated with plant disease diagnosis using deep learning techniques must be taken into consideration when developing a robust system for accurate disease management. This model utilizes profound learning and picture handling to distinguish plant sicknesses and prescribe natural answers for treating the plants. This model makes use of convolutional neural networks, which are crucial for visual imagery.
Images are processed and libraries are extracted with Tensorflow. Keras is likewise utilized for highlighting extraction expectations and adjusting hyperparameters. In light of the kind of plant and sickness, this model additionally suggests natural arrangements like fertilizer, vermicompost, bonemeal, etc. Moreover, the model distinguishes bothers and proposes natural cures, for example, rejuvenating balms, cow manure, and neem glue to safeguard the harvest from harm.
The project's objective is to reduce the economic and aesthetic damage caused by plant diseases and to provide farmers with an intuitive interface for organic plant cultivation. In order to provide the most precise Deep Learning results, this model looks for the ideal approach. Organic Solutions and a Model for Predicting Plant Diseases
Keywords: CNN, NLP, Data Pre-processing, MySQL

I. INTRODUCTION

The protection of plant health is essential in every industry. Plants not only provide non-food crops for energy, fiber, feed, and horticulture, but they also contribute to the world's food supply. The physiological functions of plants that are disrupted by persistent phytopathogenic organisms (biotic or infectious disease agents) are referred to as plant diseases. At various cultivation stages, it suffers from a variety of diseases. Because of the vast amount of land under individual farmers' control, the variety of diseases, and the occurrence of multiple diseases in the same plant, early detection and treatment of such illnesses is beneficial for ensuring high quantities and quality. In remote areas, expert knowledge in agriculture is unavailable, and the process takes time.

Fig 1: Plant Disease

It developed an automated method for farmers to send images of diseased leaves to our server, where a neural network will identify the disease and provide the farmer with the disease classification as well as the organic solution that corresponds to it because everyone nowadays has a cell phone. Using our plant disease dataset, which was gathered over several months, the proposed architecture developed a deep learning strategy inspired by work on convolution neural networks. Sequential pre-trained VGG-19 models that have been trained on a lot of ImageNet data are used to identify plant diseases.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54176

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Detection of Distracted Driver UsingConvolutional Neural Network

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Abstract: ***Abnormal driving behaviour detection helps to ensure safety of driver and passenger. Recent studies have concluded that talking on phone while driving distracts driver attention upto 20%, which leads to accidents. Deep learning models can be used to find these distracted actions. In this system the abnormal behaviour of the driver like reaching behind, hair and make-up, drinking, texting etc. are detected through deep learning. Densely connected Convolutional Neural Networks, Residual Networks are used for detection. AWGRD model, the most sophisticated model of ResNet, is formedby superpositions of previous layers, and is used to detect the driver behaviour. The input to the proposed system will be a video file. The video input can be a real time live video or it can be uploaded. In output the system detects the activity or behaviour of the driver and warns them.***
Keywords: Densely Connected Convolutional networks, Deep learning, Artificial Intelligence, Neural Networks.

I. INTRODUCTION

For the time being, detection of a distracted driver is becoming increasingly popular because it is extremely useful for ensuring the safety of both the driver and the passengers in the vehicle.

Researchers found in a recent practice that making use of a phone during driving- either by making a call or by sending a text can cause a driver to lose a quarter of their attention, making them twenty three times more likely to get into a fatal automobile accident than normal attentive drivers. According to research, distracted driving is responsible for nearly 3,000 accidents each year on the road. Only about 8% of them end in death.

A driver may be tipsy, or may be on a call, conversing with atraveler, working the radio, doing hair and cosmetics, messagingon phone and so on. They could die from a small mistake. The significant objective is to ensure that the driver is cautioned by the framework at whatever point he/she is showing occupied conduct. An alarm will sound to notify the driver from the system[1].

As a result, our goal for this paper is to define the means to detect the aforementioned abnormal behaviors.

II. OBJECTIVES

The following are the paper's goals:

1) To group the actions in the video file that was uploaded.
2) To design a user interface.
3) To classify the actions in real-time live video based on howpeople act while distracted.
4) To incorporate project modules.

III. LITERATURE SURVEY

High-resolution videos are now present in an increasing numberof visual applications, something that is widely acknowledged. For example, in video reconnaissance[2], numerous high-goal cameras are important to be put at various areas. In order to identify[3], and re-identify, and then track the target which is moving, they collaborate, making it easier to conduct subsequent high-level analyses of the target which is moving (such aspotential intention or even behavior)[4]. In profound calculation,high-goal cameras should be used to catch both self-evident andfine changes of feelings of the objective individual progressivelywhich has huge effects in security these days. It is not difficult to see from the above portrayals that, procuring and putting away an enormous volume of high-goal recordings are frequently quite easy to be acknowledged for the present[5]. Themain problem, though, is how to use those large volumes of low-level video clips to make accurate high-level decisions in an efficient and effective manner. High-quality videos of drivers taken while inside of vehicles are considered in this study.Identifying drivers' abnormal driving behavior—also known as patterns—is the central decision here. There are some research studies conducted already. The first study, for example, is based on the identification of anatomical waves of human beings such as, electrooculogram, electro-encephalogram, changes in respiratory actions, changes in blood pressure flow, etc, utilizinga variety of sensors[6].

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54177

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Easy Bus (Virtual Bus Pass and Bus Tracking System): Design and Implementation Using Machine Learning Algorithms

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Abstract: ***Unforeseen and atypical road conditions have an impact on the functioning of the bus movement. Daily issues such as traffic congestion, unanticipated delays, fluctuations in student demand, and regular bus scheduling occur, leading to disruptions in students' schedules and necessitating their inevitable wait for their respective buses to arrive. To alleviate this inconvenience for students, a system that offers real-time information on bus locations can be introduced.***
EASY BUS is an interactive application that simplifies the process of using college buses, making it convenient and accessible. Common issues faced by bus-riding students, such as uncertainty about bus arrival times, missed buses, or operational status on a given day, are effectively resolved by this app. To make the most of this solution, students are required to install the app and regularly update their bus passes.
This app boasts two prominent features: GPS tracking of bus locations and a virtual bus pass. The bus's whereabouts are tracked by a sensor every thirty seconds, and the collected data is transmitted to the server, which subsequently displays it on a map for the user (student). The app also offers a bus pass feature, allowing users to create new passes or renew their existing ones, with the associated charges processed through online payment methods.
Keywords: GPS, Location, Tracking, Mobile, Bus-pass, API, Cloud, Firebase

I. INTRODUCTION

Bus transportation, known as Omnibus, was first introduced in Nantes on August 10, 1826. An Omnibus consisted of two horses and could accommodate up to 16 passengers. The term "bus" is derived from the Latin word "Omnibus," meaning a carriage for all. Following the development of the Omnibus, various similar transportation systems such as horsecars, cable cars, streetcars, and modern buses were invented. In Malaysia, the development of public transportation began during the British era and has steadily improved over time. However, a number of problems have developed over time, including a decline in bus transportation's time management as a result of environmental conditions. This has caused inconveniences, particularly for students and staff members in universities who rely on buses. Their tardiness to classes can be attributed to waiting for buses without knowing their exact locations. In a fast-paced and evolving environment, time is of great importance, and any delay can lead to significant incidents, especially during exam days when students may need that extra time for last-minute revisions. One of the main challenges faced by students is uncertainty about the bus's location. They lack real-time information regarding the current whereabouts of the bus, making it difficult for them to estimate its arrival time and plan accordingly. Moreover, the absence of unique identifications for buses further complicates matters, as students are unsure which bus they should take.

II. RELATED WORK

"Real-Time Bus Position and Time Monitoring System": To address the issue of delays in public transportation, this system aims to provide real-time information about bus arrival times at specific stops. By utilizing GPS technology and online platforms, passengers can access accurate information about bus positions and arrival times, allowing them to plan their journeys effectively and reduce waiting times. This system not only improves the passenger experience but also promotes the use of public transport, leading to reduced traffic congestion and pollution.
"Real-Time GPS/GPRS Based Vehicle Tracking System": This system focuses on displaying real-time bus locations in Mumbai city through a standalone tracking device. By utilizing transmitter and receiver modules, along with LED-embedded route maps, the device provides accurate bus locations to pedestrians at bus stops. The system operates using GPS data from buses and does not require an external power source, making it cost-effective and sustainable.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54178

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Generative Data Augmentation and ARMD Classification

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Abstract: ***Age Related Macular Degeneration (ARMD) is a type of eye disease which normally have an effect on the central vision of a person. This Disease might sometimes lead to permanent vision loss for some people. It affects the people over the age of 50. So, basically there are 2 different types of ARMD i.e., Dry and Wet. Dry ARMD will generate a tiny amount of protein deposits called drusen, whereas Wet ARMD occurs whenever any abnormal blood vessel is developed under the retina, so sometimes this blood vessels might leak blood fluid, this type of ARMD is very severe and can even lead to permanent central vision loss. Therefore, it is necessary for early detection of the disease. Generative Data Augmentation for ARMD Classification is deep learning based which uses Convolutional Neural Network (CNN) model for generating images to accurately identify the disease.***

Deep Learning Diagnostic models require expertly graded images from extensive data sets obtained in large scale clinical trials which may not exist. Therefore, (Generative Adversarial Networks) GAN-based generative data augmentation method called Style GAN is used for generating the images. Generative deep learning techniques is used to synthesize new large datasets of artificial retinal images from different stages of ARMD using the images from the already existing datasets. The performance of ARMD diagnostic DCNNs will be trained on the combination of both real and synthetic datasets. Images obtained by using GAN appear to be realistic, and increase the accuracy of the model. It then continues with classifying the retinal images into one of the three classes i.e., dry, wet or normal using CNN model. It also compares the accuracy against the model with traditional augmentation techniques, towards improving the performance of real-world ARMD classification tasks.

Keywords: Age-Related Macular Degeneration, Deep Learning, Generative Adversarial Networks.

I. INTRODUCTION

Age-related macular degeneration (ARMD) is the most common cause of severe vision loss in elderly persons in developed countries and accounts for one-third of cases of untreatable vision loss. ARMD is a painless, irreversible, degenerative eye condition associated with the damage and ultimate death of photoreceptors. There are two types of ARMD, dry and wet; dry ARMD is far more common, but wet ARMD is usually a more advanced disease state and is associated with rapid distortion and sudden loss of central vision. Various agents are used for treatment, and lifestyle changes and dietary constituents are important for preventing ARMD and halting its progression. As new therapies become available, early identification of patients with risk factors for ARMD will be increasingly important. On the same note, retinal fundus images are exceptionally valuable source of information for ophthalmologists to be able to recognize retina problems.

As prevention is better than cure, early detection could improve the chances of cure and be able to prevent blindness. Retinal problems like diabetic retinopathy and retinitis pigmentosa can be diagnosed using retinal fundus images by medical experts. In the most recent times, machine learning research is going on for diagnosing diseases like diabetic retinopathy [6], glaucoma by extracting features and then classifying the image. Researchers are trying to come up with the optimal ways of being able to automatically classify retinal problems from those of the healthy ones with the help of feature extraction. But most importantly, to be able to classify retinal fundus images accurately, a decent size of the dataset is necessary. When the dataset size does not match with the user requirements, generation of more images is needed. Hence the usage of Generative Adversarial networks became necessary.

Generative Adversarial Networks (GAN) are powerful classes which consist of generative model and discriminator model. Generative models generate realistic images that are hard to differentiate from real images. Using Generative adversarial networks, the dataset that is currently being used could be increased as it synthesizes fake images that are very hard to separate apart from the actual images.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54178

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

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iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54179

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Glucose Monitoring using Deep Learning

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Abstract: ***Diabetes is a chronic disease that occurs when blood glucose levels are abnormal. Blood glucose is the carbohydrate in the blood that provides the body with energy to perform biological work. The carbohydrate levels in the blood change dynamically depending on various factors such as exercising and fasting. Blood glucose is crucial to healthy metabolic function within the human body and thus is essential to monitor the blood glucose levels of diabetic patients. Various methods of measurement are in use to report glucose levels ranging from the Yellow Spring Instruments 2300, the gold standard, to handheld glucose monitors, also called continuous glucose monitors (CGMs), a compact medical system that continuously monitors glucose levels in more or less real-time.***

Diabetes is a fast-growing global problem with huge social, health, and economic consequences. The estimates in 2019 showed that 77 million individuals had diabetes in India which is expected to rise to over 134 million by 2045. Considering these facts there is a need to build a better system to control diabetes. Monitoring the patient glucose levels daily and keeping him updated with their health every day will help them to come out of the danger even a little bit. Predicting blood glucose levels and displaying them on a website to help ease monitoring for diabetic patients, along with notifications and alerts about their health condition, diet and exercise recommendations, etc. The diabetic patient's data is used to predict glucose levels using machine learning. The glucose levels are predicted continuously and displayed in a graphical form on the website. Depending on the glucose levels, necessary suggestions and pieces of advice are provided. By displaying the glucose levels, user will be able to know about their health status and be able to take sufficient measures to lead a happy life. The advanced features will be that include connections of patients with personal doctors, notifications and alerts about their condition, diet and exercise recommendations, etc.

Keywords: CGM, Convolution Neural network, Deep Learning, LSTM, Recurrent Neural Networks

I. INTRODUCTION

Diabetes is a chronic condition that affects millions of people worldwide, and managing blood glucose levels is a critical aspect of diabetes care. Continuous glucose monitoring (CGM) systems have been developed to assist individuals with diabetes in monitoring their glucose levels. However, interpreting and understanding the data generated by these devices can be challenging, especially for individuals who are not healthcare professionals.

Deep learning, a subset of machine learning, can be used to analyze and interpret large amounts of data, including data from glucose monitoring devices. By training deep learning models on large amounts of glucose monitoring data, it is possible to predict glucose levels, identify patterns and anomalies in the data, and provide real-time predictions to help individuals better manage their glucose levels and improve their overall health outcomes. Additionally, this technology could be integrated into existing glucose monitoring devices, making it more widely accessible. The goal of this project is to develop a deep learning-based system for glucose prediction that can help individuals with diabetes better manage their glucose levels.

A. Problem Background

There are many glucometers in the market that come along with the a mobile application to store users glucose levels that can be connected to only that specific company products like Accu chek Guide glucometers that can be connected to Accu-Chek Connect mobile application, Contour Next from Ascensia with which the users can use Contour diabetes application. Such glucometers are not compatible with third party digital platforms for diabetes data review. There are also glucometers that do not have any application to store the data like Walmart ReliOn Confirm (Micro) from Arkray, Glucospark and Dr Morepen BG 03 Gluco One Blood Glucose Monitoring System. In the first case, if the user switches to a different brand product, the data is lost, if the application is deleted or he will need to download 2 applications and check both to review past glucose levels. In the latter case the glucose levels can only be used as one-time readings, but this cannot be used for diagnosis by doctors and the user cannot know how the user's glucose levels are changing based on what time he has taken the readings if he took before or after meals, and at what time of the day has he taken the readings, as they play an important role in telling the user if his glucose levels are in limit or not.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54180

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Lip Movement Detection Using 3D Convolution and Resnet

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Abstract: ***Recognition of Lip movements has become one of the most challenging tasks and has crucial applications in the contemporary scenario. Being able to see speech helps people communicate better, especially in challenging listening environments like when there is a background noise and video surveillance when there is no audio. Lip reading is a technique primarily used by deaf people or those who have some form of hearing impairment. It's a way of understanding and communicating with others who might not be familiar with another form of inclusive communication, such as sign language. Lip-reading technology mainly includes face detection, lip localization, feature extraction, training the classifier and finally recognising the word or sentence through lip movement. Many developments have taken place in this growing field using various deep learning-based techniques. An intelligent system will be trained by giving users lip-movement frames sequences as input and will identify lip movement and the said word using 3D convolution and ResNet . This project does analysis over various deep learning models and other datasets. This study also aims to find out the optimal architecture suitable for building a new model with high accuracy for lip movement detection.***

Keywords: Lip Movement Detection, Deep Learning,3D Convolution, Resnet, Lip-reading

I. INTRODUCTION

Lip movement detection is a technique that aims to interpret and understand spoken language by analysing visual information from the speaker's face, with a specific focus on lip movements and facial cues. It involves capturing and analysing the movements and gestures made by the lips during speech to extract valuable linguistic information. Theprocess of lip movement detection involves using computer vision algorithms to track and analyse the shape, position, and motion of the lips in real-time. By capturing and interpreting these visual cues, machinescan gain insights into the spoken language, helping totranscribe, recognize, or understand the words or sentences being spoken. Lip movement detection is particularly useful in scenarios where the audio quality is poor, or in situations where audio alone may not be sufficient to accurately interpret speech. By leveraging the visual information from the speaker's face, machines can enhance speech recognition systems and improve the accuracy of transcriptions, especially in noisy environments or when there are speech impediments. It has gained significant importance across a range of fields, encompassing speech recognition, lip reading, emotion analysis, and human- computer interaction. By comprehending and interpreting lip movements, machines can extract valuable information about spoken language, the expression of emotions through facial cues, and facilitate more seamless communication between humans and computers. In the past, lip movement detection predominantly relied on manual observation and analysis, which was subjective and demanded considerable time and effort. However, the emergence of computer vision and machine learning techniques has revolutionized this domain by introducing automated methods that improve accuracy and efficiency. The integration of computer vision and machine learning techniques has streamlined and improved the process of lip movement detection.

By detecting the movement of lips from video input and generating corresponding text output is a fascinating area of research in computer vision and natural language processing. This task involves analysing the visual information of lip motion in the video frames and converting it into meaningful textual representations. To accomplish this, several techniques have been developed that leverage the power of deep learning algorithms. One popular approach is to use Convolutional Neural Networks (CNNs) to extract spatial features from individual frames of the video. CNN's are capable of learning complex patterns and structures in images, making them well-suited for lip feature extraction. In the context of lip movement detection, a common practiceis to divide the video into smaller temporal segments or sequences.

These sequences capture the temporal dynamics of lip motion, allowing the model to understand the progression and changes in lip shapes over time. This is where 3D CNN comes into play. Byextending the traditional 2D convolutions to the temporal dimension, 3D CNNs enable the extraction of spatiotemporal features from the video sequences, providing a richer representation of lip movement.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VII Month of publication: July 2023

DOI: https://doi.org/10.22214/ijraset.2023.54644

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VII Jul 2023- Available at www.ijraset.com

People Counting and Tracking System in Real-Time using Deep Learning Techniques

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Abstract: ***The aim of project is to automatically estimate the number of people at indoor and outdoor places. People counting systems can be used in retail environment such as determining conversion ratio, advertising and promotional evaluation. This system can be used for transportation management system and video surveillance. The number of customers is indispensable data for management and decision making in public places like large-scale markets, shopping centers, airports, stations, museums, laboratories, classrooms, cafeteria etc. In this system, firstly extract the frames from the video, then draw a desired reference line on the input frame, detect the people using MobileNet-SSD object detection model, mark the centroid on the detected person, track the movement of that marked centroid and calculate the direction of centroid movement whether it is moving upwards or downwards. If the centroid movement is downward direction, then we increment in counter, else if the centroid movement is upward direction, then we increment out counter. People counting is essential for retailers of any size, but it's especially important for small businesses that don't have the benefit of assaying data from multitudinous locales when making pivotal opinions. When used intelligently, people counting can shape businesses in multitudinous ways other than just furnishing information on nethermost business.***

Keywords: Deep Learning, MobileNet-SSD, Centroid Tracking

I. INTRODUCTION

The analysis of crowds is a popular research topic that has gained attention due to its various practical applications. Automated people counting systems are designed to estimate the number of individuals present in both indoor and outdoor environments. These counting technologies serve as the foundation for a range of advanced solutions, such as retail analytics, queue management, and space utilization. The use of real-time information on people flow is especially beneficial for applications related to crowd management and security, including the management of pedestrian traffic and visitor flow evaluations. It is widely acknowledged that tracking and monitoring the movement of people in an area is of significant importance. People counting and tracking systems have been used for many years in various applications. For example, in the early 20th century, manual people counting systems were used in retail stores to track the number of customers. Later, in the 1960s and 70s, mechanical and electronic systems were developed to automate people counting.

In the 1990s, video-based systems were introduced, and since then, there have been numerous technological advancements in computer vision and artificial Intelligence that have greatly improved the accuracy and efficiency of these systems. In today's world, it is crucial for companies to consider potential solutions that can ensure the safety of both staff and customers. This is especially important as new legislation is being introduced worldwide to regulate occupancy and social distancing. The importance of people has never been greater, and it is now possible to accurately count visitors using technology. Sensors connected to software can provide real-time occupancy data, which helps determine whether a location can safely accommodate more people or not. By using this technology, overcrowding can be prevented before it becomes a serious issue, ensuring that a location does not exceed its capacity. This is essential in keeping both customers and employees safe. Collecting data on the efficiency of a shop's operations is essential for maximizing a company's potential. By monitoring customer satisfaction, companies can implement ideas to enhance the consumer experience, which can lead to increased revenues and customer loyalty. People counters are a practical solution for counting and monitoring the flow of visitors in and out of a facility. The information gathered by these counters can be segmented and used to determine visitor arrival and departure times, as well as the level of engagement customers have with products and services. People counting technology can also reveal where visitors spend the most time in a shop and which products are most popular. This information is valuable for companies seeking to optimize their marketing efforts and increase sales. In the retail industry, people counting technology is used to determine the precise number of consumers who visit a shop. People counting technology can provide valuable insights to executives and organizers of events and exhibits.

Advances in Computational Sciences and Technology
ISSN 0973-6107 Volume 16, Number 1 (2023) pp. 1-11

https://dx.doi.org/10.37622/ACST/16.1.2023.1-11

Automatic Irrigation and Crop Monitoring System Using IoT and Deep Learning

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Abstract

One of the biggest problems faced by Indian farmers is the lack of effective irrigation and monitoring techniques. Manual disease monitoring techniques require the full attention of farmers day and night and may lead to the detection of disease at a stage beyond reversal. Conventional irrigation methods require immense effort and lead to the misutilization of water. It also results in a decrease in crop yield as a result of water being given as an approximate quantity, irrespective of the type of the crop. The proposed system is a fully automated farming system, which includes a smart irrigation system using IoT and a deep learning model to detect leaf diseases. Currently, this model pertains to the potato crop, however it can be easily modified according to one's cropping needs. The crop's water requirements are taken care of by the Smart Irrigation system, in which a soil moisture sensor detects the moisture content in the soil, and based on the threshold, turns on and off the pump to ensure adequate water supply to the crop. Alongside the irrigation system, a deep learning disease classifier model is integrated, in which the images of the crop is taken automatically in regular intervals. These images are used as the test data to identify the current health status of the plant, by classifying it as either healthy or unhealthy.

Keywords: Smart irrigation system, IoT, Deep learning, Disease classifier

1. Introduction

Irrigation is the method of distributing water to land to aid in the growth of crops;

Advances in Computational Sciences and Technology
ISSN 0973-6107 Volume 16, Number 1 (2023) pp. 13-26

https://dx.doi.org/10.37622/ACST/16.1.2023.13-26

Datasets Creation for Depression Risk Prediction in Educational Environment during Pandemic

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Abstract

Emotional well-being of any individual is crucial and predominant to handle everyday stress and work productively. Mental health usually takes a setback during the pandemic, and it is vital to monitor individuals suffering to improve their quality of life. Datasets attained over the years through strategic medical screening and diagnosis of mental health illnesses forms a value asset for understanding the conditions better and help patients cope from it. Datasets play a vital role in enabling Machine Learning and Deep Learning applications to predict and classify results accurately. Specifically, as the explorations of Machine Learning is growing swiftly in the field of health care sector it is essential to utilize high-quality datasets for precise screening, detection, and diagnosis of mental health conditions. Multi modal data such as textual, audio and video datasets designed through National health surveys, clinical data, electronic health records as part of patients screening and treatment process, are frequently used for detection of prediction of depressive disorder. Nevertheless, less research and datasets exist on predicting depression risk in educational environment by considering factors like academic stressors, depression symptoms and panic due to Covid-19. The current study focuses on creating high value datasets with respect to the mentioned factors for depression risk prediction in teachers and students.

Keywords: Datasets, Self-reporting Questionnaires, Mental Health, Depression Risk, Machine Learning.

Advances in Computational Sciences and Technology
ISSN 0973-6107 Volume 16, Number 1 (2023) pp. 27-34

https://dx.doi.org/10.37622/ACST/16.1.2023.27-34

Detection of COVID-19 and Pneumonia using Chest X-ray Scans with Deep Learning

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Abstract

COVID-19, a brand-new coronavirus that causes pneumonia, recently appeared. Since then, COVID-19 has been responsible for several infections and fatalities across the globe. One way to stop the spread of this virus is to isolate those who are afflicted. Radiologists can diagnose COVID-19 in hospitals with the help of X-rays, which give radiologists a precise image of the lungs. However, a person's X-rays typically contain hundreds of slides, and using these scans to diagnose COVID-19 Pneumonia can cause delays in hospitals. A thorough investigation is required on the effectiveness of an automated diagnosis system for identifying COVID-19 patients to stop the coronavirus from spreading. By using four different pre-trained architectures, including VGG16, ResNet50, InceptionV3, and CNN-11, which were trained and tested on X-ray images of COVID-19, Normal, and Viral Pneumonia, this proposal seeks to address this issue. The outcomes from the three classes (Normal, COVID-19, and Pneumonia) were presented.

Keywords— VGG16, CNN-11, ResNet 50, Inception V3.

I. INTRODUCTION

Currently, human-to-human transmission is the primary method of coronavirus transmission, and COVID-19 vaccination options are scarce. According to reports, the best strategy to stop the spread of the coronavirus is to quickly identify it in big crowds and then isolate the afflicted people. Therefore, routine COVID-19 tests are required to identify and isolate infections in patients. RT-PCR (transcription-polymerase chain reaction) assays are primarily used in hospitals to identify patients with COVID-19.
Computed tomography (CT) pictures and X-rays are other diagnostic methods for identifying COVID-19. On X-ray or CT pictures of the lung organs, medical

Advances in Computational Sciences and Technology
ISSN 0973-6107 Volume 16, Number 1 (2023) pp. 35-43

https://dx.doi.org/10.37622/ACST/16.1.2023.35-43

Diet Recommendation System Based On Vitamin Intake

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Abstract

A WHO study states that insufficient and unbalanced food intake causes about 9% of heart attack deaths, about 11% of coronary heart disease deaths and 14% of gastrointestinal cancer deaths worldwide. In addition, about 0.25 billion children suffer from various types of deficiency ranging from vitamin A to vitamin K deficiency, 0.2 billion people suffer from iron deficiency (anemia) and 0.7 billion people suffer from iodine deficiency. The main goal of this work is to recommend a menu to different individuals. The Diet recommendation system deals with the large volume of information present from the dataset.

In this project, a custom data set is prepared based on different high and low values of vitamins from (vitamin A, B, C, D, E, K) and the features are divided from normal and abnormal states of vitamins and the labels are divided into 0 and 1 as normal and abnormal. Another data set is prepared based on a combination of different vitamins and their deficiency and recommended foods according to which vitamin is deficient. In this project, multiple classifier algorithms (KNN, decision tree, random forest, logistic regression,

Advances in Computational Sciences and Technology
ISSN 0973-6107 Volume 16, Number 1 (2023) pp. 45-53

https://dx.doi.org/10.37622/ACST/16.1.2023.45-53

Comparison of Machine Learning Algorithms for Detection of Stuttering in Speech

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Abstract

Stuttering is a speech disorder characterized by repetition of sounds, syllables, or words;prolongation of sounds;An individual who stutters exactly knows what he or she would like to say but has trouble producing a normal flow of speech.This project aims to use machine learning algorithms to detect stuttering behavior in Telugu language speech samples. Stuttering is a speech disorder that affects the flow of speech, making it difficult to communicate with others. The study will collect voice samples from individuals reading the same Telugu script and generate 8KHz and 16KHz samples in .wav files. The data will be annotated and coded on a 0-8 scale and will be generated as a data set. Machine Learning algorithms will be used to build a model for detecting stuttering patterns in the audio files.Finally the model will be integrated with a user interface.

I. INTRODUCTION

The speech disorder known as stuttering, which is also known as stammering or childhood-onset fluency disorder, disrupts the normal rhythm and fluency of speech on a regular basis [1], [2]. People who stutter have trouble articulating their thoughts and feelings in speech, often by prolonging or repeating a consonant, vowel, or syllable. When they come across a difficult word or sound in conversation, they may pause for a moment.

International Journal of Computational Intelligence Research
ISSN 0973-1873 Volume 19, Number 1 (2023), pp. 1-11

https://dx.doi.org/10.37622/IJCIR/19.1.2023.1-11

Evaluation of Deep Learning Models for Fake News Detection

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Abstract

The widespread dissemination of misinformation, commonly known as fake news, has been facilitated by the rapid expansion of social networks as platforms for news distribution. This stands in contrast to traditional mass media channels such as newspapers, magazines, radio, and television. The challenges arise from human limitations in discerning between true and false information, which poses a significant threat to logical coherence, democratic processes, journalistic integrity, and the credibility of government institutions. The lack of reliable and trustworthy information on social media further compounds the issues associated with this phenomenon. To address this pressing problem, we have proposed an integrated system that incorporates various pre-processing techniques and classification models. This system aims to detect and combat fake news by evaluating their efficacy on a specific dataset of labeled news statements. By utilizing metrics such as precision, F1 scores, and recall, we can determine the most effective model. The primary objective of this system is to develop an efficient and accurate model capable of predicting and identifying instances of fake news within social media networks.

Keywords — Fake news detection, Gradient Boosting Classifier, LSTM, Passive Aggressive Classifier, Random Forest, RNN, RNN+LSTM.

I. INTRODUCTION

The term "Fake News" refers to the dissemination of false information or propaganda through various media channels, both traditional and non-traditional, such as print,

International Journal of Computational Intelligence Research
ISSN 0973-1873 Volume 19, Number 1 (2023), pp. 13-23

https://dx.doi.org/10.37622/IJCIR/19.1.2023.13-23

Future of Project Management with Machine Learning

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ABSTRACT

Software companies will constantly work on numerous projects at a time. Project managers are responsible for making each project successful. As to monitor and control many projects organizations use project management tools to perform tasks in a well-organized manner. Current day's lot of data is generated in organizations related to software development as the organizations use project management tools to track the status of the project. This project data generated by project management tools like Jira, Asana, and Trello can be used to solve resource allocation problems. Though there are numerous solutions for addressing the project scheduling problem, none of them has intelligent decision-making. Research is still scarce in the area of software project management and evidence is required to assess the theoretical methods and ideas. This paper introduces a resource allocation method that uses machine learning for effective project scheduling.

Keywords: Project management, Machine learning, Productivity.

Introduction

There are various aspects of project development. In the IT industry, each aspect has different functionality and each of which has different features. This work will mainly focus on the resource management aspect which plays a crucial role in project development. Any Project life cycle consists of the Engineering phase and Management phase. There are many project management tools available for managing and controlling the team.

International Journal of Computational Intelligence Research
ISSN 0973-1873 Volume 19, Number 1 (2023), pp. 25-35

https://dx.doi.org/10.37622/IJCIR/19.1.2023.25-35

Intelligent Deep Learning Based Pothole Detection and Alerting System

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Abstract

Potholes are a common problem in roads and highways around the world, which can cause severe damage to vehicles and create safety hazards for drivers. In recent years, deep learning algorithms have been increasingly used for automated pothole detection. This research offers a deep learning-based algorithm that can detect potholes early using photos and videos, reducing the likelihood of an accident. This model is basically based Faster Region-based Convolutional Neural Network(F-RCNN) and You Only Look Once Version 3(YOLO V3). It also discuss the challenges in detecting potholes, such as variable lighting conditions and noise in the data, and how these challenges have been addressed in previous research. Finally, we provide a comparative analysis of the performance of different deep learning algorithms for pothole detection based on accuracy. There are various pothole identification models that combine the accelerometer with machine learning techniques, but there are fewer pothole detection models that use simply machine learning techniques to detect potholes. The findings of this study suggest that deep learning algorithms can provide accurate and efficient pothole detection solutions that can help road authorities to maintain and repair roads, reduce vehicle damage, and enhance road safety.

Keywords: Pothole Detection, Deep Learning, Image Processing, Annotation, Faster RCNN,YOLO V3,Accuracy.

Introduction

Potholes are a hollow structural damage to the road that can cause serious traffic accidents and reduce road efficiency. Manual road condition assessment is a difficult

International Journal of Computational Intelligence Research
ISSN 0973-1873 Volume 19, Number 1 (2023), pp. 37-50

https://dx.doi.org/10.37622/IJCIR/19.1.2023.37-50

Language Interpretation Using Machine Learning

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Abstract

Wouldn't it be cool for your device to translate English language into the language you speak in real life and vice versa? Understanding multiple languages can be a challenging task for humans. In a country like India, where there are over 22 recognized languages, it can be nearly impossible for an individual to learn and comprehend all of them. Consequently, communicating effectively in such a diverse linguistic environment can pose significant obstacles, forcing the need of human interpreters. An interpreter is a platform which translates what is being said in one language into another language without changing its original meaning. Google Translate is one such existing platform but it has drawbacks like not ideal for confidential documents, cannot provide a perfectly accurate translation and requires internet connection to translate. Our goal is to address the limitations mentioned earlier, and to accomplish this objective, we have come up with a project idea that involves real-time translation of spoken languages. The project aims to achieve this by using audio as an input. The proposed system will take real-time English audio as an input, translate it into Telugu and then will produce audio output in Telugu and vice versa. As English is the third most spoken native language in the world after Chinese and Spanish and also the most widely used, we chose to convert the text from English to Telugu and vice versa. Our intention is to utilize a Sequence-to-Sequence model as it is proficient in performing language translations. This model works by transforming a sequence of words from one language into a sequence of different words in another language. It uses neural network for sequence learning.

Keywords: Automatic Speech Recognition, LSTM.

International Journal of Computational Intelligence Research
ISSN 0973-1873 Volume 19, Number 1 (2023), pp. 51-62

https://dx.doi.org/10.37622/IJCIR/19.1.2023.51-62

Learning based Software Defect Prediction

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Abstract

Software Engineering is a Comprehensive domain since software system have become larger and complex than ever. Such software characteristics make it very complex to develop fault free software. Therefore, identifying defects automatically and fixing them is challenging task. Improper modelling, lack of requirement specifications, wrong coding, poor configuration management may cause defects which leads to failure of software system. Such defects must be detected and fixed at early stage of software development to minimize cost. Machine learning algorithms widely used in the software defect prediction also achieves good results in predicting software defects using deep learning techniques. In this paper, we are providing comparative study of various algorithms like convolutional neural networks, multi-layer Perceptrons in identifying defects in software. Moreover, the experiments conducted on NASA datasets.

Keywords— Code defect detection, software defects, multilayer perceptron, CNN, Decision Tree algorithm, Logistic Regression

INTRODUCTION

Now a days, deep learning – applied to code recommendations, code defect prediction, code clone detection in software engineering. Software defects usually occurs when there is incorrect collection of requirements from stakeholders, improper design specifications. The major intent of a software development process to implement a product that is effective, low cost-efficient and of high quality. A major drawback to having good quality and reliable software is the occurrences of faults, where faults degrade the software quality, leading to rework, increases in development and maintenance costs and can become unreliable end products, also not acquire customer satisfaction. A defect management approach should be employed to

International Journal of Computational Science and Engineering.
ISSN 2249-4251 Volume 13, Number 1 (2023), pp. 1-9

https://dx.doi.org/10.37622/IJCSE/13.1.2023.1-9

Question Generation System Using NLP

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Abstract

Manually creating interesting and relevant questions for subjective and objective tests is a timeconsuming and tough task for teachers. This technique is useful in Natural Language Processing, but it is a demanding process. This application generates questions that are both subjective and multiple-choice.In summary, the BERT approach is used, and then subsequent phrases are mapped to generate MCQs. The question paper is created by randomly picking questions from the Bloom's Taxonomy. Parts of speech tagging (POS Tagging) is used to generate questions. T5 _base is an NLP-based system that creates questions for objective and multiple-choice questions. This tool assists teachers in question generation, saving them time and effort. The development of question papers helps to address the manpower shortfall.

Key Words: MCQs, BERT, Wordnet, PKE, Deep learning, POS, T5_base

1.INTRODUCTION

All universities, colleges, and schools now offer online courses. Exams are a crucial instrument for assessing pupils' knowledge. Examiners are largely responsible for creating their test materials. It can be challenging to search through textbooks for new questions that are relevant and take the least amount of time on the exam. Both objective and subjective questions are acceptable. With the aid of NLP, the objective questions are automatically generated. The system receives the text as input, which is subsequently condensed using the BERT algorithm. Bidirectional Encoder Representation from Transformers, or BERT Xlnet.The Python Keyword Extractor (PKE) is now used to choose the keywords from the condensed text, and it maps each

International Journal of Computational Science and Engineering.
ISSN 2249-4251 Volume 13, Number 1 (2023), pp. 11-34

https://dx.doi.org/10.37622/IJCSE/13.1.2023.11-34

Smart Fit On Using Machine Learning and Deep Learning Techniques

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Abstract

Our society needs to know what people are doing for different reasons such as keeping people safe and tracking lifestyle and behavior. It's hard to watch everyone all the time, but sensors that respond to movement can help recognize what someone is doing. Many people have smartphones with sensors, making this kind of recognition more useful. To classify human activities this research looks at using different techniques using data from smartphone sensors. They compare the accuracy and efficiency of different methods.

Keywords: Word Prediction, LSTM.

1. Introduction

The healthcare industry has a growing demand for a better understanding of human conditions, especially in elder care, recuperation, diabetes, and cognitive diseases. Using detectors and surveillance cameras can save money by detecting abnormalities in real-time. Wearable sensors have been shown to accurately identify human activities with low error rates, but most studies were done in laboratory settings that are not practical for real-world use. The use of smartphones as sensors for identifying human activities has the potential to revolutionize the way we gather data about human behavior. By using the built-in sensors of modern smartphones, we can obtain high-quality data that accurately captures a person's movements and activities, without the need for complex and intrusive sensors. The ability to place the phone in any position around the waist, such as a pocket, further increases the practicality and user-friendliness of this approach. It also has the potential to save significant amounts of money for caretakers, as real-time recording and reporting of abnormal gestures

International Journal of Computational Science and Engineering.
ISSN 2249-4251 Volume 13, Number 1 (2023), pp. 35-44

https://dx.doi.org/10.37622/IJCSE/13.1.2023.35-44

Train Delay Predicti On Using Machine Learning and Deep Learning Techniques

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Abstract:

Transport systems are critical pieces of infrastructure and they have substantially increased in size in many countries worldwide. This includes rail transport systems that have evolved significantly, including to provide long-distance travel services. Passenger train delay significantly influences riders' decision to choose rail transport as their mode choice. Poor on-time performance can impact passenger trust and their satisfaction, and it may result in a shift to other modes of transport, especially private vehicles and air transport. Service disruption is a root cause of lower rail punctuality and customer satisfaction. Major service disruptions result from various conditions or factors such as accidents, problems in train operation, malfunctioning or damaged equipment, routine maintenance, construction, passenger boarding or alighting, and even extreme weather conditions. Train delay can also negatively affect connecting trains and passengers' journeys or activities. Thus, delay estimates or predictions can help train operators develop better plans to manage, reschedule, or adjust the timetable of the current and consecutive trains more effectively, as well as to inform passengers in advance so they themselves can adjust their travel plans in time. In light of these problems, the main objective is to model passenger train delay prediction based on three Machine Learning and Deep Learning techniques.

Keywords: CNN, Train Delay Prediction, Random Forest, Logistic Regression, KNN, Naive Bayes

Introduction

Our aim is to build a web application on Train delay prediction to predict the influence degree of train operation interference and delay propagation, which is helpful to

International Journal of Computational Science and Engineering.
ISSN 2249-4251 Volume 13, Number 1 (2023), pp. 45-55

https://dx.doi.org/10.37622/IJCSE/13.1.2023.45-55

Water Quality Prediction using Image Processing and Machine Learning Models

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Abstract:

The quality of water pertains to its physical, chemical, biological, and sensory properties that determine its appropriateness for various applications. Assessing and determining water quality is crucial as it directly affects human health, industrial and domestic purposes, and the natural ecosystem. Water quality can be evaluated through laboratory techniques or test kits designed for home use. Although laboratory analysis provides the most precise results, it is also time-consuming. The water quality parameters tested must conform to the standards set by local authorities, which are often influenced by international regulations created by the water quality organizations such as the World Health Organization (WHO). As a result, this study proposes a water quality detection system using machine learning methods. The crucial features of water are extracted from water images using machine learning methods based on color features. The proposed system presents comparison of accuracies of different machine learning models. The highest accuracy is achieved through multi-layer perceptron predicted to be 93.92% on feature dataset.

Keywords: Machine Learning, Color Moments, Multilayer Perceptron, Features

1. Introduction

Have you ever wondered about how we obtain insights on the state of our country's waterways, including lakes, streams, coastal waters, and estuaries? Monitoring is the primary means of obtaining this data. There are numerous methods to keep track of state of water. Experts in monitoring examine the chemical composition of water, deposits, and aquatic organisms like fish tissue to measure concentrations of key components, such as nutrients, metals, pesticides, dissolved oxygen and oils. They also

ISSN 2278-3091
Volume 12, No.3, May - June 2023
International Journal of Advanced Trends in Computer Science and Engineering
Available Online at http://www.warse.org/IJATCSE/static/pdf/file/ijatcse021232023.pdf
https://doi.org/10.30534/ijatcse/2023/021232023

Diabetic Retinopathy Classification using Transfer learning

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Received Date April 14, 2023 Accepted Date: May 17, 2023 Published Date: June 06, 2023

ABSTRACT

Diabetic Retinopathy (DR) is an eye illness that impacts individuals who have diabetes and damages their retina over time, eventually causing blindness. Due to lesions in the retina that are formed because of retinal blood vessel rupture, it impairs vision and, in the worst-case scenario, results in severe blindness. To prevent severity and to lessen challenges in identifying tiny lesions throughout the disease's advanced stages, it is now crucial to diagnose the condition early as, it manifests itself without any symptoms. Even ophthalmologists find it challenging and time-consuming to identify this condition. Early DR case identification and classification is essential for delivering the required medical care.

This study proposes applying deep learning techniques to detect DR in retinal fundus images. The data acquired for this process may be incomplete and imbalanced. Data augmentation balances the data and increase the quantity of retinal images. As deep-learning algorithms need more data to process, DCGAN Augmentation technique is employed. The CNN (Convolutional Neural Network) methods, specifically the VGG16 and DenseNet121 architectures, are employed for DR early detection in order to let patients to receive therapy at the appropriate time..

Key words : Deep Learning, Diabetic Retinopathy, Data Augmentation ,DR Detection, DR Classification.

1. INTRODUCTION

The eye's anatomy is intricate. Changes in the eye's primary structure may affect the eyes and nearby structures. Over 93 million people worldwide including 17.6% of Indians, have symptoms, making it difficult to administer a timely and efficient course of treatment. Therefore, early medical intervention is necessary for detection.

To identify DR by the presence of lesions linked with the vascular anomalies brought on by the disease, an ophthalmologist or other trained physician must view and assess digital colour retinal images. This is time-consuming and laborious process. The automated DR screening approach will hasten the detection and decision-making processes, aiding in the management or control of DR advancement. Using CNN models like VGG16 (Visual Geometry Group 16) and DenseNet 121, this method proposes an automatic classification system that evaluates fundus images with different illumination and fields of view and classifies them into normal and abnormal. Figures 1 and 2 below depict a normal retina and a retina damaged by diabetic retinopathy, respectively.

Figure 1: Normal Retinal image	**Figure 2:** Image of retina affected with Diabetic Retinopathy
	

There is a dataset size limit in medical imaging due to issues with privacy and annotation costs. To train the models for image segmentation, detection, and classification, enormous amounts of data are required. The process of annotating medical images is quite expensive and time-consuming, and it

1

Detection of stages in Diabetic Retinopathy using CNN

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Abstract: Automatic retinal image analysis is emerging as a key screening tool for the early detection of ophthalmologic illnesses such diabetic retinopathy (DR) and glaucoma with the advent of digital image processing, analysis, and modeling tools. In order to advance the development of computer-assisted DR diagnosis, a robust approach for optic disc detection, extraction of the optic disc boundary, and feature extraction of exudates is proposed in this study.

The suggested approach is based on segmentation techniques, smoothing filters, and morphological processes. Prior to applying the watershed transformation for boundary extraction, internal and exterior markers are utilized to change the gradient magnitude image. This technique is thought to significantly outperform previous ones in terms of optic disc border extraction, detection, and classification accuracy for the purpose of DR early detection.

The proposed method has shown an accuracy of 96.5% in classifying the retinal images into different classes based on the severity of diabetic retinopathy.

Keywords: Diabetic retinopathy, Image Processing, Preprocessing, Annotation, Support Vector Machine, Random Forest, Image classification.

1. Introduction

Diabetic retinopathy (DR), the most common eye problem affecting diabetic patients, is caused by the destruction of tiny blood vessels in the retina as a result of high blood glucose levels. Microaneurysms, hemorrhages, hard exudates, and cotton wool patches (also known as soft exudates) are all results of this fluid leakage [2], [3]. Diabetes retinopathy is a quiet condition that patients may not even be aware of until the alterations in the retina have advanced to the point where they make therapy challenging or even impossible. The need for instruments to aid in the diagnosis of diabetic retinopathy has increased due to the rising number of diabetic retinopathy cases worldwide. All people who have had diabetes for ten years or more are impacted, and it can lead to vision loss. Many patients worldwide suffer from diabetic retinopathy, which can lead to blindness.

In India, around 3 million adults aged 40 and older have VTDR, with a higher prevalence in those with documented diabetes who live in high and moderate ETI-SDI states.. Early diagnosis of diabetic retinopathy is a difficult task that can remind diabetic retinopathy patients to seek appropriate treatments on time. This research provides an automated image level DR detection method using multiple highly trained Neural Network models using an interpretable Ensemble Neural Network model for Diabetic Retinopathy disease classification.

Semantic and Syntactic Errors Detection using NLP

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Abstract—The purpose as a tool for syntax analysis, also known as parsing analysis or syntax analysis, is clear from the name of the tool. The text's precise semantics—or dictionary-like semantics—are extracted. To ascertain the meaning of a text, syntax analysis compares it to established grammar rules. Syntax mistakes and their specific location are generally poorly resolved by conventional LR parsers. We provide a method for identifying syntax mistakes and suggested token stream changes that may be made to correct the errors found. The method looks for syntax problems by comparing the "agreement" between two language models for each token. When the models disagree, it can be a sign of a syntax mistake. The methodology then looks for a workaround by obtaining a different token sequence from the models. Programming assignments have been corrected using current NLP techniques, although these mostly target syntactic faults rather than utilizing NLU techniques to comprehend the desired semantics. Understanding semantics has the ability to greatly increase the accuracy of mistake repairs by focusing on fixing faults that are unique to the intended issue rather than errors that are present in all programs. Each stage of the procedure also provides a chance to conduct related research on NLU methods used on source code.

Keywords - Natural Language Processing, NLU, Query pre-processing and post-processing.

I. INTRODUCTION

Grammar and practice are crucial for learning English. Writing is a useful tool for evaluating and enhancing grammar. Therefore, in order to develop their writing skills, English learners need to practice writing a lot. On the one hand, there are an increasing number of students as a result of the importance of English. The number of English teachers is slowly increasing at the same time that instructional materials are getting harder to come by. The teacher's feedback period after students' practice is longer because composition correction is challenging and requires a lot more time[1]. Therefore, the influence on an individual's learning is poorer the longer the feedback time is. In daily teaching, an English teacher usually needs to teach several classes of English at the same time. The teaching task is extremely heavy, and it is difficult to spend a lot of energy on reviewing composition. It is important to improve the detection rate of verb grammatical errors for English composition automatic reading.

The work presents a deep learning-based strategy for detecting grammatical errors, particularly for verb consistency and verb tense, in light of the standard reading system's low performance in this area. The study employs the LSTM model's capacity to remember context information to address the issue of inaccurate verb tenses because verb tenses depend on context information[2]. In contrast to the word bag model used in most reading systems, the word embedding model is used in this study to convert text information into numerical data. The approach not only addresses the word bag model's flaw of missing text position information but also addresses the potential dimensional disaster that word bag models can cause. The subject of English grammatical error correction is addressed in this study using recurrent neural network technology, which offers English language learners an easy-to-use method that contributes to the advancement of their grammar proficiency. Furthermore, it converts the text data into a low-dimensional vector space, preserving the text's location and averting dimensional catastrophe.

1.1. Problem Background

The effort required to comprehend the meaning that the phrase in question was intended to convey is usually acknowledged to be the most crucial part of semantic analysis. Consider the example given in the sentence that follows, which reads, "Ram is magnificent." The speaker of the sentence may be talking to Lord Ram or simply to someone with the name Ram, although both possibilities are equally possible. It's likely that Lord Ram is being allusion in this sentence. The task of the semantic analyst, whose obligation it is to determine the precise meaning of the phrase, is therefore one that bears a tremendous lot of weight and is considered as being of the utmost relevance.

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 12 Issue 04, April-2023

CLX (Collge Online Exchange) - Mobile Application using Flutter

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***Abstract*—The ever-expanding technology, peculiarly in field of e-market have huge applications in the recent years. The applications of e-market in the field of educational institutes is demandable. Selling and buying of books, laptops in educational institutes is too frequent. In this contemporary era digitizing this process using a cross-platform (Android and iOS) to supplement business in educational campuses could give us an appreciable opportunity to start a business over it. A mobile application for college online exchange that encourages online market for sales (on products that are used in educational institutes like books, laptops, drafters, etc.,) in educational institutes will expose considerable scope for e-business. This kind of e-market applications have not yet emerged in market, although similar application such as- Olx (Online Exchange) exist but it is generalized and not personalized to a single college. Hence, couldn't compete with the benefits of the proposed application which focus on a single educational institute. College Online Exchange application is built using Google Flutter, developed by google which serves as optimal open-source UI tool kit for natively compiled applications for mobile, web, and desktop from a single codebase. College Online Exchange application assures precise information and authentication with trustful identifications from students as it works autonomously in the campus.**

Keywords*—Online exchange; mobile application; flutter; cross-platform application; e-business.

I. INTRODUCTION

There are many existing e-market applications such as olx, quicker, e-bay, etc., which focuses on selling and buying both used and new products around the world. But none of these applications primarily focus on educational purposes. We can neither verify that the other party is a fraud nor a genuine user. Hence, the risk of using the application persists. The application of e-market in the field of educational institutes is demandable. Selling and buying of books, laptops in educational institutes is too frequent. A mobile application for student online exchange that encourages online market for sales (on products that are used in educational institutes like books, laptops, drafters, etc.,) will expose considerable scope for e-business and meet the student general needs.

There exist many online purchasing applications in the market but none of them is related to educational purposes. The current e-market is not centrally focused on educational institutes. They are commercial general-purpose applications.

An application system which meets student's needs as well contains high security is highly in demand. An application which is student centric at educational institutes that allows students to buy, sell and exchange items at their own college with high security is the problem of our project. The application allows to buy, sell and exchange those items that are related to educational purposes like textbooks, notebooks, drafters, laptops, calculators and etc. There exists, only these categories where a seller can sell his item. Security is considered as one of the biggest challenges for the CLX application. Because as its sole purpose is not to commercialize and look for student centric, security is the important aspect. We maintain security in the application by maintaining a database containing the students' details from the college. Any user after creating their own account can sell items once the user has approved by that he/she is a real person and selling some valid items only.

II. LITERATURE SURVEY

The CLX app's sole goal is to provide non-commercial e-business of education related products only to the colleges. CLX app is unique from other online sell, purchase & exchange apps. They can reuse the product. They can check product and buy they can see if there is any fault or not. It has option only for buying and selling of educational purpose products like books, drafters, calculators, laptops. We did survey in other colleges also they are related apps but not similar app. There is no app that sells the textbook, drafter, apron etc. This app helps to buy textbook, drafter etc. A practical survey conducted in college have shown in the fig.2.1 that how much the students are interested in using the app and also suggested on additional features. Student's comments and reviews included that they can reuse the products and earn money out of their previous year books.

A practical survey conducted in college (GNITS) have shown in the fig. 1. In the survey we asked few questions like are they willing to buy or sell the items that are already used by them or by others like calculators, aprons, drafters, books etc., and their response got recorded. We can see in the below fig. 1 that how much the students are interested in using the application. And they think it is beneficiary for students.

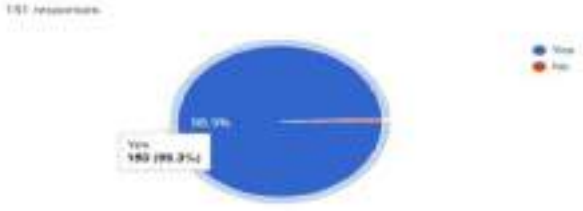

Fig. 1. Survey Report

International Journal on Recent and Innovation Trends in Computing and Communication
ISSN: 2321-8169 Volume: 11 Issue: 3
DOI: https://doi.org/10.17762/ijritcc.v11i3.6345
Article Received: 05 January 2023 Revised: 10 February 2023 Accepted: 20 February 2023

Technology for Kisan Samanvayam: Nutrition Intelligibility of Groundnut Plant using IoT-ML Framework

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Abstract— Neolithic Demographic transition resulting the reduction of habitable land for cultivation. Hence the smart agriculture is the only way to cater higher food demand. The farming community of developing countries like India needs Kisan Samanvayam with futuristic technologies for financially viable cultivation. Technology place vital role in economically nourishment of soil fertility and crop management. In this regard we proposed IoT-ML framework for remotely assessing the soil nutrients (N, P,K), PH and early stage detection of crop deceases. Android APP which is a part and parcel of the frame work enable the farmer to have real time visual statistics of the soil nutrients, notifications and suggestions regarding to the crop management. JXCT Soil NPK sensors, PH sensors, Dual Core ESP32 Controllers, Firebase Cloud and Random Forest Decision Tree machine Learning Algorithm, Micromlgen serve this purpose. Unlike Solitary sensor for entire field, we have divided a hector into four subregions for effective monitoring local region needs. The presence of IoT with TinyML increased the robustness of the framework and results are encouraging with sandy loam soil.

Keywords- Smart farming, Internet of Things, Machine Learning, ESP32, NPK sensor, PH sensor

I. Introduction

During COVID-19, Agriculture is the only industry that protected from declining GDP of OUR Country. Horticulture contributes around 30.4 percent of our GDP growth with state of art technological support [1]. However, the technological benefits not fully explored in agriculture domain. Farmers are compelled to adapt mechanized tools for their support as the available manpower support is getting reduced year by year [2]. Conventional Machine learning models are based on sophisticated higher cost Hardware, consume more power and are not suitable for real time responses. Further they are not financially viable to the farmer and also not compatible with mobile devices. As an alternative, Researchers have proposed Internet of Things (IoT) with Edge computing for smart agriculture. IoT with machine learning through edge devices with sensors are capable of giving valuable inputs to the farming community about soil moisture, Fertility of soil, humidity level, temperature level, nutrient status of the plants, growth of the plants and remote water management. These inputs are handy while analyzing and dealing with suspected plant deceases. With early stage detected symptoms and proper remedial approaches, we can minimize the crop loss there by increasing the yield and financial status of the farmer.

In order to increase the yield farmers knowingly or unknowingly using of excessive fertilizers. Environmental pollution, increasing the soil acidity and disturbing soil eco system are the side effects of excessive fertilization. Good nutrition is essential for optimal crop yield. Plants require several chemical elements like N, P, K, Ca, Mg, S, Fe, Mn, Zn, Cu, Cl, B and Mo to support their life cycle. All these Nutrients are divided into two groups mainly macro nutrients and micro nutrients [3]. Plants require Macro nutrients like Nitrogen, Phosphorous, and Potassium in higher concentrations in their entire life cycle whereas Micro nutrients such as iron can be required in tracer quantities. Because of this reason Macro Nutrients are applied directly to the soil and Micro nutrients can be applied either to the soil or to leaves. Plant growth and health depends on the amount of available nutrient present in soil which

A pragmatic approach for hate speech detection through applying machine learning

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Present trend of colossal increase in social exchanges seen in web social networks, an ensuing boost in vile activities are exploiting this infrastructure. Almost all websites proffer platform for people to chatting, sharing opinions and views, voicing their moral fiber in form of post(s), comment(s) and message(s) making them nearly not doable in controlling the content. In addition, given the diverse ethnicities, cultures and belief systems, subsequent masses incline towards belligerent and odious verbal communication when in discussion with people with contradictory views. In a conversation, sentences are interpreted into classification of: "strongly hateful (SH)", "weakly hateful (WH)", and "non-hateful (NH)". An approach based on pattern detection is proposed in which pre-defined patterns are mined in realistic way from a training set and then optimized set of parameters are defined to collect the similar patterns. Beside the mentioned patterns another proposal is made on collection of words and expressions which imitate an offense tone and reveal hate and further using these words with patterns alongside features based on sentiment to detect a hate speech. Classification of sentences into three classes makes the distinction which reflects hate or just being offensive. Later taking a test set, a classification is run based on grammatical patterns and semantic features which revealed the score of 0.68, 0.88, 0.80, 0.76, 0.62, 0.82 for SVM and 0.99, 0.98, 0.97, 0.97, 0.99, 0.99 for random forest. For Random forest it out performed

Publication: AIP Conference Proceedings, Volume 2724, Issue 1, id.020012, 7 pp.

Pub Date: April 2023

Bibcode: 2023AIPC.2724b0012D

Abstract

Diabetic retinopathy (DR) refers to a diabetes complexity that immensely impacts the eyes. This is classified into 5 various stages of the severity in accordance with the international convention. Despite that, optimization of a grading model to have a robust generalizability needs a huge number of balanced training data that is very complicated to gather, especially for greater levels of severity. A vast amount of medical data is complex and has a very high-priced method which requires cooperation between the clinics and researchers. The issue is usually attempted to be figured out with the usage of the traditional methods of data augmentation by making certain changes to images of retina dataset for instance rotation, cropping, size and zooming. In this suggested paper, the latest methods or techniques of data augmentation is exhibited which is called as deep convolutional generative adversial network (DC-GAN) and variational auto encoders (VAE). This is a particular method which is responsible for the production of artificial medical images. In addition to this, to improve DR, we can also take the aid of the classification models which are resnet50, densenet201, InceptionV3 and VGG19 for the purpose of classification of the eye related diseases. The proposed method is depicted on the Asia Pacific Tele-Ophthalmology Society (APTOS)-Blindness dataset. First, the present-day online data augmentation techniques have been utilized, and the artificial images of retina are produced by the ease of DCGAN. Then, a method of classifying is used for both techniques. Ultimately, after the method training which is done by using the real & synthetic clinical images and the outcome exhibits which the proposed model determines every stage or phase of DR and achieve the accuracy of 98.66% with using of ResNet-50 which is contrary to the current existing techniques.

Journal of Emerging Technologies and Innovative Research

(An International Scholarly Open Access Journal, Peer-reviewed, Refereed Journal)

Impact factor 7.95 Calculate by Google Scholar and Semantic Scholar | AI-Powered Research Tool, Multidisciplinary, Monthly, Multilanguage Journal

UGC Approved Journal no 63975

ISSN: 2349-5162 | ESTD Year : 2014

Call for Paper

Volume 10 | Issue 9 | September

Published in:

Volume 10 Issue 4
April-2023
eISSN: 2349-5162

UGC and ISSN approved 7.95 impact factor UGC Approved Journal no 63975

7.95 impact factor calculated by Google scholar

Unique Identifier

Published Paper ID: JETIR2304443

Registration ID: 511830

Page Number

e298-e303

Title

Marker Based Augmented Reality using Vuforia and Unity

Authors

C.Hasitha
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Musuku Srihitha

Abstract

Augmented reality can be used to bring static/2D images to life. Using an application that uses AR could animate images making it easy to understand concepts and visualize objects effectively. It gives people a real-world hands-on experience. The solution is an application that takes images as an input and simulates a 3D model that can be visualized with the help of web camera.

Key Words

Cite This Article

"Marker Based Augmented Reality using Vuforia and Unity", International Journal of Emerging Technologies and Innovative Research (www.jetir.org), ISSN:2349-5162, Vol.10, Issue 4, page no.e298-e303, April-2023, Available :http://www.jetir.org/papers/JETIR2304443.pdf

ISSN

2349-5162 | Impact Factor 7.95 Calculate by Google Scholar

An International Scholarly Open Access Journal, Peer-Reviewed, Refereed Journal Impact Factor 7.95 Calculate by Google Scholar and Semantic Scholar | AI-Powered Research Tool, Multidisciplinary, Monthly, Multilanguage Journal Indexing in All Major Database & Metadata, Citation Generator

Cite This Article

"Marker Based Augmented Reality using Vuforia and Unity", International Journal of Emerging Technologies and Innovative Research (www.jetir.org | UGC and issn Approved), ISSN:2349-5162, Vol.10, Issue 4, page no. ppe298-e303, April-2023, Available at : http://www.jetir.org/papers/JETIR2304443.pdf

Publication Details

Published Paper ID: JETIR2304443

Registration ID: 511830

Published In: Volume 10 | Issue 4 | Year April-2023

DOI (Digital Object Identifier): http://doi.one/10.1729/Journal.33753

Page No: e298-e303

Journal of Scientific & Industrial Research
Vol. 82, February 2023, pp. 232-240
DOI: 10.56042/jsir.v82i2.70221

An Industry Framework for Remote Health Monitoring using Machine Learning Models to Predict a Disease

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Received 30 May 2022; revised 27 July 2022; accepted 07 October 2022

Remote health monitoring frameworks gained significant attention due to their real intervention and treatment standards. Most conventional works object to developing remote monitoring frameworks for identifying the disease at the earlier stages for an appropriate diagnosis. Still, it faced the problems with complexity in operations, increased cost of resources, misprediction results, which requires more time consumption for data gathering, and reduced convergence rate. Hence, the proposed work intends to design a machine learning based remote health monitoring framework for predicting heart disease and diabetes from the given medical datasets. In this framework, the Industry based smart devices are used to gather the health information of patients, and the obtained information is integrated together by using different nodes that includes the detecting node, visualization node, and prognostic node. Then, the medical dataset preprocessing is performed to normalize the attributes by identifying the missing values and eliminating the irrelevant qualities. Consequently, the Unified Levy Modeled Crow Search Optimization (U-CSO) algorithm is employed to select the optimal features based on the global fitness function, which helps increase the accuracy and reduce the training time of the classifier. Finally, the Most Probabilistic Guided Naïve Distribution (MP-ND) based classification model is utilized for predicting the label as to whether normal or disease affected. During an evaluation, two different datasets, such as PIMA and Hungarian, are used to validate and compare the results of the proposed model by using various performance measures. A Patients' health status can be monitored remotely for disease detection and proper diagnosis.

Keywords: Artificial intelligence, MP-ND, Smart devices, U-CSO

Introduction

In order to keep people safe from health threats, public health monitoring is one of the most important and fundamental concerns.[1] Heart disease and diabetes, which impact the nervous system and kidneys as well as the heart and kidneys, are now considered life-threatening disorders in the modern world. Most healthcare systems could benefit from using decision making tools for disease prediction and diagnosis because of poor quality treatments and inefficient clinical diagnosis.[2,3] Because early disease detection helps to prevent people from contracting serious illnesses. Health gadgets, smart watches, smart mobile phones, and other devices can be used to monitor patients' health status[4,5] via remote monitoring systems. There is a new remote health monitoring framework that uses advanced machine learning methods to predict different diseases. Patients' health status can be monitored remotely for disease detection and proper diagnosis in this paper.

The major goal of the remote monitoring system is to ensure that patients receive the best possible care in the event of an emergency. In this study, an intelligent machine learning-based smart health framework is built, which helps to consolidate the patient data from smart devices for early detection of hazards and to keep healthcare practitioners updated with the current health information of the patient.[6,7] In this structure, the patient's health data is gathered through the detection, visualization, and prognostic nodes to provide an alarm for healthcare personnel. Data imputation, optimization, and categorization can all be used in this workflow. In this case, data imputation is used to scale the data from medical datasets, which aids in the improvement of pattern quality. Once the data has been reduced in dimensionality, the feature selection can be carried out utilizing the innovative optimization technique. Finally, an advanced AI-based machine learning technique can be used to accurately classify the given data.

To obtain the health information of patients from the smart devices, three different nodes such as detecting node, visualization node, and prognostic

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Journal of Scientific & Industrial Research
Vol. 82, February 2023, pp. 232-240
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To obtain the health information of patients from the smart devices, three different nodes such as detecting node, visualization node, and prognostic

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node have been utilized in this framework. To tune the given input datasets by eliminating the noise and normalizing the attributes, the dataset preprocessing is performed initially.

The study is different from the existing ones in the following manner:

- This system makes use of three separate nodes, such as a detection node, a visualization node, and a prognosis node, to gather patient health data from smart devices.
- In the beginning, dataset preprocessing is used to refine the input datasets by removing noise and standardizing their properties.
- Based on the global fitness, the features are selected using an algorithm called Unified Levy Modeled Crow Search Optimization (U-CSO).
- It is possible to classify the output as normal or disease-affected using the Probabilistic Guided Nave Distribution (MP-ND).
- Two prominent datasets, Hungarian and PIMA, are used to test the effectiveness of these techniques.

Related Works

In order to create a remote healthcare monitoring system for a variety of ailments, this part examines some of the usual research on data clustering, optimization, machine learning, and deep learning. According to their major features and functioning principles, the existing techniques are analyzed for their merits and drawbacks.

Using machine learning, Gondalia *et al*.[8] developed an IoT-based health monitoring system for soldiers in the military. The primary goal of this study was to locate soldiers who had been injured on the battlefield so that their health could be monitored. The GPS control and sensors like heart rate monitors were used to keep tabs on the soldiers' well-being (heartbeat and temperature). In addition, this study made use of the k-means clustering algorithm to examine the sensor data. Using sensor data, the clustering of features correctly predicted different types of movements like sitting, walking, or running in the event of wound or blast. For this reason, k-means clustering was not more suitable because of its lower efficiency, global clustering, and fluctuating starting partitions than any other method. It was Malasinghe *et al*.[9] who presented a detailed survey for identifying the best method to construct a remote patient health tracking system. E-health systems' security challenges were also addressed, along with the relevant solutions. A better machine learning technique was used[10] to design a new remote patient monitoring system. This system analyses the pilot data to see if wearable technology can be used to keep tabs on patients' health. A smart home health monitoring framework was created by Chatrati *et al*.[11] to monitor patients with diabetes and high blood pressure remotely.

In order to automate the transfer of patients' medical information to doctors, however, this project necessitates the creation of an appropriate graphical user interface. Based on data of heart rate and Electronic reports as well as chest sounds, Vitabile *et al*.[12] used a smart health monitoring system to analyze psychological circumstances and health status of patients. In this case, medical data has been kept private and secure using the block chain methodology. This system's key selling point was its faster processing of large-dimensional data. Patients' health state could be predicted remotely using a machine learning method developed by Nair *et al*.[13] In this case, the disease was predicted using the dataset's properties and a decision tree classification process. In addition, the division of feature models made it more capable of managing large datasets. It also has the ability to lessen generalization errors and over fitting errors. Still, this study relies on a series of computer procedures to forecast the classification labels.

Older adults can now be monitored from afar using a multi-stationary technique developed by Li and colleagues.[14] There are two different types of sensors employed to make the diagnosis in this framework: radar and sensors that can be worn by the patient. Filtering methods, wrapper methods, and embedded methods have all been used in this study to improve classification accuracy and speed up the process. In addition, the disease was predicted using KNN and SVM classification methodologies and the outcomes of these techniques were compared in terms of accuracy and processing time. It was determined through validation that the SVM model outperforms the KNN model in terms of performance. Patients' health status can be monitored remotely using the random forest classification technique developed by Kaur *et al*.[15] At the time of medical crisis, the IoT-based healthcare system was built to predict chronic diseases, such as diabetes. Classes such as KNN, linear SVM, decision tree and multilayer perception were evaluated and compared based on their performance in classifying different types of diseases using criteria such as accuracy, AUC, precision, and

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VIII Month of publication: Aug 2023

DOI: https://doi.org/10.22214/ijraset.2023.55320

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VIII Aug 2023- Available at www.ijraset.com

Analysis of ECG Signals using Frequency andTime domain features with SVM

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Abstract: ***ECG Examination is not limited to diagnosis of cardiovascular disease, but diagnosis of diseases and pathological conditions of a patient. There are numerous uses of ECG data in medical or surgical system namely preoperative / postoperative evaluation, drug efficacy evaluation, detection of side effects and health diagnosis, which can be found using ECG data.Hence, this is an open area of research. This work presents an ECG disease classification modelusing time and frequency domain features with machine learning models. The ECG signal base line wandering (typical noise) problem is solved by filtering. The time domain features such as Heart rate, RR intervals, QRS duration, Shannon entropy, Average Heart rate variability is used along with frequency domain features such as wavelet features, FFT featuresand DWT leader. These features are used for training in the proposed model. A SVM model is used to identify and classify the various heart diseases. In this work, two data sets have beenconsidered to validate the proposed model, which are constructed from MIT-BIH website. Theresults of the proposed model are compared with the results of the existing algorithm. The recognition accuracy for proposed model is 97.95% for "Data set-1" and 94.47% for "Data set-2", which are better than the existing results.***

Keywords: Electrocardiogram (ECG), Atrial Fibrillation (AF), Baseline Wandering Correction, Hybrid Features, Support Vector Machine (SVM).

I. INTRODUCTION

One of the leading causes of morbidity and mortality is the cardiovascular disease across the world. The patient's life is reduced due to these diseases and further the cost incurred towards National Health Organisations increases. In addition to the prevalence and incidence, the cardiac arrhythmias with the clinical significance is increased that being associated with the population aging. As the Atrial Fibrillation (AF) is the type of sustained arrhythmia [1], it is more common for adults. It includes the significant growing trends specifically in the elder population or obesity disorders. Sometimes, AF is challenging task for diagnosis owing to the possible symptoms absence or the paroxysmal behaviours. The great interest towards the portable devices today as monitoring devices in the clinical settings in the researches. For providing the reliable AG diagnosis, the automatic techniques have been used to obtain the Electrocardiogram (ECG) signals [2] with portable devices. However, a challenge is still existed, especially if they are also considered other normal or pathological rhythms. The ECG shows information on cardiac electrical activity, revealing some of the arrhythmias [3]. Differences from a normal rhythm help to diagnose deviations in driving routes, enlargement of the heart muscle, hormonal imbalances or cellular ion channels, or even the appearance of a myocardial infarction. The most prominent complex on the ECG, called QRS [4], where R indicates the highest peakof the signal. This is why the R-R interval typically serves to indicate the rate at which the heart beats. On the other hand, the P wave indicates atrial activation, while the T wave indicatesthe repolarization of the ventricles. The Figure 1 shows a representation of the most importantelements involved in the generation of the P-QRS-T complex of the ECG, or what is the same,during a heartbeat or cycle.

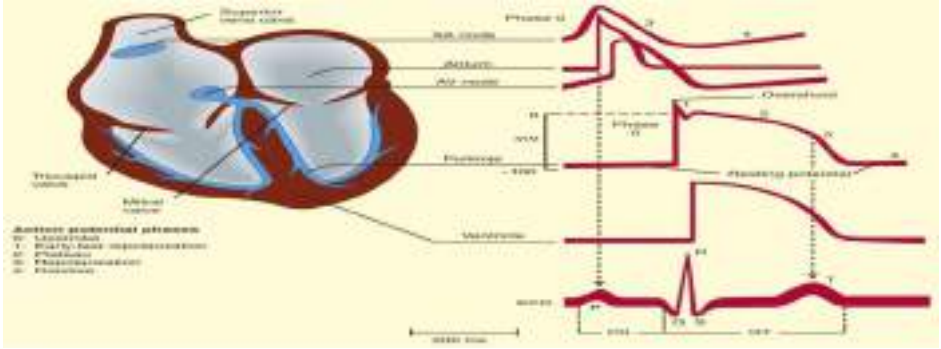

Fig 1: Schematic representation of the heart and Electrocardiogram (ECG)

IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

DNA BASED ADVANCED ENCRYPTION STANDARD ALGORITHM USING VERILOG HDL

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Abstract The specific use of mechanical and related procedural protections is a significant obligation of each Federal association in giving satisfactory security to its electronic information frameworks. This distribution determines a cryptographic calculation, the Advanced Encryption Standard (AES) which might be utilized by Federal associations to ensure sensitive information. Assurance of information during transmission or while reception might be important to keep up the privacy and trustworthiness of the data spoken to by the information.

Information encryption (cryptography) is used in different applications and conditions. The particular use of encryption and the usage of the AES is found in numerous elements. Cryptography is utilized to secure information while it is being conveyed between two parties or while it is put away in a medium defenseless against physical burglary. Correspondence security gives assurance to information by enciphering it at the transmitting point and deciphering it at the receiving point.

Document security gives assurance to information by enciphering it when it is recordedon a capacity medium and decoding it when it is used again from the capacity medium. Inthis, the key must be accessible to the transmitter and recipient at the same time during correspondence.

A field of cryptography based on the combination of AES and DNA computing is employed to secure data as it provides security, a vast range of parallelism, and meagerpower consumption. An AES algorithm is designed with the inclusion of DNA units at thelevel of S-Boxes for compression of bit length. The AES algorithm is coded in Verilog HDL and synthesized in the Xilinx ISE Design Suite.

Keywords DNA(Deoxyribonucleic Acid) DNA Mapping, Key-Block- Round Combination, AES (Advanced Encryption standard) , Verilog HDL(Hardware Description Language) , ASCII(American Standard Code for Information Interchange), FPGA(Field Programmable Gate Array).

ISSN 2347 - 3983
Volume 11. No.8, August 2023
International Journal of Emerging Trends in Engineering Research
Available Online at http://www.warse.org/IJETER/static/pdf/file/ijeter021182023.pdf
https://doi.org/10.30534/ijeter/2023/021182023

Implementation of High-Speed Serial I/O using Xilinx Tools in FPGA

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Received Date: June 30, 2023 Accepted Date: July 18, 2023 Published Date : August 07, 2023

ABSTRACT
The I/O (Input Output) module conveys the information between I/O device and processor. I/O devices are majorly of two types: Parallel I/O and Serial I/O. Parallel I/O performs multiple I/O operations simultaneously. Due to this speed and higher bandwidths are achieved, but the usage of parallel I/O devices is decreasing as time progresses because it involves complex design due to the usage of multiple wires for the transmission hence only limited to usage in shorter distances.It also uses a greater number of pins compared to serial I/O forthe same number of data bits which makes its usage problematic in higher level devices. Serial I/O transmits individual data bits sequentially. It uses lesser number of lines for data transmission thereby reducing the design complexity. Since, the data transmission is sequential the signal delay increases. Thus, this project aims to develop a protocol which achieves High Speed Serial I/O which helps to increase the data rate from Mbps to Gbps, decrease the design complexity, to design hardware using fewer number of pins on PCB and reduce signal delay to maximum extent possible.

Key words : AURORA Protocol, Delay, Speed.

1. INTRODUCTION

Serial I/O uses fewer number of pins decreasing the hardware design issues, but increases delay due to bit by- bit data transmission. Though Parallel I/O provides higher speed of data transmission, the complexity of hardware design increases reducing its effectiveness for usage. Thus, this project aims at the implementation of High-Speed Serial I/O which gives effective communication with minimum delay and reduces the design complexity, as referred from [1].

2. GENERATION OF AURORA 8B/10B CORE

Start the CORE Generator software, choose a new file and give a file name and click generate by assigning the required values to the parameters. The Aurora 8B/10B core provides a quick way to simulate and observe the behavior of the core using the provided example design, as referred from [3] and [4].

2.1 Simulation of AURORA Protocol

Simulation of protocol is done (as shown in Figure1) and the following bugs were encountered, and they were rectified through back tracing the source code module.

Channel Initialization Error: After simulation, we found that the lane_up signal(It is asserted upon successful lane initialization) was undefined and thus the channel_up signal(It is set to high when Aurora channel is in line to send data) was also found to be undefined.Since the channel_up is deasserted, data transfer could not take place. Through back-tracing we asserted the input signal of lane_up. Thus the data transfer was successful.

D flipflop error: UNISIM is the library that is included in the source code. Inclusion of this library provided the correct results eradicating the D- Flipflop problem which arised due to the FDR component in D-Flip Flop code module.

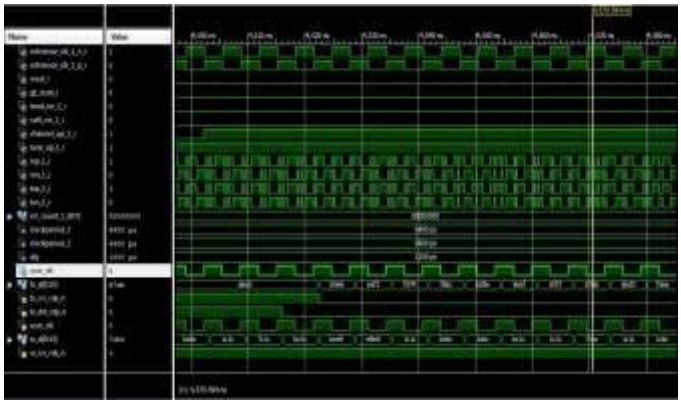

Figure 1: Simulation of Aurora protocol

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54184

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Artificial Neural Network Based Integrated Ambulance System

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Abstract: ***In emergency situations, almost all hospital beds were fully occupied, and the entire health department had to collapse. and the issues faced by the ambulance drivers who take the patients to the hospital had to wait outside the hospital for a prolonged time due to the unavailability of beds, ventilators, medical ICU, and a lack of oxygen supply, which led to the deaths of many patients. The major issue faced is that there is no proper system connecting all hospitals nearby for analyzing the condition of the patient inside the ambulance at the same time, and hospitals with the required equipment should be chosen at the right time.***

To prevent these situations, a system has been proposed in which decision-making will be done by analyzing the patient's condition using artificial neural networks and by retrieving information about the hospital and medical system's availability from a centralized server page connecting to all nearby hospitals.

Keywords: Artificial Neural Networks (ANN), Internet of Things (IoT), temperature sensor, respiratory sensor, and heartbeat sensor.

I. INTRODUCTION

Almost all hospital beds were filled during the emergency, and the health department crumbled due to several problems. Due to the scarcity of beds, ventilators, medical ICU beds, and oxygen supplies, the ambulance drivers were forced to wait outside the hospital for an extended period of time, which caused the patients to pass away inside the ambulance.

A method that uses an artificial neural network to monitor the patient's condition while they are in the ambulance has been developed to prevent this from happening; the proper hospital should be selected at the right moment.

The artificial neural networks will use the patient's biomedical parameters, such as Spo2 (pulse oximeter), respiratory, heartbeat (beats per minute), and body temperature, to determine the patient's condition. From there, it will classify the patient's needs, such as oxygen bed support, ventilator support, and MICU support, by confirming the networked medical system's hospital availability.

II. LITERATURE REVIEW

Title: Online AI Bot for Emergency Service and Mobile Medicine Recognises STEMI in Electrocardiogram (ECG) Year:2021

Authors: Jen-Yeu Chen, Serkan Kavak, and Shi-Jim Yen Description: Emergency medical care in rural areas frequently requires prompt medical decisions and on-board medical care in ambulances before patients can reach hospitals. The need for prompt medical care, for instance, follows a myocardial infarction (heart attack). In this case, the hardware connections are implemented using the Arduino platform, and programming is done using the Arduino IDE. We anticipate that the final result of our initiative will lower the potential fatality rate owing to delays.

Title: Association between patients' medical histories and the reason for calling ambulance services using data mining based on emergency medical databases.

Title: Data mining based on the emergency medical database the association between the reason of calling ambulance service and the medical history of patients Year: 2016

Author: Jhe-Nan Lin; Wei-Zen Sun; Huei-Ming Ma; Meng-Han Yang

Description: The amount of data available for analysis is skyrocketing across a wide range of application areas, including the medical and biological sciences. This study has attempted to mine the relationship between the patient's medical histories and the cause for calling the ambulance service using the emergency medical database. It's possible that chronic diseases are the source of the acute conditions that prompt people to call an ambulance. The connections found by this research could be useful for creating suitable chronic illness management.

Title: Tracking ambulances with a patient health surveillance system

Description: You can utilize a patient health monitoring system in conjunction with ambulance tracking while using GPS modem.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54185

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Asset Tracking and Management System

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Abstract: ***This abstract presents an overview of an IoT-based asset tracking and management system. The system utilizes Internet of Things (IoT) technologies to enable real-time monitoring and tracking of assets in diverse industries. Today, the growth of technology is rapid and provides all necessary and effective solutions for their requirements. One of the most important areas of concern is security. In this scenario, IoT asset tracking is developed to increase the safety of any valuable items. The Internet of Things technology (IoT) can track and monitor an asset in the outdoor and indoor environment. This empowers business and end-users with the information and opportunity to run their operations effectively and make educated decisions respectively.***

The management of assets is a critical process for businesses to ensure that they are operating effectively. The system provides organizations with valuable insights into the location and utilization of their assets. It highlights the advantages of adopting this technology such as improved asset visibility and enhanced security. Furthermore, the abstract explores potential applications of IoT-based asset tracking in sectors such as logistics, transportation, and inventory management. Overall, this abstract demonstrates the significance of IoT in revolutionizing asset tracking and management processes ultimately leading to cost savings.

Keywords: Asset tracking, GPS, GSM

I. INTRODUCTION

In today's rapidly evolving technological landscape, the Internet of Things (IoT) has emerged as a powerful paradigm, revolutionizing numerous industries and transforming the way we interact with the physical world. One significant area where IoT has shown immense potential is asset tracking and management. Traditional asset tracking systems often suffer from inefficiencies, limited real-time visibility, and inadequate security measures. However, the integration of IoT technology provides an innovative and comprehensive solution to these challenges.

The working of IoT-based asset tracking involves a combination of interconnected devices, sensors, communication protocols, and cloud-based platforms. The typical steps involved in the process are Asset Tagging , Data Collection , Sensor Communication , Data Aggregation , Cloud-based Processing , Real-time Monitoring and Alerts

II. RELATED WORK

The type of asset tracking used is based on RFID[1] (Radio Frequency Identification). Using paperwork in the process of dispatch and return might have several disadvantages such as dislocations, delay in updates and there is no guarantee that it would be error free.

Therefore, RFID based asset tracking came into picture. It uses RFID tag and RFID reader. Spartan company manufactured around 25,000 tags for testing and only 5 were failed. Phalanx is a software platform that uses Oracle database to manage and has 2 components (mobile device and server-based software). This software has data synchronization that supports fast feedback and update from systems and can easily switch to suitable quality of channel network.

The main problem is tag selection. Selecting right tag keeping considerations such as cost and appropriate technology is mandatory. The asset to be tracked is equipped with an RFID tag. RFID readers emit radio frequency signals and capture information transmitted by RFID tags.

The development and deployment of a real-time asset tracking system based on Wi-Fi technology in a hospital clinic setting. The system uses small Wi-Fi tags attached to mobile assets, such as medical devices and personnel, to track their location within the clinic. The system utilizes radio signals from wireless access points to estimate the location of the tagged assets with a resolution of within 1.5 meters.

The paper highlights the challenges in accurately tracking mobile assets in a dynamic medical environment and the potential benefits of wireless networking technology in addressing these challenges. It mentions that existing wireless tracking technologies, such as wireless sensors and RFID, often require costly dedicated network infrastructure, while a Wi-Fi-based system can leverage existing hospital 802.11 WLAN infrastructures, making it a cost-effective solution for asset tracking in healthcare environments.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** VI **Month of publication:** June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54192

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Predicting Online Customer Purchase using Gradient Boost Classifier

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Abstract: ***Understanding client buying behavior is crucial for firms in order to enhance targeting consumers, maximize marketing efforts, and boost overall sales success. In order to identify whether a client is inclined to make a purchase or not, the Gradient Boosting algorithm is used in this paper's predictive modeling technique. The Gradient Boosting technique is used to create a model for prediction because it can handle complicated connections and detect non-linear patterns. The technique includes a number of steps, such as feature engineering, model training, and performance evaluation. The data preparation methods used include feature encoding, feature selection, and missing value imputation. On the labeled dataset, the Gradient Boosting classifier is trained, with prediction accuracy being optimized.***
Keywords: Gradient Boosting algorithm, prediction of customer

I. INTRODUCTION

Predicting the future of digital marketing is challenging, as the industry is constantly evolving with new technologies, consumer behaviors, and regulatory changes. However, based on current trends and the direction of the industry, some of the predictions for digital marketing includes

1) Increased Use of Artificial Intelligence (AI):
2) Growing Significance of Voice Search and Smart Assistants:
3) Emphasis on Privacy and Data Protection:
4) Rise of Influencer Marketing and User-Generated Content:
5) Integration of Augmented Reality (AR) and Virtual Reality (VR):
6) Continued Growth of Mobile Marketing:
7) Expansion of Video Marketing:

It's important to note that these predictions are based on the current trajectory of the digital marketing landscape. However, the industry is dynamic, and new innovations and trends can emerge, influencing the future direction of digital marketing.

The digital marketing has opened up the doors of big data analysis. The moment the customer browses for an item, the traces regarding the requirements, type of the customer, the interests, the priorities are all learnt and analysed by the system, resulting in recommendations provided to the customer. This is possible due to predictive analysis on big data using statistical and machine learning algorithms. In [1] prediction of customer behaviour using behavioural informatics is tried for better business decisions.

II. RELATED WORK

In the modern era of advanced technology, it is crucial to anticipate market trends in order to understand consumer behavior as trends tend to be unpredictable. Drawing upon advancements in machine learning and previous research on behavior prediction, our study aims to develop a model that can forecast consumer behavior. In [2] the research is to explore the correlation between various consumer behaviour parameters and their inclination to make purchases. Initially, we investigate the relationship between consumer behavior and changing factors such as the environment, organization, individuals, and interpersonal dynamics. The paper proposes a time-evolving random forest classifier that utilizes innovative feature engineering to accurately predict consumer behavior, which significantly influences their purchasing decisions. The results obtained from the random forest classifier demonstrate higher accuracy compared to other machine learning algorithms.

Customer buying behaviour is influenced by various factors, including personality traits such as quality, motivation, occupation, income level, perception, psychology, references from others, and demographics[3]. In today's world, data mining is commonly employed to study customer shopping activities using diverse algorithms and methods. This technology has gained popularity across numerous industries. Each customer's actions and preferences are recorded as data in a database, capturing information about their purchasing habits, frequented items, and quantities bought, often without their awareness.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54194

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Study on Coal Mine Safety Monitoring and Alerting System Using IOT

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Abstract: ***A coal mine safety monitoring and alerting system using IoT can help improve safety in coal mines by providing real-time monitoring and alerting of hazardous conditions. The system can use various sensors and devices to monitor parameters such as gas concentration, temperature, humidity. The data from these sensors can be collected, processed, and analyzed using an IoT platform to provide insights into the condition of the mine. The system can also incorporate a range of alerting mechanisms to notify mine workers and supervisors of any hazardous conditions For example, the system can use audio and visual alarms, mobile notifications, and even automatic shutdown of machinery in case of danger.***
The system utilizes various sensors and devices to monitor parameters such as gas concentration, temperature, humidity, and collects, processes, and analyzes the data using an IoT platform. The system aims to reduce the risk of accidents and injuries to mine workers, increase productivity, and reduce downtime.
Keywords: Coal mine safety, IoT monitoring, Hazardous conditions, Alerting mechanisms.

I. INTRODUCTION

Sensors and actuators for get-together the information and sending over the web are what's undeniably related with this progress. We use cloud not exclusively to store information yet likewise for information assessment, gathering, depiction. Such a rising development can be utilized in different IoT applications like agribusiness, prospering, tricky home, and so forth, to make the previously existing frameworks consistently gainful. The key qualities of the cloud recall for request connection philosophy, in all cases get to, asset pooling and, versatility.

Existing arrangement of Dangerous Gases Location in Coal Mine shafts doesn't meet the necessary green climate boundary and cautioning framework.

This coal mineshaft security framework there isn't anything for information change for refreshing the public individuals just as administration of climate quality and earth tremor alarms encompassing of mines. Because of this no information communicating, no precise boundary observing, we go to the new creative framework or coal mineshaft well being estimation.This study presents a proposed framework designed to screen the boundaries of coal mineshafts and promptly alert personnel in the event of potential threats, ensuring enhanced safety measures in the coal mining operations.

The increasing demand for electricity has led to the utilization of coal for its energy content in power generation, as well as in iron ore extraction and cement production. This has resulted in the extensive development of coal mines worldwide, necessitating a paramount focus on miner safety. Manual supervision of underground mine wirings is time-consuming and labor-intensive. Crucial factors such as temperature, humidity, and CO2 levels pose risks to miners working underground. To address these challenges, a system has been proposed to automate the monitoring of these safety-critical parameters and transmit the data regularly to a central Base Station, eliminating the need for manual labor. This innovative approach streamlines operations, ensures timely data collection, and enhances safety protocols in coal mining operations.

When measured values surpass the predefined threshold, an alarm is triggered, alerting relevant personnel. The transmitted data, facilitated by wireless technology, is received and monitored at the base station [3]. Mishaps and explosions in coal mines often result from inadequate maintenance of electrical wirings, which deteriorate over time. These failures and subsequent mishaps do not transpire abruptly, but rather gradually, as the deteriorating wiring leads to a progressive increase in mine temperature.

To address the challenge of unnoticed gradual temperature increases in mines, a predictive system is implemented, continuously monitoring parameters on a daily basis. This system forecasts potential failures, thus preventing mishaps and safeguarding human lives. The monitoring of these parameters assumes a crucial role in ensuring miner safety.

International Journal of Engineering Applied Sciences and Technology, 2023
Vol. 8, Issue 01, ISSN No. 2455-2143, Pages 268-272
Published Online May 2023 in IJEAST (http://www.ijeast.com)

PERFORMANCE ANALYSIS OF A POINT-TO-POINT SYSTEM UNDER ACTIVE ATTACK

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Abstract—**In wireless communications, security issues have become difficult due to unchangeable and unpredictable nature of the wireless medium. There are many traditional cryptographic techniques which were used previously. The physical layer security used for ensuring secure wireless communications apart from the cryptographic techniques, which is achieved after proper understanding of the nature wireless channels. Classical information theoretic secrecy is one of the metrics followed, in which, we assume that there is no(zero) leaked information at the eavesdropper which means the information decoding probability at the eavesdropper is '0'. But, practically achieving classical information theoretic secrecy is not possible.**
So, this project deals with partial secrecy. The partial secrecy of a system is measured in terms of equivocation, which gives the information of the level at which the eavesdropper (active) is confused. It means that in partial secrecy, there is information leakage but the eavesdropper cannot exactly decode the original message. The new secrecy metrics used GSOP (generalized secrecy outage probability), AFE (average fractional equivocation) and AILR (average information leakage rate) altogether provides more comprehensive and in-depth understanding of the secrecy performance over the fading channels.

Keywords—**Classical information theoretic secrecy, secrecy outage probability.**

I. INTRODUCTION

In wireless communications, providing security to the data is very difficult because of many factors affecting it. In a wireless medium, apart from abstractions in the medium, there is also threat to the data by unauthorized user (eavesdropper) who try to extract the data. Considering all the factors, providing security to the data in a wireless environment is crucial but is a difficult issue which determines the performance of a system.

In general, the secrecy performance is known by calculating secrecy outage probability (SOP). But it has two limitations:

1) It cannot give the information exactly about the eavesdropper's decidability.
2) It cannot exactly estimate the amount of leaked information to the eavesdropper.
3) In a worst case (main channel capacity is less than eve channel capacity), SOP is unable to give any information about how much information leaked to Eve.

The three new metrics used overcome the drawbacks of secrecy outage probability which are:

1) Generalized Secrecy Outage probability (GSOP) which considers some amount of information leakage at Eve and the information leaked is measured by equivocation.
2) Asymptotic Lower Bound on error probability-based secrecy metric (or) average fractional equivocation (AFE) at the eavesdropper gives the error information at Eve.
3) Average Information Leakage Rate (AILR) tells us how much the information is extracted at the eavesdropper.

By adopting the new secrecy metrics, we can establish optimal design parameters that lead to improved secrecy performance of the system.

II. SYSTEM MODEL

This paper considers a quasi-static Rayleigh fading wire-tap channel where the transmitter (Alice) wants to send important information to receiver (Bob) through the channel where the unauthorized person (Eve) is also present.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54188

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Breast Cancer Detection Using Support Vector Machine Algorithm

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Abstract: ***Breast cancer is primary cancer affecting women and ranks second as the leading cause of female mortality. The crucial aspect is identifying the presence of breast cancer and pinpointing the affected area. Medical imaging consistently advances, and early detection of cancer is vital in lowering cancer death rates. The enhancement procedure for mammograms involves filtering and discrete wavelet transforms. Contrast stretching is utilized to boost image contrast. Improved Breast cancer early detection and diagnosis are achieved by segmenting mammogram images. From the segmented breast region, features are retrieved. The proposed system identifies the cancer region and classifies patients as either normal or cancerous. The input mammography image is subjected to pre-processing techniques, and undesirable parts of the image are cropped off. Using morphological techniques, the tumor location is separated from the surrounding tissue and marked on the original mammography image. If the mammogram image is normal, the patient is deemed normal; otherwise, the patient is diagnosed with cancer. The Decision Tree Algorithm is utilized for categorization in this study for reasons of comparison.***
Keywords: Preprocessing, Feature extraction, Segmentation, Confusion Metrix.

I. INTRODUCTION

Breast tissue cells can become cancerous and grow into breast cancer. It is the highly prevalent cancer in women around the world. When cells begin to multiply uncontrollably and form a tumour, breast cancer occurs. These tumors may be malignant (cancerous) or benign (non-cancerous). Malignant tumours have the potential to spread to other parts of the body and represent a threat to life if they are not identified and treated in a timely way. Breast cancer detection is the process of determining whether a person has the disease. Early breast cancer detection is crucial because it enables quick treatment and increases the likelihood of a favorable outcome. A number of screening procedures, such as mammography, ultrasound, MRI, and clinical breast exams, can find breast cancer.

Mammography is a quite popular technique to diagnose breast cancer, which involves capturing X-ray images of breast tissue. While MRI creates detailed images of the breast with a magnetic field and radio waves, ultrasound employs high-frequency sound to create breast tissue images. It is important to keep in mind that not all breast lumps or anomalies are malignant. In reality, benign breast masses predominate. But if a lump or other alteration is found, it should be examined by a medical expert to see if more testing or treatment is required.

In order to analyze the dataset, support vector machine algorithms are used to ascertain the correctness of mammography pictures. The decision tree approach is additionally employed for classification, enabling a comparison of the effectiveness of the two algorithms.

The dataset has been split into numerous classes by the support vector machine technique according to particular attributes, giving information based on the accuracy of the mammography image. The decision tree technique, contrasted with, iteratively breaks the data down into smaller groups depending on the most useful qualities, ultimately arriving at a choice at each node of the tree.

Researchers can assess the accuracy of classification findings and determine whether the method is more successful at spotting breast cancer in mammography pictures by using both the SVM and decision tree algorithms. To assess each algorithm's performance, various metrics can be assessed, including sensitivity, specificity, and positive predictive value.

The suggested system seeks to address two issues in particular. A Gaussian mixture model is employed to address the first issue, which is locating the breast cancer-affected area. The Support Vector Machine (SVM) algorithm and the Decision Tree algorithm are is employed to address second challenge, which is to categorize patients as normal or malignant.

Objectives of the proposed system are as follows:

1) Acquiring input mammogram images from the dataset.
2) Pre-process the images using the median filter.

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International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54190

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Gain Enhancement of Microstrip Patch Antenna for Wi-Fi Augmentation

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Abstract: ***A wideband, compact and low profile microstrip patch antenna (MSPA) design for wireless fidelity and C-band considerations is very advantageous in various applications.***
The antenna proposed in this paper consists of a simple laterally inverted Swastik-shaped patch with the microstrip line fed and a rectangular ground plane.
The antenna has patch dimension of 15mm×12mm, substrate dimension of 20mm×20mm overall size, prototyped on FR4 material of excellent physical and electrical properties, thickness of 0.5 mm and a dielectric constant of 4.4. According to the software simulation results, the proposed MSPA displays remarkable return loss and voltage standing wave ratio (VSWR) and operates at the Wi-Fi frequency of 5 GHz. In addition to this, it may also be operated in the frequency range of 4-8 GHz. The results obtained from the measurements are similar to the fabricated antenna after testing using the vector network analyzer (VNA).
Keywords: Wi-Fi, C-band, MSPA, Swastik, VSWR, Return Loss, Gain, Ansys HFSS

I. INTRODUCTION

Wi-Fi is a family of wireless network protocols based on IEEE 802.11 standards. It has been used for accessing the Internet, exchanging data over long-range communication and for networking purposes for a while now.
It is now being used across the world, in homes and small office networks, linking wireless and wired access points alike to the Internet.
Antennas are unquestionably the most crucial components of a wireless system. Due to the growing mobility and miniaturization of mobile devices, new wireless communication systems require low profile antennas for high mobility as well as wideband antennas for high-speed data transfer with maximum coverage.
Wi-Fi enhancement requires a good negative return loss value (S11 parameter) and nearly ideal VSWR which helps in improving the gain and bandwidth of Microstrip Patch Antenna. As a result, a wideband Wi-Fi antenna design has been determined with extended bandwidth and highly enhanced gain.

II. LITERATURE SURVEY

The proposed antenna design asserts its inquisitive compactness, subsequent augmentation into an embedded Wi-Fi module and portability and enhanced gain.
This has been designed using ANSYS HFSS software. Nowadays, because of advances in integrated technology, engineers are able to fit many diverse applications operating at different frequencies into a single wireless device.
As a result, the demand for various antennas covering different wireless communication bands on the same platform has increased dramatically. [5]
Here, a plain ground structure instead of a defected ground structure (DGS) is implemented within the design. In addition to the aim of this project, achieving a simple, compact and low-profile antenna without DGS would introduce a good amount of radiation on all sides without the radiations getting deflected in the case of a DGS. This way, the slot lobes would not be able to emit some of their radiation towards the back lobes and thus, radiation pattern changes positively. This is one of the main beneficial components that would provide the desired enhanced gain and high radiation.

III. ANTENNA DESIGN

The antenna had been designed following the below procedure as shown in the flowchart.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** VI **Month of publication:** June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54191

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

IoT Based Smart Shopping Cart Using RFID

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Abstract: ***The standard of living for people has improved with the help of contemporary technology. As a result, large crowds gathered in supermarkets and shopping malls. Due to barcode-based billing system, it is difficult to avoid standing in long lines during weekends or when there is a large crowd in supermarkets and shopping centers. IoT Based Smart Shopping Cart using RFID technology seems to be a promising solution to address the issue of long queues at the billing counters in crowded shopping malls and supermarkets. This system can save a lot of time for customers as the bill is generated automatically at the cart itself. The use of RFID tags for each product and a recharge card with a certain amount in it for each store is an innovative approach that can simplify the billing process. The display of the remaining balance after deducting the price of each product on the LCD of the cart and the real-time update of the total bill on an IoT application such as ThingSpeak can provide customers with a convenient and transparent shopping experience. It can also reduce the need for manual labor, as the system can manage the billing process without the intervention of a cashier. Overall, the IoT Based Smart Shopping Cart using RFID technology has the potential to revolutionize the way people buy by making it faster, more convenient, and more efficient. It can also contribute to reducing the waiting time in long queues and improving the overall shopping experience for customers.***
Index Terms: RFID Technology, RFID Reader and Tags, IoT application, ThingSpeak.

I. INTRODUCTION

IoT achieves data management and data processing by tightly connecting communication networks with sensor networks, either directly or indirectly. The Internet of Things (IoT) relies heavily on sensors and actuators to connect us to the real world. It describes how cleverly physical objects like actuators that connect wirelessly or wired to other electronic devices can manage information. This includes sensors, microcontrollers, microprocessors, and physical devices.

Electronic tags that are connected to certain things are now used. RFID technology reads the object's stored information wirelessly when these tags come within range of the reader. In the IoT's applications, RFID is essential. It is made up of three parts, including RFID tags that are connected to the object and hold information about it, an RFID reader that reads the information from the tags, and a central processing system that facilitates communication between the RFID system and other electronic equipment.

Barcode scanning systems are typically used in retail centres. which has a huge queue of consumers waiting to be billed. An IoT-Based Smart Shopping Cart Using RFID is designed as a solution to this problem. Every product has an RFID tag attached to it, and an RFID reader mounted to the cart is used to scan each product. Customers fill the cart with various products they have purchased. The LCD shows the balance of the recharge card following each purchase. Rescanning the item will remove it from the total cost and put back the amount subtracted if the customer wants to remove some goods. Using this, the amount of time consumers must wait at shopping malls is reduced.

II. LITERATURE SURVEY

An IoT-based smart shopping cart makes it simple to shop in malls and supermarkets by automatically creating a bill in the cart and using the IoT application ThingSpeak, which reduces wait times at the cash registers. [1].

The automation of shopping carts using RFID and ZigBee modules is an innovative way to streamline the shopping experience for customers. The use of RFID tags instead of barcodes enables the system to identify products quickly and accurately, reducing the time customers spend at checkout. The trolley's ZigBee transmitter transmits data to the system's main computer, allowing the system to track inventory levels and sales in real-time. This makes it easy to restock items that are running low and to identify popular products that may need to be reordered [2].

The proposed automated and time-saving retail system is a great illustration of how technology may be used to enhance the customer shopping experience. By designing a smart cart that is customer-friendly and secure, retailers can enhance the overall shopping experience for their customers. One of the key features of the proposed smart cart is its ability to generate a bill from the cart itself. This means that customers can keep track of their purchases as they shop, making it easy for them to stick to their budget.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54195

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Vehicle Overspeed Detection and Number Plate Extraction Using Raspberry Pi

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Abstract: ***The worst possible scenario for a road user is a traffic accident. The majority of fatal incidents are caused by overspeeding. Vehicles travelling faster are more likely to be involved in collisions. In the past, numerous gadgets were employed to catch reckless highway driving. Most of the approaches require human concentration and involve a lot of effort, which is difficult to implement With the help of this project, we hope to create a system for the early identification and warning of reckless driving-related unsafe vehicle driving patterns. The entire implementation requires an IR transmitter, an IR receiver, a control Raspberry Pi. The police employ a system to determine the speed limit based on the volume of traffic in the area. The time taken by the vehicle to travel from one set point to the other is calculated by control circuit and depending on that value the speed of the vehicle is calculated. Moreover, if the vehicle crosses the speed limit, it captures the image and extract the details of number plate using "Optical Character Recognition".***

I. INTRODUCTION

Road transportation is the transport service for passengers or goods on roads can be via bike or automobiles or by animal such as horse or oxen. Standard networks of roads were adopted by Romans, Persians, Aztec, and other early societies. Modern roads came into adoption during the late 1700's with civil engineering.

It is the second important mode of transport in India. It reaches every region of the nation that even the railway transportation could not. The country's industrial and agricultural sectors both benefit from the basic infrastructure services provided by road transport.

Fig 1. Chart showing the number of accidents taking place in India per year.

Over the years, India has seen a steep rise in road accidents. Fig1 shows the number of accidents taking place in India per year. According to a report on road accidents in India released by the Ministry of Road Transport and Highways, 2022 has seen the greatest rise in number of accidents in five years' accidents more than the previous years, of which over speed is main cause of increase in accidents. To overcome this problem and decrease death rate due to accidents, introduction of new and innovative speed enforcement technology is necessary.

Today, reckless driving puts both the driver and the broader public in grave danger. Although reckless driving is a severe issue, patrol officers' present methods for detecting it are insufficient. First of all, given the huge mileage of driveways, the number of patrol officers is far from enough to observe and analyze every driver's behaviours. Second, rash driving norms are merely descriptive, and visual observations cannot accurately capture the specifics of nighttime or inclement weather driving. Today, authorities must utilise a handheld radar gun to aim at the car and record the speed in order to identify reckless driving. If a car is travelling faster than the posted limit, the nearest police station is notified, and the car will be stopped. This is a time-consuming and inefficient process because one must inform the appropriate parties following detection. This system cannot be trusted with human life since the number of automobiles grows daily.

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International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54186

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Authorized Automatic Vehicle Allowance System

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Abstract: ***In most organizations, the ongoing vehicle entry registration process for visitors, staff, or students entering the organization includes a security guard checking the driver's identification card or looking for a membership sticker on the vehicle's windscreen, which can easily be lost or stolen. This writing process is tiresome and time-demanding, and it is prone to incorrect notes; additionally, backup and sharing of this vehicle information is difficult due to the data being a physical copy. The goal of the Automatic Authorized Vehicle Allowance System is to create a digital picture processing system with the Raspberry Pi that can be used in an entrance parking system. The Raspberry Pi will identify the car with an ultrasonic sensor and photograph it. The device then processes the picture using digital image processing techniques. The system incorporates various algorithms such as localization, normalization, orientation, segmentation, and optical character recognition (OCR), which examines picture characteristics and forecasts license plate numbers. The obtained number plate information is then cross-checked with records stored in a pre-existing database. An administration is in charge of designating a "whitelist," which is a list of vehicles that can join the suggested system. If the car registration is found in the database, a servo motor circuit connected to a Raspberry Pi will open the gate, and after a monitor delay, the gate will shut. The system is built in such a way that it is simple to apply in a short period of time and is cost-effective.***

Keywords: Raspberry Pi, Optical Character Recognition

I. INTRODUCTION

Due to the increase in today's population, the number of vehicles on the road is also expanding, hence the true identity of the driver and vehicle is a key worry presently. Manual entry of each car involves a security guard confirming membership details by checking the driver's identification card/sticker on the vehicle will require a significant amount of personnel and time, and 100 percent correctness cannot be guaranteed. Hence the traditional method of vehicle entry is not effective.

Other available access control methods like the usage of keypads, card readers, and biometric scanners that verifies the identity of drivers and passengers before granting access to the organization can be quite time-consuming. And the usage of RFID technology, where the tag is attached to the vehicle and the reader is placed at the entrance, can have high-cost installment.

To address this issue, we created a software system Automatic Vehicle Allowance System (AVAS) that automatically recognizes license plates and records them in a database. This technology aids in traffic control, and its primary use is security. It aids in the management of undesirable cars in limited regions and zones, as well as in the monitoring of vehicles on the road. Because of the nature of light, identifying a license plate is a difficult process. This system looks at an input picture region that contains a license plate. The spectral analysis approach is utilized in the ANPR system to capture the picture, then the system identifies and isolates the area containing the number plate from the input image, and then performs character segmentation to compare each extracted letter with the letters saved in the database[1]. The key benefit of this technology is that it can capture images of moving vehicles and then send them to be segmented and recognized. The system grants access to vehicles if their number plate matches the corresponding registered plate in the database; otherwise, access is denied.

II. RELATED WORK

Gaurav Srivastav…[2] presented a system that is constructed and simulated in MATLAB because large programs may be substituted directly with single preloaded procedures. In the study, he also mentioned specific topics and future research that may be done in the field of NPR for efficient use of the approach in the actual world.

Deepali Kamthania and Vanshika Rai.....[3] the authors utilized various image-processing techniques such as morphological transformation, gaussian thresholding, and gaussian smoothing in the pre-processing step. The study also involved applying contours through border following and filtering based on character dimensions and spatial localization for number plate segmentation, followed by using the K-nearest neighbor technique for character identification. According to the authors, the proposed system demonstrated high accuracy and can be applied in several scenarios such as e-challan surveillance and stolen car identification.

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Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54187

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Automatic Traffic Sign Detection and Classification

P. Madhuri[1], G. Madhavi[2]
[1, 2]*Asst. Prof. ECE, G. Narayanamma Institute of Technology & Science*

Abstract: ***Automatic detection and recognition of road traffic signs is an essential task for regulating the traffic, guiding, and warning the drivers and pedestrians. Many challenges like cluttered background, foreground scenery, various geographic, metrological, weather conditions namely cloudy day, rain, snow, fog, changeable and uncontrollable lighting conditions depending on the time of the day exhibits the detection of road signs. The traffic sign may have different sizes and colors. Our goal is to detect the traffic signs with red, blue, yellow colors with any of the available shapes. Then the detected signs, combined with the color and shape information are classified.***

The recognition of Traffic sign involves two stages: detection stage, it finds the region consisting of traffic signs from the image and then the classification stage where the detected signs are categorized into different classes like information, warning, prohibition and so on.

The image is acquired and is processed in CSR block, in which the base features from the image are extricated. The base features extricated from the image are color, shape, and Region of Interest (ROI) position. This pre-processing is very quick, because no special transformation is required. RGB and HSV color space is chosen for color segmentation. By extracting the color, CSR block creates 3 binary maps (red, blue, and yellow). From these binary maps, the shape of the traffic sign is detected. From the image the ROI is segmented, which is the input to the shape detecting block. After the shape is detected, traffic sign is classified according to its detected color and shape.

I. INTRODUCTION

Traffic signs are the signs put up at the side to provide information to all the motorists, passengers, truck driver etc. The signs used in the olden days were simple wooden or stone milestones. Later, the signs with directional arms were initiated. For example,the fingerposts in the United Kingdom and their wooden counterparts in Saxony.

With traffic congestion increasing since the 1930s, many countries have approved pictorial signs or simplified and standardized their signs to overcome language barriers, and improve traffic safety. Such pictorial signs utilize the symbolsplace of words and are usually based on international protocols. Such signs were first progressed in Europe, and have been used by most of the countries.

Traffic signs can be categorized into eight like danger warning signs, priority signs, prohibitory or restrictive signs, mandatory signs, special regulation signs, information, facilities, or service signs, direction, position, or indication signs, additional panels.

Traffic signs are the control devices utilized to control the traffic and furnish useful information to make the driving safe and well timed. Traffic signs define a visual language which helps to convey messages to drivers and to generate user friendly road system which can be understood by everyone. These traffic signs are put forth to the driver that to need to be interpreted while driving. This may look as a simple task, but sometimes thedriver misses the signs. Sometimes these traffic signs may be blocked by other objects and will not be properly visible to the drivers; these situations may lead to dangerous situations like accidents.

II. LITERATURE SURVEY

The Support Vector Machine approach is used for the detection as well as classification. Linear SVMs are utilized as geometric shape classifiers at detection phase. They work on the color segmented image. Blobs of Interest (BoI) are detected, once the color segmentation is done. Distance to Borders is used as the input vectors to execute the Linear SVM. The results show good success rates and few false positives in the final recognition stage. This approach is invariant to translation, rotation, scale and partial occlusions. It can recognize various geometric shapes, i.e., circular, octagonal, triangular and rectangular. But it requires enhancements in the performance to be applicable in real time.

Principle Component Analysis is used as minimized dimensional map. The drawbacks of PCA are high storage space requirement and computational complexity. PCA decomposes an n*n non sparse matrix, when the original space dimension is n. The representation that reduces the post-dimensional is generated by linear mapping as PCA is a linear mapping method.

Two-Dimensional Principle Component Analysis (2D-PCA) has been proposed as a new image recognition method. This method directly extracts feature from original matrix, minimizes computational complexity, training and feature extraction time.

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Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Prediction of COVID-19 Severity by Applying Machine Learning Techniques

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Abstract: ***An intimidating spread of COVID- 19(which is also known as severe acute respiratory pattern coronavirus 2 or SARS-COV- 2) led scientists to conduct tremendous sweats to reduce the epidemic goods. Artificial intelligence (AI) methods that are quick and precise are needed to support croakers in their assessments of a case's inflexibility and mortality hazard. By providing early medicine administration, pre-vaccination of rigid patients will reduce the cost to the hospital and stop instances from dying continuously. This design uses machine learning and deep learning techniques to build a vaticination model that predicts several inflexibility problems for the COVID-19 case grounded on X-ray pictures. Non-Handcrafted styles and composite handcrafted ways are applied to extract features. Principal Component Analysis(PCA) is being incorporated to choose the most vital features, and also Machine and Deep learning ways are applied. To extract characteristics, non-handmade styles and composite handcrafted methods are used. To choose the most crucial features, Principal Component Analysis (PCA) is used with machine and deep learning techniques. The cases are categorised and classified as pneumonia, severe, or normal. The PCA features enabled the Bagging, Ada Boost, KNN (K- nearest neighbors), and XGBoost classifiers to perform stylishly with 97% of accuracy, 98% of precision, and recall of 95%. This study proposes a new prophetic frame for the inflexibility and mortality threat of COVID-19 cases to help hospitals, croakers, and medical installations in their decision-making about which cases need to get attention first before others, and at the same time, to keep hospitals ' coffers for high- threat precedence cases.***
Keywords: Preprocessing, Feature extraction, Feature Selection, Confusion Metrix, Performance Analysis.

I. INTRODUCTION

The World Health Organization (WHO) Country Office in China initially received word of a pneumonia of unknown cause discovered in Wuhan, China, on December 31, 2019. Since then the number of cases of coronavirus are increasing along with the high death toll. In just a few days, the virus has started to spread widely from one city to the whole world. Coronaviruses are a large virus family that may cause everything from a typical cold to more serious illnesses like Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). MERS-CoV and SARS-CoV are the names of these two diseases which are spread by coronaviruses. In 2002, SARS was first seen in China, and in 2012, MERS was first seen in Saudi Arabia. In 2019, is recent virus seen in Wuhan, China is called SARS-COV2.

A critical activity that reduces the mortality rate, uses hospital resources, and benefits doctors is predicting the early-stage severity risk of any sort of illness in their decision-making. Figuring out the COVID-19 patients' severity risk is therefore a crucial task with numerous benefits, including ensuring that each patient receives the appropriate medical care in accordance with their severity, making the most effective utilisation of the hospital's amenities by providing the high-risk patient top attention and aiding doctors in making choices that will enhance the patient's care.

The three main approaches for finding COVID-19 are X-ray imaging, reverse transcription-polymerase chain reaction and computed tomography (CT). Although RT-PCR is the effective type, it is the most expensive, is not offered in all hospitals, and requires a long time to obtain results. Therefore, for early detection and treatment of this disease, many doctors rely on chest radiographic imaging, which might include CT and X-rays. Although CT is a very sensitive instrument, its findings can only be seen after a long period depending on when symptoms first appear. As a result, CT is challenging to utilize in routinely monitoring patients.

Despite the fact that chest X-ray (CXR) radiography is one of the most widely used and accessible techniques for the quick assessment of lung diseases, it is less sensitive than CT and RT-PCR. Since X-ray findings may be seen quickly and the technique is inexpensive, it can be done regularly to check on the patient's condition.

Feature extraction is a difficult task, particularly when the size of the data set is tiny. Values of numerical information or intensity of pixels that provide useful information regarding the local and/or global variations of an image's pixels are called an image's attributes.

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Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Design of Single Legged Hopper Robot in Gazebo

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Abstract: Robotics is one of the core areas where the bioinspiration is frequently used to design various engineered morphologies to develop novel behavioral controllers comparable to human being and animals.
Research on legged robots has been going on for over a century. The reason behind such sustained interest in legged robots is due to the fact that most of the earth's land surface is inaccessible to wheeled or tracked systems. Legged animals can, however, be found everywhere. Thus, mankind has been fascinated with the idea of a mobile legged robot that can handle difficult terrain and be useful in the fields of transportation, forestry, agriculture, fire, fighting, hazardous areas, defense (carrying weapons to soldiers, de-mining), police purposes, assistive devices for walking, entertainment (toy production), robotic pets, and ocean and space exploration.
Our project is based on one such example, single legged hopper robot a legged locomotive inspired by the jumping mechanism of click beetles. It aims to create a single legged hopper robot in Gazebo. A simulation tool that offers the ability to accurately, and efficiently, simulate populations of robots in complex indoor and outdoor environments. The Robot Operating System (ROS) works best in the LINUX OS, is the software of version Melodic + Gazebo 9, is utilized in the project.

I. INTRODUCTION

Legged robots can traverse unstructured terrain and could be used to explore areas of interest, such as craters, which rovers are unable to reach. In contrast to other legged robots, single legged is primarily built for hopping. One-legged hopping robots have long been used to study balance issues, but their dependence on off-board power has kept them tethered, literally, to the lab. Many hoppers have been hydraulic devices. But hydraulic actuation requires off- board motors and is energetic enough to pose issues outside of a controlled laboratory environment.

In general, small robots or unmanned ground vehicles (UGVs) are severely limited by their ability to negotiate obstacles. This demonstrated hopping capability allows small UGVs to overcome up to 30 obstacles that are 40-60 times their own size. In addition, hopping mobility has been shown to be 5 times more efficient than hovering for obstacles at heights less than or equal to 10 meters, which allows longer station- keeping time for the same amount of fuel.

Single legged hopping robots not only provide a simplified test bed for locomotion control algorithms, but they also demand high-speed, high force actuation to achieve safe and robust ground clearance and subject the actuator to greater mechanical stresses than do multi- legged systems. These robots also find its applications in fields like military, planetary exploration. For these reasons, single- legged hopping robots provide an ideal benchmark for actuators used in legged locomotion. The software required for this project is robotic operating system (ROS) which helps in creating the code required for to operate the robot of version Melodic + Gazebo 9.

II. LITERATURE SURVEY

A single legged hopper robot is a type of legged locomotive built for experiments on active balance and dynamics in legged locomotion. The machine has a leg that changes length, a body that carries sensors and interface electronics, and an actuated 2- axis hip. The hip is powered by hydraulics and the leg by compressed air. The one legged hopping robots are a typical and the simplest systems of the dynamic legged robots.

Most of research about the one-legged hopping robots were limited to the systems with Spring Loaded Inverted Pendulum (SLIP) model, which is composed of a point mass attached on a telescopic spring that is free to rotate around its point of contact with the ground. The SLIP model hopping systems can be stabilized without much effort in control design since the simple decoupling dynamics.

Raibert and his co-workers made a major contribution to this field through their 2D and 3D single legged hopper. Many other works have been done to improve the original legged system of Raibert. Zeglin introduced an "uniroo" that was capable of stabilizing its body pitch by continuous control during flight and stance.

International Journal of Electronics and Communication Engineering.
ISSN 0974-2166 Volume 16, Number 1 (2023), pp. 17-30

https://dx.doi.org/10.37624/IJECE/16.1.2023.17-30

Breast Cancer Detection Using Support Vector Machine Algorithm

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Abstract

Breast cancer is primary cancer affecting women and ranks second as the leading cause of female mortality. The crucial aspect is identifying the presence of breast cancer and pinpointing the affected area. Medical imaging consistently advances, and early detection of cancer is vital in lowering cancer death rates. The enhancement procedure for mammograms involves filtering and discrete wavelet transforms. Contrast stretching is utilized to boost image contrast. Improved Breast cancer early detection and diagnosis are achieved by segmenting mammogram images. From the segmented breast region, features are retrieved. The proposed system identifies the cancer region and classifies patients as either normal or cancerous. The input mammography image is subjected to pre-processing techniques, and undesirable parts of the image are cropped off. Using morphological techniques, the tumor location is separated from the surrounding tissue and marked on the original mammography image. If the mammogram image is normal, the patient is deemed normal; otherwise, the patient is diagnosed with cancer. The Decision Tree Algorithm is utilized for categorization in this study for reasons of comparison.

Keywords: preprocessing, Feature extraction, Segmentation, Confusion Metrix.

I. INTRODUCTION

Breast tissue cells can become cancerous and grow into breast cancer. It is the highly prevalent cancer in women around the world.

International Journal of Electronics and Communication Engineering.
ISSN 0974-2166 Volume 16, Number 1 (2023), pp. 1-15

https://dx.doi.org/10.37624/IJECE/16.1.2023.1-15

Prediction of COVID-19 Severity by Applying Machine Learning Techniques

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ABSTRACT

A intimidating spread of COVID- 19(which is also known as severe acute respiratory pattern coronavirus 2 or SARS- COV- 2) led scientists to conduct tremendous sweats to reduce the epidemic goods. Artificial intelligence (AI) methods that are quick and precise are needed to support croakers in their assessments of a case's inflexibility and mortality hazard. By providing early medicine administration, pre-vaccination of rigid patients will reduce the cost to the hospital and stop instances from dying continuously. This design uses machine learning and deep learning techniques to build a vaticination model that predicts several inflexibility problems for the COVID-19 case grounded on X-ray pictures. Non-Handcrafted styles and composite handcrafted ways are applied to extract features. Principal Component Analysis(PCA) is being incorporated to choose the most vital features, and also Machine and Deep learning ways are applied. To extract characteristics, non-handmade styles and composite handcrafted methods are used. To choose the most crucial features, Principal Component Analysis (PCA) is used with machine and deep learning techniques. The cases are categorised and classified as pneumonia, severe, or normal. The PCA features enabled the Bagging, Ada Boost, KNN(K- nearest neighbors), and XGBoost classifiers to perform stylishly with 97% of accuracy, 98% of precision, and recall of 95%. This study proposes a new prophetic frame for the inflexibility and mortality threat of COVID-19 cases to help hospitals, croakers, and medical installations in their decisionmaking about which cases need to get attention first before others, and at the same time, to keep hospitals ' coffers for high- threat precedence cases.

Keywords: Preprocessing, Feature extraction, Feature Selection, Confusion Metrix, Performance Analysis.

ISSN 2320 2629
Volume 12, No.3, May - June 2023
International Journal of Information Technology Infrastructure
Available Online at http://www.warse.org/IJITI/static/pdf/file/ijiti011232023.pdf
https://doi.org/10.30534/ijiti/2023/011232023

Design and Development of a Solar-Powered Vacuum and Wet Cleaning Robot using Arduino UNO

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Received Date : April 05, 2023 Accepted Date : May 15, 2023 Published Date : June 07, 2023

ABSTRACT

In today's day and time, it is difficult to find the time to clean our homes by ourselves. It is even more difficult to do so with conventional cleaning methods. This is where vacuum cleaners come to our aid to provide an efficient way to keep our surroundings clean, with the help of motors and filters that can pull up any kind of dirt and dust. In this paper, we present the design and implementation of a dual-function cleaning robot, which functions both as a vacuum cleaner and a wet floor cleaner. The robot is powered by a solar panel and is equipped with an Arduino UNO, a motor driver shield, and DC motors. An ultrasonic sensor was also integrated for obstacle detection. The vacuum function employs suction to remove dust and debris from floors, while the wet floor cleaning function uses wipers and a small pump to dispense water and clean the surface. This paper outlines the components, design considerations, and testing results for this innovative and eco-friendly cleaning solution.

Keywords: Solar panel, vacuum and wet cleaner, sensor, obstacle detection, eco-friendly.

1. INTRODUCTION

As technology advances, there has been a growing interest in developing environmentally friendly and autonomous cleaning solutions. This has led to the development of cleaning robots, which have become increasingly popular in recent years. The aim of this project is to design and implement a dual-function cleaning robot that combines the functions of a vacuum cleaner and a wet floor cleaner, powered by solar energy. However, most of these robots rely on battery power and need to be charged frequently, which can be inconvenient for users. This thesis explores the design and development of a solar-powered vacuum and wet cleaning robot that utilizes solar energy as its primary power source.

The use of solar energy as a power source for robots has been a topic of research for several decades. However, most of the existing research has focused on outdoor robots and solar-powered vehicles. The idea of using solar energy to power household cleaning robots is relatively new. By utilizing solar power, the robot can be more environmentally friendly and reduce the need for frequent charging. In this project, the following components have been used to design the robot.

- Arduino UNO Microcontroller: The Arduino UNO microcontroller is a versatile and programmable device that serves as the brain of the robot. It controls all the other components, including the DC motors and the ultrasonic sensor.
- Motor Driver Shield: The motor driver shield is an electronic device that provides an interface between the microcontroller and the DC motors. It allows the microcontroller to control the speed and direction of the motors.

IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

SMART CRADLE SYSTEM USING IoT

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Abstract In this paper, The proposed idea of a smart cradle seems to be an innovative solution to the problem of taking care of infants when the mother is away due to work or other reasons. The cradle integrates with a smartphone, allowing constant monitoring of the baby through sensors and hardware components such as an Arduino Uno microcontroller, IR sensor, Moisture sensor, Sound sensor, Speaker module, and Servo motor mechanism. With the use of these components, the cradle can detect various activities such as urination, crying and show the baby status through the Tcp Telnet Terminal
app. The cradle's rocking feature and live camera monitoring further add to its efficiency and convenience for the parent. In addition, aside from being helpful for personal use at home, the smart cradle also has the potential to assist maternity hospitals in caring for newborns. This technology can offer a practical answer to the obstacles encountered by employed mothers, and promote the security and welfare of babies.

Keywords: Integrated Development Environment (IDE), Espressif Systems (ESP), Internet of Things (IoT), Infrared (IR), Passive Infrared (PIR), Reduced Instruction Set Computer (RISC), Radio Frequency (RF), Global System for Mobile (GSM), Wireless Fidelity (WIFI), Microcontroller Unit (MCU), Arithmetic Logic Unit (ALU), Serial Peripheral Interface (SPI), Static Random Access Memory (SRAM), Universal Serial Bus (USB), Ground (GND), General Purpose Input Output (GPIOS)

1 INTRODUCTION

The proposed cradle system addresses a common problem faced by working parents who find it difficult to manage work and take care of their babies simultaneously. The manual swinging of the cradle may not always be possible, and leaving the baby with a babysitter can cause safety concerns for parents. The cradle system aims to bridge this gap and provide a solution that enables parents to take good care of their babies. The system is designed to address the issue of infant crying, which is a common phenomenon that can be difficult for parents to handle. The crying of an infant is a way for them to communicate their needs, and it is important for caregivers to respond appropriately to these cries. The proposed cradle system takes into account the emotional and physical needs of the baby, rather than just following strict routines for feeding, waking, and sleeping. Research has shown that ignoring an infant's cries can have negative effects on their intellectual and social development while leaving a distressed baby to cry regularly can damage brain development. Therefore, the cradle system's focus on addressing the needs of the baby is important for their overall well-being and development. Overall, the proposed cradle system offers a practical solution for parents who find it challenging to balance work and caregiving, while also promoting healthy development for infants.

1.1 Literature Survey

The Smart Cradle System has enabled several innovative ideas and achievements in the field of baby cribs. Marie R. Harper, La Mirada, and Maxine R. Blea devised a concept for a self-rocking cradle that uses an oscillatory motor to mimic a mother's rocking motion. The cradle is supported by swivel supports at both ends and a motor device that regulates a smooth rocking motion to the crib [1]. Yang Hu and Weihua Gui proposed an adaptive sway control cradle that utilizes sensors to detect changes in the baby's condition and adjust the rhythm of the cradle accordingly [2]. Gim Wong introduced an electrically actuated "Automatic baby crib rocker" that can be controlled by a baby's voice or a switch [3]. Dr. M. Levy, Deepali Bhiwapurkar, and Gokul Viswanathan suggested an infant monitoring system that sends real-time alerts to parents through GSM technology. This system has a cry detection module that can activate the cradle swing with a pre-recorded voice and use sensors to detect the baby's motions [4]. Chau-Kai-Hsieh and Chiung Lin proposed a voice identification device that can recognize specific sounds of an infant's cry or voice using the filter bank and Zero crossing rate methods. The device is simple, affordable, accurate, and does not require prior training on the subject being monitored [5].

1.2 Objectives

- The proposed system detects when a baby cries and automatically swings to soothe the baby.
- It includes a system to detect baby crying and inform the guardian through their phone.
- With the live monitoring feature, the guardian can remotely keep a watchful eye on their baby using their smartphone.

ISSN 2319 – 7595
Volume 12, No.3, May - June 2023
International Journal of Information Systems and Computer Sciences
Available Online at http://warse.org/IJISCS/static/pdf/file/ijiscs011232023.pdf
https://doi.org/10.30534/ijiscs/2023/011232023

AI-Powered Road Safety: Detecting Driver Fatigue through Visual Cues

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Received Date : April 03, 2023 Accepted Date : May 15, 2023 Published Date : June 07, 2023

ABSTRACT

Driving when fatigued is among the main causes of road deaths. Consequently, one ongoing research area is how to recognize driver fatigue and how to determine whether it is present. A large percentage of conventional methods are either based on machines, the behavior of people, or physiological processes. Some solutions need expensive sensors and data processing, while others are infiltrating and uncomfortable to the driver. As a consequence, this study creates an accurate, real-time method for identifying driver fatigue. The footage is captured by a camera, and image processing techniques are employed to recognize the driver's face in each frame. When facial landmarks on the detected face are pointed, the eye aspect ratio and mouth opening ratio are computed based on their values, and drowsiness is recognized utilizing generated adaptive thresholding. The following stage involves determining whether or not a discovered item is a face using SVM. It also checks the driver's eye aspect ratio (EAR) and mouth opening ratio (MOR) up to a predetermined number of times to look for signs of sleepiness and yawning. If sleepiness is identified, a warning email is sent to the registered email address.

Key words: Mouth Aspect Ratio (MAR), Eye Aspect Ratio (EAR), Histogram of Oriented Gradients (HOG), Support Vector Machine (SVM).

1. INTRODUCTION

One of the leading factors in fatal car accidents is driving when tired. Long-distance or overnight bus drivers, long-haul truck drivers, particularly at night, and bus drivers are more prone to encounter this problem. A sleep-deprived driver is the greatest nightmare of every passenger worldwide. Auto accidents associated with exhaustion result in an important percentage of collisions and fatalities every year. Due to its significant practical significance, the detection of driver fatigue and its indication are currently a focus of research. Due to its significant practical significance, the detection of driver fatigue and its indication are currently a focus of research. The mechanism for detecting tiredness on a basic level. is composed of the acquisition system, the processing system, and the warning system. The acquisition system takes a video of the driver's frontal face at this point and transmits it to the processing block for online analysis to detect tiredness.

If the warning system detects tiredness, it will issue the driver with a warning or alert. Physiological, behavioural, and vehicle-based tired driving detection methods make up the three primary categories. The vehicle-based system continuously monitors a wide range of variables, such as steering wheel movement, brake or accelerator use, vehicle speed, lateral acceleration, lane position deviations, etc. The identification of any abnormal change in these measures is

Night Vision Thermal sensor based Animal Movement Observation using CNN and YOLO v3

Journal: International Journal of Advances in Computer Science and Technology (IJACST) (Vol.12, No. 6)

Publication Date: 2023-06-15

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Page : 50-56

Keywords : CNN; Python Flask web application; Thermal cameras; Temperature difference; Wildlife detection; YOLO v3;

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Abstract

Developing an automated system for wildlife detection and recognition using thermal cameras can be challenging nowadays, which have many applications in wildlife conservation and management. This includes many challenges like detecting false positives and negatives and also environmental factors like temperature and humidity. Developed a system for the classification of animals using one of the developed algorithms, the computer-aided CNN algorithm and Python Flask web application that loads a pre-trained convolutional neural network (CNN) model for image classification (cat or dog) and allows the user to upload an image for classification. The wildlife conservationists need a system, which uses a thermal images or videos and detects the animal presence in video. Temperature difference is used to distinguish the animals and can develop the system which uses images to detect the animals in a given video. Using this option, the conservationists will identify the animal using the developed system which is built with yolov3 (You Look Only Once, version 3)

ISSN 2347 - 3983
Volume 11. No.6, June 2023
International Journal of Emerging Trends in Engineering Research
Available Online at http://www.warse.org/IJETER/static/pdf/file/ijeter031162023.pdf
https://doi.org/10.30534/ijeter/2023/031162023

A Machine Learning Approach for Prediction of Diabetes Mellitus

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Received Date: April 27, 2023 Accepted Date: May 18, 2023 Published Date : June 07, 2023

ABSTRACT

Diabetes Mellitus is among chronic diseases and lots of people are suffering with this disease. It may cause many complications and have a high risk of diseases like heart disease, kidney disease, stroke, eye problem, nerve damage, etc. There is no doubt that this alarming figure needs great attention. With the rapid development of Machine Learning, machine learning has been applied to many aspects of medical health. There are several Machine learning algorithms that are used to perform predictive analysis in various fields. Predictive analysis in healthcare is a challenging task but ultimately can help practitioners make data informed about a patient's health and treatment. In this project, for experiment purposes, we have taken a dataset which is originally from the National Institute of diabetes and digestive and kidney diseases. All patients here are females at least 21 years old of Pima Indian heritage. By studying the dataset, we must find hidden information, hidden patterns to discover knowledge from the data and predict outcomes accordingly.

The objective of this project is to diagnostically predict whether the patient has diabetes or not, based on certain diagnostic measurements included in the dataset. We have proposed a diabetes prediction model for better classification of diabetes by applying some popular machine learning algorithms namely, Logistic Regression, Random Forest Algorithm and KNN Algorithm to predict Diabetes.

Key words: Dataset, KNN Algorithm, Logistic Regression, Machine learning, Random Forest Algorithm, Diabetes Mellitus.

1. INTRODUCTION

Diabetes is one of the deadliest diseases in the world. It is not only a disease but also a creator of kinds of diseases like heart attack, blindness, kidney diseases etc . The normal identifying process is that patients need to visit a diagnostic center, consult their doctor, and sit for a day or more to get their reports. But with the rise of Machine Learning approaches, we have the ability to find a solution to this issue [1].

Diabetes mellitus is an endless infection portrayed by hyperglycemia. It might cause numerous inconveniences. As per the developing bleakness as of late, in 2040, the world's diabetic patients will achieve 642 million, which implies that one of the ten grown-ups later is experiencing diabetes. There is no uncertainty this disturbing figure needs extraordinary consideration [2]. The World Health Organization has assessed 12 million passes around the world, consistently because of Heart maladies. A large portion of the passouts in the United States and other created nations are expected to cause cardiovascular maladies. The early visualization of cardiovascular illnesses can help in settling on choices on way of life changes in high hazard patients and thus decrease the intricacies [3]. This exploration means to pinpoint the most significant/hazard elements of coronary illness just as anticipate the general hazard utilizing calculated relapse. Machine Learning has been connected to numerous parts of medicinal wellbeing. In this project, we utilized Logistic regression, Random Forest and KNN Algorithm to anticipate diabetes mellitus.

The dataset is originally from the National Institute of Diabetes and Digestive and Kidney Diseases. The objective of the dataset is to diagnostically predict whether a patient has diabetes, based on certain diagnostic measurements included in the dataset. Several constraints were placed on the selection of these instances from a larger database. All patients here are females at least 21 years old of Pima Indian heritage. The datasets consist of several medical predictor (independent) variables and one target (dependent) variable, Outcome. Independent variables include the number of pregnancies the patient has had, their BMI, insulin level, age, and so on.

2. LITERATURE SURVEY

The Pima Indians are genetically predisposed to diabetes, and it was noted that their diabetic rate was 19 times that of a typical town in Minnesota [4]. The National Institute of Health (NIH) originally owned the Pima Indian diabetes Database (PIDD). The number of patients (n) in the database n=768 each with 9 attribute variables. Out of the nine conditional attributes, six are due to physical examination, the rest of the attributes are chemical examination. Of these 9 attributes, there are eight inputs and the last one being the output. The

International Journal of Advances in Engineering and Management (IJAEM)
Volume 5, Issue 6 June 2023, pp: 933-936 www.ijaem.net ISSN: 2395-5252

Fingerprint Based Security Locker System

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Date of Submission: 20-06-2023 Date of Acceptance: 29-06-2023

ABSTRACT:
The major objective of this project is to develop and put into use a fingerprint-based security system that can be set up in businesses, residences, and banks. We'll be using an Arduino Mega and a biometric locker technique to put this idea into action. To create an impenetrable security system, we are using fingerprint technology. In order to prevent outsiders from gaining access to the controlling systems, the fingerprint sensor will be installed inside the locker panel, facing the exterior of the locker. It is our job to secure our possessions because thefts are on the rise. Only the authenticated person may retrieve the documents or cash from the locker using this system. Clients' fingerprints are saved, and when
KEYWORDS: Fingerprint , Security , locker panel, sensor, bio metric locker.

I. INTRODUCTION

In the actual world, people are more concerned about the safety of their costly possessions, such as jewellery.Money, essential documents, and so on. As a result, bank lockers are the safest place to keep them. Because places such as offices and other public places are not safe, difficulties regarding the security of our documents and valuables have arisen.As a result, we decided to create this form of security system that will be more valuable to everyone. This technique ensures that fingerprints are accurately used to unlock and close doors. We can give users with strong security with this initiative. Most banks have lockers with one key in the user's possession and a master key in the bank's possession. They also have a password that the user must enter.

Theft is a serious issue in today's society. Because places such as offices and other public places are not safe, difficulties regarding the security of our documents and valuables have arisen.As a result, we have chosen to create this form of security system that would be more effective.Everyone will find it handy. This mechanism ensures that fingerprints are used correctly for door opening and closing. We can give users with strong security with this initiative. Most banks have lockers with one key in the user's possession and a master key in the bank's possession. They also have a password that the user must tell the bank before entering the locker room; if the user loses the key, it is a problem.

II. LITERATURE SURVEY

These are some of the existing Smart Security designs used by

(a) GSM Based Security System. The PIR sensor detects motion by measuring the difference in temperature. Heat levels emitted by nearby objects in the infrared or radiant spectrum. When the PIR sensor senses motion, the output gets high. A common PIR sensor has a range of roughly 6 metres (30 ft). When the PIR sensor detects motion, the sensor's output is high. The Arduino detects this. Then, using serial communication, it communicates with the GSM module to make a call to the preprogrammed mobile number.

(b) An infrared-based security alarm system. Any movement can be detected and triggered by an IR-based security alarm circuit. This circuit is quite useful.

III. PROPOSED SYSTEM

In the suggested system, the biometric system scans the finger with an Arduino uno microcontroller attached to an optical fingerprint sensor R305.

A 16x2 LCD is used to provide instructions to users. The user can register fingerprints with various ID numbers. The biometric security system has been improved to make it more user friendly by including four push buttons: one for deleting enrolled finger prints, one for enrolling new finger prints, one for confirming fingerprints, and one for incrementing and decrementing id locations.

ARDUINO MEGA

A microcontroller board based on the ATmega2560 is called the Arduino Mega 2560. It contains 16 analogue inputs, 4 hardware serial ports (UARTs), a 16 MHz crystal oscillator, 54 digital

Quest Journals
Journal of Electronics and Communication Engineering Research
Volume 9 ~ Issue 5 (2023) pp: 10-15
ISSN(Online) : 2321-5941
www.questjournals.org

Research Paper

Some Studies on Shielding Effectiveness for Oblique EM Waves Incidence on Dual Shields

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Abstract *-Shielding effectiveness of various shields against angle of attack with conductors and conducting polymers using plane wave theory is carried out in this paper. The shielding efficiency of these new material combinations against EM waves is evaluated according to the angle of incidence of the dual shield. With recent advances in the synthesis of stable high-conductivity polymers, these lightweight, mechanically strong materials appear to be viable alternatives to metals for EMI shielding. A specific frequency analysis is performed ondual shield materials.*

Keywords– *shielding effectiveness, Electromagnetic Interference; Dual shields; angle of incidence.*

R*eceived 01 May, 2023;* ***R****evised 08 May, 2023;* ***A****ccepted 10 May, 2023 © The author(s) 2023.*
P*ublished with open access at* ***www.questjournals.org***

I. INTRODUCTION

Electromagnetic Interference (EMI) refers to the interference or disruption of the operation of an electronic device caused by either electromagnetic conduction or radiation from an external source. This source could be either natural or artificial and is characterized by rapidly changing electrical currents. The resulting disturbance can interrupt, obstruct, degrade or limit the effective performance of the

device.To prevent the undesired coupling of radiated electromagnetic energy into equipment, shielding is used. The design and development of electromagnetic shields aim to minimize electromagnetic interference and improve circuit compatibility. Different types of electromagnetic shields have been proposed, including single, double and multi-layered conductors, as well as conductive polymers sandwiched between conductive layers. The focus of the design is on optimizing the performance of the shielding effectiveness.

Most of the difficult shielding problems occur in communication systems where many transmitters, receivers and other sensitive equipment must be located closely together, and weight is minimized. It is difficult to predict the shielding effectiveness of any enclosure, such as an equipment package or room filtration. Therefore, it is only necessary to treat problems of this kind theoretically. Several light-weight polymers, which are essentially non-conductive but are conductive upon doping, have been studied in recent years [1-5]. These materials have several potential applications, such as electromagnetic interference (EMI) shielding, microwave attenuators, gas sensors, display units, junction devices, etc. [3,5]. Properties such as conductivity variation over a wide temperature range, light weight and high mechanical strength of the polymers make them attractive in

IJARCCE ISSN (O) 2278-1021, ISSN (P) 2319-5940

International Journal of Advanced Research in Computer and Communication Engineering

ISO 3297:2007 Certified ⁜ Impact Factor 8.102 ⁜ Peer-reviewed / Refereed journal ⁜ Vol. 12, Issue 5, May 2023

DOI: 10.17148/IJARCCE.2023.12589

GLAUCOMA DETECTION IN RETINAL IMAGE

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Abstract: The main objective of this proposed system is to detect Glaucoma in the retinal image. Glaucoma is an eye condition that can't be healed once it happens. In case the corrective therapy does not continue, it causes a permanent visual disability so it cannot be ignored. Treatment will be helpful when the disease is identified at an early stage. Most of the research describes different techniques widely incorporated in the detection of Glaucoma disease.

In this proposed system, the detection of Glaucoma is identified through Image Pre-processing and SVM algorithm. Pre-processing operators like Segmentation, Enhancement, Binarization, and Thresholding are used to extract the optic cup and optic disc from the retinal image to find the CD R. This proposed technique is based on OTSU's segmentation method to locate the Optic cup and disc. Calculating only the CDR (Cup-to-Disc ratio) does not help to distinguish all the images as Glaucomatous or normal. Thus, RDR (Rim-to-Disc ratio) is considered another feature for Glaucoma assessment. The SVM (Support Vector Machine) algorithm plays an important role.

Keywords: Cup to Disc Ratio (CDR), Rim to Disc Ratio (RDR), Support Vector Machine (SVM), Optic Disc (OD), Optic Cup (OC), and Region of Interest (ROI).

I. INTRODUCTION

Our connection to nature is the human senses. The human cerebrum consolidates the neuron explosions of seeing, hearing, smelling, degusting, and touching into a substantial whole. Our eyes are the most important sensory organs by a long shot. Glaucoma damages the optic nerve in the eye, leading to visual impairment and loss of vision. Glaucoma seems to be developed and does not occur in life until later. The elevated pressure, called intraocular eye pressure, will affect the optic nerve that carries the images to the brain.

Early Glaucoma treatment will decrease the blindness risk by about 50 percent. A major cause of vision loss is Glaucoma which is identified by neuron generation of the optic nerve. It is difficult to revitalize the degenerated nerve fibres of the optic nerve and so early diagnosis and prompt treatments are necessary to avoid visual damage. In fundus images, current works related to Glaucoma detection focus only on CDR estimation to detect Glaucomatous events. CDR has, however, been found to be inconsistent in determining how much OD damage Glaucoma causes. For example, some patients have small CDRs with substantial loss of the visual field, while others have large CDRs but little loss of the visual field. So, CDR is calculated as well as RDR thereby classifying the images into four different stages.

II. LITERATURE SURVEY

Pooja Chaudhari proposed a method for detecting glaucoma. Using a cup-to-disc ratio and feed-forward artificial neural networks, glaucoma can be detected more accurately. It is discovered that this strategy gives more trustworthy findings than the ones that were previously available.

This extensive new technique, its applications, and its potential range According to Anju Soman et al., features are extracted from retinal pictures using DWT for classification, and various classifiers, including SVM, Dual Sequential Minimization, Random Forest, and Artificial Neural Networks, are used from the images. These characteristics are employed in categorization. The three employed filters each have unique wavelet characteristics. These characteristics are utilized to distinguish between and diagnose glaucomatous and normal retinal pictures.

ISSN: 2278-4632
Vol-13, Issue-05, No.02,May : 2023

SMART INTERACTIVE DUSTBIN NETWORK

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Abstract:
In the era of industrialization, scientific and technological progress has led to greater convenience and a larger global population, but it has also resulted in increased waste production. The government has allocated significant resources to tackle this waste reduction problem as public bins are filling up quickly and overflowing before trash collection, causing unhygienic and messy streets that negatively impact health and the environment. To avoid such negative consequences, modernizing dustbins and garbage management through the use of the Internet of Things can be a potential solution. The Smart Interactive Dustbin Network is a solution designed to help communities manage their waste collection efficiently, keeping their surroundings clean and hygienic. This network uses LoRa technology to wirelessly transmit data from multiple dustbins to a gateway, which can then notify authorized personnel when a bin is full. The ultrasonic sensor connected to the LoRa node measures the level of garbage in the dustbin, allowing for efficient and hygienic waste collection management. This system has the potential to be implemented in various locations, helping to eliminate littering in cities and reduce the need for human involvement in waste disposal.
Keywords: NodeMCU(ESP8266),LoRa(LongRange),LiPo(Lithium-ion Polymer),WiFi,ThingSpeak.

1 Introduction

The United Nations Department of Economic and Social Affairs (UNDESA) predicts that by 2050, 68% of the world's population will be living in urban areas, leading to a significant increase in the amount of urban garbage. The current waste management system is not efficient as garbage bins are emptied at a fixed schedule, regardless of how full they are, leading to hygiene risks and operational inefficiencies. Many municipalities have attempted to address this problem by changing collection routes or adding more bins, but these solutions are only temporary. Instead, a dynamic system that uses IoT technology to monitor bin fill levels in real-time is proposed. This model aims to prevent overflow of garbage and extend the lifetime of the node to avoid frequent battery recharging through rechargeable batteries. When the dustbin is about to overflow, it alerts the respective municipal authority.

1.1 Literature Survey:

The Smart Bin for clean cities paper discusses the use of ultrasonic sensors in smart bins to measure the level of garbage. The sensors send data to the cloud via WiFi module when the garbage exceeds a certain level. The paper also suggests waste compression in the bin to avoid unnecessary space occupation by light-weighted particles. To optimize battery utilization, the project uses the ESP8266's deep sleep mode and RTC memory to push previous values that were not pushed due to Wi-Fi unavailability. The paper also explores the integration of ESP8266 with LoRa for the project, highlighting the advantages of LoRa over other communication techniques. Other proposed solutions use different wireless transmission technologies such as ZigBee, RFID, and GSM, but these have drawbacks such as short communication range, power consumption, and high running costs. The emergence of Low Wide Power Area Network (LPWAN) technologies provides an energy-efficient, low-cost solution for wireless data collection in large areas without the need for cellular transmission technology.

ISSN: 2278-4632
Vol-13, Issue-05, No.02, May : 2023

SMART SAFETY BAND

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Abstract

In today's busy world, the number of victims of unethical physical harassment and crime is increasing day by day. Human security is the main objective of our project. To build a quick-responding alert system, we introduce an innovative Internet of Things (IoT)-based solution in the form of a "Smart Safety Band," which keeps monitoring the individual and indicates a threat. The microcontroller used is interfaced with multiple sensors. When a threat is detected by the alert system, it transmits data through the GSM module directly. The transmitted data during the threat includes the GPS location along with the abnormal readings recorded. Our model can detect sudden falls and unexpected attacks manifesting as a change in pulse rate or temperature. To detect the threat, we are also using the voice module and the emergency key, for which verification from the user is not required if the victim notices any suspected threat. The alert will then be sent. A non-lethal electric shock is produced in all cases for safety. The system can function even if the band has been destroyed after sending the first alerts. Automation ensures that even if the user is incapacitated, the band automatically sends signals through the server without requiring any user input, and it also contains the shock mechanism to produce a non-lethal electric shock in emergency situations. In order to make it more cost-efficient, we are using a voice sensor instead of a voice module, which measures the pitch of frequencies. To make the system more compact, we are using Arduino Nano instead of Arduino Uno.

Keywords: Threat, IoT, detection, GSM, GPS

1. INTRODUCTION

Safety plays an important role in everyone's day-to-day lives, especially while walking or jogging during the early hours of the morning to have less hindrance, early arrival to workstations to be more productive, travelling alone to unknown places either due to work or entrainment, or simply running daily errands. And due to the rise of crimes and the unsecure environment, it became tedious to travel alone. Every one in three people loses the opportunity to have a bright and safe future due to an unsafe environment. So, to overcome this problem, we introduced a wrist band that helps monitor the user's activity.

Smart wristbands have been in use for a brief period of time. Every other person in a gathering possesses one. It is easy to carry everywhere, can be used by anyone, and is easy to explain and understand the working with simple commands. Most bands are user-controlled, or one should manually press the buttons to work, which is not very efficient in an emergency situation.

There are many reasons for movements in the human body, whether walking, sitting, or running. We need to consider all possibilities for human body movements. So, we need an efficient safety band such as the "Smart Safety Band". Here in our proposed model, the band is working using various sensors that detect the user's bodily movements and send updated information. This device can be operated manually by pressing a button.

JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

IOT BASED UNDERGROUND CABLE FAULT DETECTION

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Abstract : The principal objective of this project is to detect the faults and anomalies happening in underground cables utilizing Arduino. Ohm's law is the fundamental concept that guides this project's operation. Depending on where the cable fault lies, the current value also varies at the feeder end when a DC voltage is supplied. Therefore, the Arduino's integrated ADC gets the voltage change detected across the resistor in the event of a short circuit, such as an L-G or L-L fault. This value is processed by the Arduino, and the defect is identified in relation to the base station's distance. This value is transmitted to the LCD interface on the Arduino board, which displays the precise location of the defect in relation to the base station for each phase in kilometres. This project is organised using a set of resistors that indicate the length of the cable. In order to manually cause faults, fault switches are installed at each known kilometer. The fault distance can finally be determined.

IndexTerms -.Underground Cable, Arduino Uno, LCD, Fault detection, ESP8226.

1.INTRODUCTION

Underground cable fault detection is an essential task in the maintenance and operation of power distribution systems. Faults in cables can lead to power outages, equipment damage, and safety hazards. With the advent of Arduino, an open-source microcontroller platform, it has become possible to build low-cost, high-accuracy underground cable fault detection systems. An Arduino-based underground cable fault detection system typically involves a set of resistors and switches that represent a cable to monitor various electrical parameters such as voltage, current, and resistance. The data is then processed and analyzed by the Arduino microcontroller, which uses the relation between the length and resistance to detect and locate any faults in the cable. he use of IoT in underground cable fault detection has several benefits, including reduced downtime, increased reliability, and improved safety. By detecting faults early, maintenance crews can quickly repair the cable before it leads to a major outage. Additionally, IoT-based systems can provide real-time monitoring, enabling operators to make informed decisions and take proactive measures to prevent faults.

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1.1 Fault Types in Cables

Open Circuit Fault - An open circuit is a fault that occurs when there is a break or interruption in the conductor, causing a loss of continuity and preventing the current from flowing. Open circuits can be caused by corrosion, mechanical stress, or manufacturing defects.Faulty

Short Circuit - A short circuit is a fault that occurs when two or more conductors come into contact, causing a high current flow that can damage the cable and surrounding equipment. Short circuits can be caused by insulation breakdown, mechanical damage, or external factors such as moisture, dust, or animals.

Ground Fault - A ground fault is a fault that occurs when one or more conductors come into contact with the ground or an earthed object, causing a current flow that can damage the cable and surrounding equipment. Ground faults can be caused by insulation breakdown, poor grounding, or external factors such as lightning.

2.LITERATURE SURVEY

"Underground Cable Fault Detection using Arduino" by S. B. Sahu et al. (2020): The authors present a low-cost underground cable fault detection system based on Arduino. The system involves a set of sensors that monitor voltage, current, and resistance and an Arduino microcontroller that processes and analyzes the data. The system can detect and locate faults with high accuracy and provide alerts to maintenance crews. "Development of an Arduino-based Underground Cable Fault Detection System" by S. K. Singh et al. (2019): The authors present an Arduino-based underground cable fault detection system that involves a set of sensors that monitor various electrical parameters and an Arduino board that processes and analyzes the data. The system can detect and locate faults with high accuracy and provide alerts to maintenance crews. These studies demonstrate the effectiveness and potential

ISSN: 2278-4632
Vol-13, Issue-05, No.02, May : 2023

SMART AGRICULTURAL SECURITY SYSTEM

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Abstract:

Farmers generally suffer a lot of crop damage due to animal attacks, a constant threat to agricultural lands that concern farmers severely. To circumvent this damage, farmers have been using scarecrows. To settle on a plan of action for this issue, a simple application has been developed that detects the animal in the field and plays that particular animal's nemesis sound. The real-time motion of the animals in the fields is captured by interfacing the Pi camera with the raspberry pi. Then, by using image processing and machine learning the animal can be identified and the nemesis sound is generated using the speakers connected in the fields to scare away the animals. It is a more efficient way of protecting the field as the real-time motion is captured and the sound of the nemesis animal from the speaker is produced immediately.

Keywords: Crop Protection, Animal Detection, Raspberry Pi, Pi Camera

INTRODUCTION

Farmers generally suffer a lot of crop damage as seeds may be removed after sowing, seedlings may be pulled out, and grains in the milky stage or at the ripening stage may be fed upon by animals or birds, this being a constant worry for farmers in agriculture. To reduce this damage, farmers have been using scarecrows which are primarily made from a wooden stick frame and old clothes, which are then stuffed with straw. The head is made from burlap and often painted to look like a simple face making it a decoy in the shape of a human. The loose clothing flaps in the breeze, giving the illusion of a real, moving person. But recently the attack of animals on the crops in the farms have been increased during the absence of the farmer in both day and nighttime even in the presence of scarecrows. Hence, efficient, and reliable monitoring of animals in the vicinity of the field is essential.

Thus, the Smart Security System is identified as an effective measure to resolve the issue of animal attacks, that use image recognition and computer vision. Image recognition (or image classification) is identifying and categorizing images in one of several predefined distinct classes. So, image recognition software and apps can define what's depicted in a picture and distinguish one object from another. Computer vision is the field of study aimed at enabling machines with this ability. Identification of real-time objects through computer vision-oriented research has recently increased due to the widespread application of Convolutional Neural Networks (CNN) based models. Here, in this Security System, YOLO algorithm is used where the animal is determined by a pi camera and the identified animal is searched through the built-in data set and the name of the animal detected is displayed along with its nemesis sound played through the speaker.

 http://doi.org/10.36893/JK.2023.V13I05N02.170-175

International Journal of Advances in Engineering and Management (IJAEM)
Volume 5, Issue 5 May 2023, pp: 152-156 www.ijaem.net ISSN: 2395-5252

Fingerprint Based Voting System Using Arduino Nano

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Date of Submission: 01-05-2023 Date of Acceptance: 08-05-2023

ABSTRACT

A fingerprint-based voting system based on arduino, fingerprint and GSM technologies is a smart way to ensure voter authentication and simplify the voting process. In the current model, the voter enters the machine and presses a button to vote. The pollster then chooses from a list of switches denoting the appropriate candidates or measures. The machine is set up to avert multiple votes by excluding other candidates once a candidate's switch is and the push button is pressed, which opens the curtain and increments the appropriate counters for each candidate.

This paper focuses on a secure method of casting a vote. A Fingerprint Based Voting System is an application that recognises the user based on his or her finger pattern. The voter can only vote for a candidate once; the system will not allow the candidate to vote again, and it also displays instructions on an LCD screen that must be followed step by step in order to vote for a candidate. The main advantage of using this system is that votes do not get rigged as fingerprint is used for authentication. In addition, if a voter is registered but does not vote, an automated message is sent to the registered mobile number.

Keywords: Arduino Nano, GSM SIM 900A, R307

I. INTRODUCTION

A vote is a powerful right that every citizen of their own country possesses. The country's economy is built while the culture is preserved during the term of the elected leader. As a result, it is critical that fair and free elections be authorized. Even in countries with strong rule of law, the voting process can be manipulated. In the current system, a direct-recording electronic (DRE) voting machine records votes through a ballot display with mechanical or electro-optical components that the voter can activate (typically buttons or a touchscreen); processes data with computer software; and stores voting data and ballot images in memory components. It generates a table of the voting data after the election, which is saved in a removable memory component and printed. This system uses a vote count method to summarize ballots at polling places. They usually tabulate votes as they are cast and print the results after the polls close. The proposed system simplifies and speeds up the authorization process.

II. LITERATURE REVIEW

A. Piratheepan, S. Sasikaran, P. Thanushkanth, S. Tharsika, M. Nathiya, C. Sivakaran, N. Thiruchchelvan and K. Thiruthani Gesan [1] proposed a system offline version of an electronic based fingerprint based voting machine using arduino. This system employs fingerprint authentication, and the interface accepts voters' national ID card numbers, provides a voting interface, and displays confirming status or error messages.The number stored in the local database will be checked and then the central database is checked if the voter is not found. If the central database also doesn't contain the voter's ID, the person is said to be trying to cast the vote illegally.

Mr.L.Jones Nirmal, M.S.Vikram Madhavan, C.Arul Murugan, S.V.Charan Kumar, M.Surya [2] proposed that fingerprint based biometric voting machine is divided into two parts, in first part user needs to register and in second part user will vote for desired candidate. They designed a voting machine that is suitable for small scale purposes like institutes and organizations.

S. Charan , K. Hari Prasanth , D. Anand Joseph Daniel [3], three literate surveys were conducted on fingerprint capture, direct pore matching for fingerprint verification, and an online fingerprint identification algorithm. It is based on a

IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
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ANALYSIS OF ECG SIGNALS USING MACHINE LEARNING TECHNIQUES

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ELECTRONICS AND COMMUNICATIONS ENGINEERING

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Abstract : ECG examinations can be used to diagnose a patient's disorders and pathological states in addition to cardiovascular diseases. Preoperative/postoperative evaluation, drug efficacy evaluation, side effect identification, and health diagnosis are just a few of the many uses of ECG data in the medical or surgical system. As a result, this is an active field of study.

This research uses machine learning models to classify ECG diseases. A machine learning approach called an SVM model is used to recognise and categorise the various heart ailments. The dataset includes 3 distinct disease classes: congestive heart failure (CHF), normal sinus rhythm (NSR), and cardiac arrhythmia (ARR). The model's performance is evaluated using the performance parameters Accuracy, Precision, Recall, and F1-score.

INTRODUCTION

Human-computer interaction (HCI) is a growing field of study in the scientific world. Data mining is dominated by the application of machine learning algorithms to get the best results in numerous fields. Using bioelectrical signals to classify emotional states is one such topic. The purpose of the paper is to analyse the effectiveness, efficiency, and computing burdens of several algorithms utilised in scientific comparisons for emotional state recognition via cardiovascular physiological signals.

LITERATURE SURVEY

G. Sannino, and G. De Pietro, "developed a new deep learning system for ECG beat classification. Deep Neural Network (DNN) was developed using deep learning library from Google and tensor flow framework. The developed deep learning system comprises of seven hidden layers with 5, 10, 30, 50, 30, 10 and 5 neurons. This experiment was conducted on a publicly available dataset; MIT–BIH arrhythmia and compared the experimental outcomes with the recent scientific literature.

F. Akdeniz et al. use the Wigner-Ville distribution to detect arrhythmias in the ECG data. The database was accessed from the Physio Net database, and features from that database were used to locate the arrhythmia. In comparison to the current method, the accuracy, sensitivity, and specificity were higher while also requiring less computational time.

PROPOSED METHOD

Stage 1: Data for ECG signals are chosen from the MIT-BIH Physionet database's standard data collection.
Stage 2: For training and testing ECG signals, time domain features and frequency domain characteristics are retrieved.

Features of the time domain:

- Mean Heart Rate (in bpm)
- Mean RR (in ms): The mean RR interval value.
- SDNN (in ms): RR interval standard deviation.
- NN 50v1: Total number of beats having a beat-to-beat difference more than 50ms, variant 1.
- NN 50v2: Total beats with an interbeat delay of more than 50ms, version 2.
- pNN 50v1: NN 50v1 to ECG segment length ratio
- NN 50v2 to ECG segment length ratio (pNN 50v2)
- SDSD (in ms): The standard deviation between each segment's adjacent RR intervals or the variation between beats
- RMSSD: Root mean square of inter-beat differentials (in milliseconds).

Features of the frequency domain:

- The Wavelet Entropy
- Wavelet multiscale variance
- Two fractal coefficients

IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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ELECTRICITY GENERATION USING RACK AND PINION MECHANISM

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***Abstract*---** A nation can become more prosperous economically by increasing its power generation efficiency. The suggested concept is to implement energy during the passing of vehicles over a speed breaker using the Rack and Pinion mechanism, which converts rotational energy into electrical energy. This method is useful in regions where producing electricity is a challenging task. The kinetic energy of moving automobiles on roads, highways, etc. can be used to create power using this method.

***Index Terms* – Speed Breaker, Rack-Pinion Gears, Spur Gear, Springs, Generator or Dynamo, Battery, Inverter Circuit, Arduino UNO, LDR Light Sensor, LCD display, Voltage sensor module.**

I. INTRODUCTION

Every part of daily life requires electricity, yet due to population expansion, conventional energy sources are becoming less. Many individuals in India struggle with the problem of having no electricity. Everyone who tried finds the electricity supply to be unpredictable and irregular. Electricity is one example of a reliable, sustainable energy source that India lacks. In the modern world, the availability and consumption of electricity is one indicator of a nation's standard of living. Innovative technologies have been created to improve and make more sustainable the processes used in power generation. India is the country that is most affected by insufficient electricity production. Interestingly, India still has a serious electricity shortage despite possessing the fifth-largest coal reserves in the world. In the modern world, there are many automobiles on the roads, and when they move, they produce some kinetic energy. These vehicles waste a lot of energy on the road because of the speed limiters. There are more speed bumps than ever before, thus it's more critical than ever to develop a novel device that can convert the energy that moving vehicles expend on them into a valuable resource. Electricity-producing speed limits are a novel and practical idea. In general, a moving vehicle produces a number of energies, such as "Heat Energy," which is produced when a vehicle's tires scuff against a rough surface, like a road, or when a fast-moving vehicle encounters the wind. As a result, power can be generated using the weight and speed of a vehicle as inputs. For this project, the generation of power via vehicle pressure has been proposed.

II. RACK PINION MECHANISM

A speed breaker that uses a rack and pinion mechanism to generate electricity is an inventive approach to using the kinetic energy of moving objects to create power. This device, which is attached to a generator or dynamo, is situated beneath a speed breaker. The rack and pinion system rotates the generator or dynamo, which produces electrical energy when vehicles pass over the speed breaker. A voltage sensor module is next used to process the electrical energy that was generated. This module delivers data to an Arduino board after measuring the voltage level of the energy produced. The voltage level data is sent to the Arduino board, which analyses it to decide whether the generated energy is adequate for use or storage. Near the speed limiter is a Light Dependent Resistor (LDR) sensor. This sensor picks up the presence of a car crossing the speed limit. The relay module receives a signal from the LDR sensor when a car crosses the speed limiter. The relay module then turns on a charging circuit, which uses the electrical energy produced by the generator or dynamo to charge a battery.

The charging circuit is built to prevent either an overcharge or an undercharge of the battery. By doing this, the battery's lifespan is increased and harm to the charging circuit is avoided. Many devices and appliances can be powered by the battery's electrical energy. The voltage sensor module and the LDR sensor output data to an Arduino board, which is used to monitor and manage the system. The circuit board is configured to manage the charging circuit when the generated energy is adequate for usage or storage. The information about the voltage level is displayed using an i2c LCD display module. A bulb can be added to the battery charging circuit to show how the system works. The charging circuit will cause the bulb to illuminate, and the frequency of illumination will depend on how frequently passing vehicles push the speed breaker down.

FINGERPRINT VEHICLE STARTER USING ARDUINO

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ABSTRACT

Due to the rising number of vehicle thefts, vehicle security is a pressing concern in today's society. Handling keys in automobiles is another issue. Keys must be carried, and losing or misplacing them will be a serious problem. Using a fingerprint-authenticated vehicle starter system, this issue can be resolved. The system makes it easy and secure to start or stop the engine of a vehicle. To start the vehicle, the user only needs to scan their finger, no key is required. Only authorized users are permitted to start the vehicle by the system. By scanning their fingerprints, users can first sign up for the system. Multiple users can sign up to be authorized by the system. When the system enters monitoring mode, it checks the authenticity of the users. The system checks the user's authorization before starting the vehicle for only authorized users during scanning. Here Arduino microcontroller is made use of. The microcontroller is connected to the fingerprint sensor, push buttons, a motor driver, a starter motor and LCD display are used. The motor serves as the vehicle's starter in the demonstration. Using a fingerprint-based system, this system automates vehicle security in addition to doing so.

Keywords: ***Arduino microcontroller, Automobiles***

1. INTRODUCTION

In the contemporary world, automobiles are a big part of daily life. It is fundamentally necessary for every family. The history of automobile started with the invention of wheel and has been advancing ever since. The automobile we know today evolved as a result of the development of the steam engine. In the past, vehicles were ignited by crank shaft mechanisms.

Leaving that regular technique behind came in the idea of lighting the vehicles utilizing key. Push start buttons are taking the place of keys right now. The primary objective here is to eliminate the traditional use of keys for vehicle start-up. Since the introduction of biometrics in the 18th century, technological advancements in security have reached new heights. The Greek words "Bio" and "Metrics," where "Bio" means "life," and "Metrics" means "to measure," are what give rise to the field of biometrics. The four significant techniques utilized in Biometrics are: Voice, face, palm, iris. There are numerous additional approaches, but these four are the most significant.

Nowadays, there is a lot of emphasis placed on vehicle security because of the rise in vehicle thefts. Handling the keys to the automobiles is another problem. Keys must be carried, and losing or misplacing them will be a severe problem. This issue has a remedy that involves a fingerprint-authenticated vehicle starter system. Biometric-based security, is now being used by almost all automobile manufacturers. In comparison to other biometric sensors, fingerprint sensors are relatively inexpensive. Additionally, they are somewhat simpler to maintain. The justification behind going into biometrics is that its possibilities being copied are extremely less. The technology offers a convenient and safe way to start and stop a vehicle's engine. The owner doesn't need a key to start the vehicle; instead, they just have to scan their finger. The automobile can only be started by people who are authorised by the system. Owners can sign up for the system by scanning their fingerprints. Multiple people can register as authorised users on the system. When in monitoring mode, the system searches for users to scan. Utilising an Atmega 32 microcontroller, the system uses scanning to determine whether the user is an authorised user and only allows them to start the vehicle. The starter motor, push buttons, LCD display, Arduino micro-controller, and all other components are linked to the fingerprint sensor. The motor is used to show how to start a vehicle. This system automates access control and vehicle security using a fingerprint-based mechanism.

The second goal is to lower the price of this technology, which in the present day is available only from premium manufacturers. This is compatible with any two-wheel drive vehicle. Here simplification has been done keeping in view four-wheelers.

Amit Saxena,[1] As fingerprints are the oldest and most popular type of biometric identity and also provide a strong security mechanism for different security domains, the article primarily focuses on the replacement of keys with biometric lock systems, particularly fingerprint-based lock systems in the automobiles.

Prashant Kumar R,[2] Since each person has a distinct fingerprint, the study focuses on fingerprint security. Additionally, eligible users in the module can be added or removed using a keypad.

ISSN: 2278-4632
Vol-13, Issue-05, No.01, May : 2023

GEO MAGNETIC MID-LATITUDE IONOSPHERIC GRADIENT DETECTION BY TIME-STEP METHOD

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Abstract:

The main challenge for GBAS is the instability of the local area ionospheric delay. Ionospheric delay gradients can damage an aircraft's landing system. Studying the ionosphere's spatial gradients is necessary to accomplish this because the approaching aircraft will receive statistics. This paper discusses the time step method to detect the ionospheric spatial gradients. This method allows estimating the ionosphere gradients at both short and long baselines. The Spatial gradients for GPS stations, p502 and p509 located at 32.982^{o}N, 115.421^{o}W and 32.890^{o}N, 115.293^{o}W respectively, are analyzed for the year 2021. The maximum gradients were observed in the month of May with 2.3307 mm/km for the station p509 and the minimum gradients are observed on 23 January 2021 with 0.0008 mm/km.

Index terms: Ground-based Augmentation System (GBAS), Ionospheric delay gradient, Time step method, baseline length selection, ionospheric spatial gradient

Introduction:

The variance in local area ionospheric delay is the primary obstacle to GNSS signal quality at airports [1]. Ground Based Augmentation System (GBAS) augments the satellite-based aircraft navigation system to provide service with improved accuracy and enhanced safety which is superior to the standalone satellite navigation. International Civil Aviation Organization (ICAO) [2] has suggested to install GBAS in place of the existing Instrumental Landing System (ILS) to improve performance at lower installation, maintenance and costs [3].

The GBAS ground facility comprises of three to four predetermined reference receivers, a Very High Frequency (VHF) Data Broadcast (VDB) transmitter and a Master Control Station (MCS). The Global Positioning System (GPS) receiver in the aircraft computes the location of the aircraft. The GBAS receiver receives the differential corrections from the GBAS ground facility. Most GNSS errors that an aircraft encounters in and around an airport can be corrected by GBAS.

The ionosphere exhibits significant temporal and spatial variations in total electron content (TEC) resulting in plasma bubbles and scintillations [4]. TEC is an important parameter in detecting and mitigating errors caused by exceptional ionosphere behaviour. The spatial gradients over mid-latitude regions have been detected in this paper. Spatial gradients are found at the stations p502 and p509 located at the geomagnetic coordinates of 39.42^{o}N, 47.61^{o}W and 39.38^{o}N, 47.47^{o}W respectively.

For GBAS operation, ionospheric parameters were studied in both quiet and disturbed events [5] [6] [7] [8]. The time step method [9], [10] requires TEC observations to estimate delay gradients at a single station at different time instants. For Ionospheric Pierce Point (IPP) selection, time index management was used. The ionospheric height baselines were appropriately adjusted for delay gradient estimation at each time interval. The GPS signal errors due to ionospheric delay between the user and the ground facility [11] is reduced by avoiding the affected satellites.

The indices of geomagnetic activity are excellent instruments for modelling and forecasting the ionosphere's behaviour. The mostly accepted metrics for measuring the intensity of geomagnetic activity are the Kp index and the Dst index over the low and mid latitude ionosphere [12]. The three-hourly quasi-logarithmic index known as the Kp index provides the planetary average value of geomagnetic activity. Its value, which runs from 0 to 9, is a direct reflection of the intensity of the ionospheric storm [13]. A Kp index range of 0 to 3 denotes a tranquil

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 5, May 2023

Voice Controlled Wheelchair

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Abstract: *Speech signals are the most important means of communication in human beings. Almost every conversation to interact is done by means of voice signals. Sounds and various speech signals can be converted into electrical form using a microphone. Physical disability can occur due to multiple reasons like injuries from accident, age related & health problems. Wheelchair is used to provide a mode of transportation for such disabled people with impairments in hands and legs. People with such issues like paralytic people find it difficult to operate the wheelchair manually or using a remote assembly. For such people the project is designed to work on voice-based commands so that the paralytic or disabled person can give direction commands by just speaking into the microphone given. The system also includes directional buttons for wheelchair control using remote. The system consists of an Arduino UNO based circuit interfaced with an voice recognition module that takes speech commands from the user converts this speech into digital data which is then debugged by the micro-controller to get directional commands. The entire system consists of 2 circuits i.e., the transmitter circuit and a receiver circuit. Transmitter circuit comprises of the voice recognition module and the receiver circuit consist of the motor and driver assembly. We use a NRF trans-receiver module for the communication. A 16*2 LCD is used to display the command which is given to the wheelchair.*

Keywords: Arduino UNO, Voicemodule, Driver circuit, Microphone.

I. INTRODUCTION

In exploration it is conceived as an idea to ease the lives of those among us who are unfortunate enough to have lost the capability to move their legs due to a significant quantum of palsy, accident or due to old age. Man, else abled people, generally depend on others in their diurnal life especially in moving from one place to another. For the wheelchair druggies, they need continuously someone to help them in getting the wheelchair moving. Their lives are made delicate by the fact that there's lack of an intuitive control system for their wheelchairs that allows moving singly. Using an electrical wheelchair leads to a large quantum of independence for persons with a physical disability who can neither walk nor operate a mechanical wheelchair alone as it requires great trouble and help of other people. The problem is that in some cases the disability causes someone to lose the capability to use his hands, thus in this case, the way of controlling wheelchair can be done using speech commands for hands-free cases leading to an intriguing and promising outgrowth. But still the vacuity of the smart wheelchair resultsis frequently too limited due to the high costs and not-so-friendly operation. By the proposed approach, described in this exploration, the low- cost, simple and friendly result for the voice- controlled platform will be presented that’s stoner friendly, completely customizableaccording to the language spoken by the stoner and will help in improvement of stoner’s independent mobility. This exploration is ground on Voice- controlled Wheelchair design, by means of Bluetooth technology, design and perpetration of wireless remote- control results. The design also incorporates use of android program and notifies the system and stop the wheelchair till farther command. In this work, Smart Wheelchair control using Arduino Uno and Bluetooth Module via android operation is presented.

DOI: 10.48175/IJARSCT-10060

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 5, May 2023

Automatic Medication Dispenser

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Abstract: *In moment's time there is a growing need to assist the seniors. There is an increase in the death rate of the aged people caused substantially due to the overdose of medicine or because of taking the wrong medicine. Numerous seniors who suffer from Dementia or Alzheimer's may not flashback when to take their medication or what medication to take. This system can be helpful in similar cases. This system helps us in furnishing the correct cure of medicine on the right time to the person. In this paper, we've described the design of the system that sounds off a buzzer and an LED light is turned ON to indicate the time to take the medicine. A communication is transferred to his/her guardian through a GSM Module, if the medicine is still not taken after a certain quantum of time.*

Keywords: Microcontroller, Sensors, Driver circuits, Stepper motor, Servo Motor, GSM Module, Medication

I. INTRODUCTION

The advancement in the medical technology has led to the invention of further and further medications that help in curing the fatal conditions and protract the life of the person. But when the medicine is taken in wrong boluses or if the wrong medicine is taken there's a chance of it oppressively effecting the health of the person and in worst cases may indeed lead to death. The system proposed helps in precluding such a situation. This design can be enforced by making use of a microcontroller, detectors, motors and a GSM Module. This system is effective and also movable so it can be used anywhere like houses, hospitalsetc.

II. LITERATURE SURVEY

According to The National Coordinating Council for Medication Error Reporting and Prevention has defined drug error (ME) as "any preventable event that may beget or lead to unhappy drug us or patient detriment, while the drug is in the control of the healthcare professional, patient or consumer". In Indian, utmost of the cases of drug error are due to the unsound use of the drug. Annually, 7,000 deaths are reported due to the medical crimes. The Data traced back to the recent times shoes that the adverse medicine events was as important as in Delhi and the numbers show that5.2 million medical crimes do annually.

Type of medicine administration errors (n=126)

Type of error	Medicines	Number of medicines		
Inaccurate dose (n=72)		Extra or high dose	Low dose	
	IV fluid (24)	13	11	
	Multivitamins (18)	7	11	
	Furosemide (17)	10	7	
	Co amoxiclav (8)	4	4	
	Salbutamol (3)	1	2	
	Enalapril (2)	2	0	
Errors in dose interval (n=36)		Early	Late	
	IV Fluid (12)	6	6	
	Ceftriaxone (10)	2	8	
	Co-amoxiclav (5)	2	3	
	Metronidazole (3)	0	3	
	Mannitol (3)	1	2	
	Vitamin-D3 (2)	1	1	
	Insulin (2)	1	1	
	Gentamicin (1)	0	1	
Wrong route of administration (n=16)		Oral to IV	IV to oral	Tablet to syrup
	Zinc (8)	0	6	9
	Ranitidine (4)	1	3	0
	Paracetamol (2)	0	2	0
Wrong patient (n=1)	Diagnosis	Wrongly administered		
	Pneumonia	Calcium		

Table 2 Shows some data supporting the statistics

International Journal of Advances in Engineering and Management (IJAEM)
Volume 5, Issue 5 May 2023, pp: 292-295 www.ijaem.net ISSN: 2395-5252

Vehicles Congestion Controller and Penalty System

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Date of Submission: 01-05-2023 Date of Acceptance: 10-05-2023

ABSTRACT

Road accidents are one of the major causes of human deaths. Among the different types of road accidents, motorcycle accidents are common and cause severe injuries. Motorcycle accidents have been rapidly growing throughout the years in many countries. Due to various social and economic factors, this type of vehicle is becoming increasingly popular. The helmet is the main safety equipment of motorcyclists, however many drivers do not use it and other safety measure is to avoid triple rides. The main goal of helmet is to protect the drivers head in case of accident. In case of accident, if the motorcyclist does not use can be fatal. This project aims to propose a system for detection of motorcyclist without helmet and motorcycle with triple ride.

In this paper following are the implementations: 1.When the motorcycles passes through camera it should recognise the no helmet number plate and penalty is sent to that recognised vehicles. 2. When the motorcycles passes through camera it should recognise triple ride of motorcycle number plate and penalty is sent to that recognised vehicles mobile number

Keywords: Python Modules, Visual Studio Code.

I. INTRODUCTION

As social, economic, and transportation factors vary from place to place, the number of motorcycle accidents has increased with time in every country. One of the popular forms of transportation for persons in the middle class is the motorcycle.

The primary piece of safety gear for motorcycle riders is a helmet, however not all drivers use them. Adults ride at excessive speeds and triples because they don't follow the required safety precautions. The structural support that an automobile provides to keep drivers safe and protected makes a motorcycle accident a severe problem for society. Even when a motorcyclist takes every precaution, incidents with injuries still happen.

The main purpose of a helmet is to safeguard the wearer's head in the event of an accident or bike fall. Today, fewer individuals wear helmets, and many disregard traffic laws like those against triple riding. The suggested project assists in upholding proper triple riding regulations and determining whether motorcycle riders are wearing safety harnesses, or helmets, while operating their vehicles.

II. LITERATURE REVIEW

Pezhman Niksaz et. al. [1] proposed a system that estimates the size of traffic in highways by using image processing and the result of the project is a message which is shown to inform the number of cars in highway. This project has been implemented by using the Matlab software and it aims to prevent heavy traffic in highways. The steps implemented in the project are as follows: 1) image acquisition 2) RGB to grayscale transformation 3) image enhancement and 4) morphological operations.

Chandrasekhar. M, Saikrishna. C, Phaneendra Kumar [2] proposed the implementation of image processing algorithm in real time traffic light control which will control the traffic light efficiently. A web camera is placed in each stage of traffic light that will capture the still images of the road where we want to control the traffic. Then those captured images are successively matched using image matching with a reference image which is an empty road image.

The traffic is governed according to percentage of matching. The key point of the paper is the

IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

MELANOMA DETECTION USING MACHINE LEARNING

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***Abstract*--- Melanoma and other skin malignancies are among the most serious medical problems of the twenty-first century due to their difficult and subjective human interpretation and extremely expensive and complex diagnosis. When it comes to lethal illnesses like melanoma, early detection is crucial for assessing the likelihood of recovery. We think the use of automated approaches will aid in early diagnosis, particularly when a batch of photos has a variety of diagnoses. Therefore, in contrast to traditional medical personnel-based detection, we describe in this report a fully automated approach for identifying dermatological diseases using images of lesions. Our model is developed in three stages, which include data gathering and augmentation, model construction, and prediction. Convolutional Neural Networks and Support Vector Machine are two AI algorithms that we combined with image processing technologies to create a better structure and achieve an accuracy of 90%.**

***Index Terms* – Melanoma, Malignant, Convolutional Neural Network (CNN), Support Vector Machine (SVM).**

I. INTRODUCTION

Millions of individuals worldwide are affected by the deadly skin cancer illness melanoma, which has a high fatality rate. Dermatologists manually examine pigmented skin lesions and visually analyze them to identify melanoma at an early stage. However, due to varying accuracy and a dearth of dermatologists, manual examination for melanoma identification is constrained. Therefore, the creation of automated melanoma detection techniques that can precisely identify and categorize skin lesions is urgently required. The most dangerous kind of skin cancer, termed melanoma, arises in melanocytes, which are skin cells.

According to research, alone in the US, around 10,000 people every year pass away from melanoma skin cancer. The aberrant synthesis of skin particles, which later create body cells, is what gives rise to the melanoma skin lesion. These skin moles come in a variety of textures and hues, including brown, pink, red, and black, depending on the melanoma's risk factors. A thorough examination by a dermatologist is required if moles are larger than 6 mm and have an atypical color to determine whether melanoma may be contained. The two categories of melanoma lesions are benign and malignant. Due to the low contrast information between moles and skin, the massive color similarity between infected and uninfected skin portions, the presence of noise, hairs, and tiny blood vessels, variations in color, texture, illumination, contrast, blurring, and melanoma size, accurate localization, and classification of melanoma lesions can be difficult. We provide a powerful and practical melanoma detection technique to overcome the difficulties.

Speed is still a crucial component in the identification of skin cancer. It becomes worse with time, much like any other medical problem. In this study, a machine learning model for detecting malignant melanoma skin cancer was constructed utilizing integrated convolutional neural networks and support vector machines. 3300 photos of both malignant and benign skin cancer were obtained as part of an open-source dataset from the Kaggle website. A total of 80% of the dataset was utilized to train the models, while the remaining 20% was used to test the models. The models were run at Google Colab using TensorFlow, NumPy, and Keras.

Handcrafted characteristics and deep learning (DL) based methodologies can be used to classify existing automated melanoma detection methods. The handmade features employ the essential elements of extraction-based techniques for identifying skin moles. However, because of variations in the size, texture, and color of skin moles, these approaches are unable to detect skin lesions with any degree of accuracy. Following the professional dermatologist's segmentation of the melanoma region from the healthy skin, classification is carried out to improve the accuracy of melanoma detection systems.

ISSN No:-2456-2165

Fault Identification in Solar PV Panels Using Thermal Image Processing Technique

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Abstract:- Photovoltaic (PV) module monitoringand upkeep are essential for a dependable and effective operation. Due to hotspots in PV modules brought on by a variety of flaws and operational issues, the dependability of the PV system may be put in jeopardy. Hotspots should be found and categorized from a monitoring perspective for later maintenance. In this study, hotspots are identified, assessed, and categorized using thermal pictures of PV modules and a machine learning technique. To do this, categorization is based on the texture and histogram of gradient (HOG) features of thermal pictures of PV modules. The machine learning method like Naive Bayes (nBayes) classifier is used to train the images in order to identify the hotspots and classifies them into defective and non-defective images.

***Keywords*:-** *Hotspots, Monitoring, Photovoltaic (PV) Modules, Naive Bayes Classifier, Texture and Histogram of Gradients (HOG) Thermal Images.*

I. INTRODUCTION

Due in large part to the continuing decline in PV module prices and the growing interest in environmentally friendly energy sources, solar PV energy generation and utilization have increased significantly over the past few decades. The use of solar PV modules is widespread, with examples including utility-scale power plants, remote stand-alone telecommunication stations,residential rooftops, and nearly zero energy building facades. The International Energy Agency (IEA) estimates that there are currently more than 400 GWP of installed solar powersystems globally, with crystalline silicon (c-Si), both mono and poly, accounting for more than90%.

According to several studies that show lower performance ratios (PR) under actual conditions, the energy production of a PV system is typically significantly lower than the anticipated performance. Degradation in PV module performance that often begins after the first few years of operation and getting worse over time is frequently brought on by lower PRs. The inspection methods focus on isolating performancedeteriorations rather than assessing the dependability of PV modules, which requires an understanding of the different sorts of faults that can occur when the system is in use. Large PV facilities cannot be monitored using visual inspections and human interpretation. Many contemporary systems incorporate image processing to automate the procedure whereby broken PV modules may be promptly found or categorized into the appropriate categories.

II. LITERATURE SURVEY

Different approaches to fault detection and analysis, including monitoring systems, artificial intelligence based I and C analysis, voltage and current measurements, and power loss measurements, lack precise data and are not decentralized in the system for inverters and fault diagnosis [1]. Assessments of the fully operational power plants were made after evaluating the solar PV system's connections to the grid and its simulation using the MATLAB software [2]**.** Comparisons between the regular model and anticipated values of the proposed system were made using the output readings for the fault systemon PV from the various types of shading. A graph showing the noise for these outputs' detection times and a stability curve for the relevant data were also made [3].

The spectral information is supplemented by thetexture properties. HOG features are utilized for picture identification and image detection by storing the local gradients in the images [4]. Histogram equalization is carried out to increase the contrast to facilitate picture distinction [5]. Modelling a genuine PV system is extremely difficult since electrical characteristics differ greatly between PV systems due to variations in the location, physical layout, and PV module manufacture (including size, material, and ground connection) [6].

IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
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VEHICLE SAFETY AND ACCIDENT DETECTION USING IOT

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Abstract : Due to the increase in demand for vehicles, road accidents and road hazards have increased. People's lives are at grave danger. The victims' chances of dying rise as a result of the ambulance's late arrival at the scene of the accident. Systems that automatically detect accidents may include "VEHICLE SAFETY AND ACCIDENT DETECTION" systems. The Internet of Things (IoT) connects various devices, individual components, and perform operations using inputs provided by sensors. To save the priceless human life, there is a critical need for an effective automated detection of accidents and automatic alerting of the location of the accident and the emergency services. This paper focuses on the alerting and identification of accidents. It depicts the precise longitude as well as latitude of the vehicles that has been engaged in the crash, vehicle collision, and alcohol detection.

Keywords **- accident , IoT, detection, alert**

I. INTRODUCTION

The Association for Safe International Road Travel (ASIRT) predicts that annually, approximately 1.3 million individuals lose their lives in automobile crashes and 20 to 50 million sustain injuries. In the event of an accident, the current solution helps the passengers. The person who is hurt has to manually turn on the assistance function. However, if the person had been in a life-threatening or risky non vital circumstance, it would not have been feasible. An IoT-based system is the approach we provide, when an accident occurs, the "VEHICLE SAFETY AND ACCIDENT DETECTION USING IOT" initiative sends an alert to the nearest emergency centers. Utilizing the both x-value and y-value, an accelerometric sensor is used to measure whether the position of the vehicle has changed. A vehicle collision is detected using a tilt sensor. Along with these sensors, the setup we're proposing additionally comprises an alcohol sensor that will turn on if the driver is intoxicated.

The key findings of this project are as follows: (i) Developing a novel intelligence-based IoT approach that would result in a decrease in crashes (ii) Implementing a safety system that detects the position of the vehicle during a collision and determines whether or whether the motorist has had alcohol. (iii) To provide a system that delivers a warning message that includes the car's location, to the concerned authorities in the event of an accident. This paper starts off by providing an empirical examination of automobile crashes. The literature review, proposed system, methodology, and implementation are all discussed subsequently in Chapters II, III, IV, and V. Results, conclusions, and future scope appear in Sections VI and VII.

II. LITERATURE REVIEW

This section explores the benefits and limitations of existing, comparable systems. Several techniques are available that only assess accidents. There hasn't been a system in place that can efficiently detect and avoid accidents at the same time.
Automatic Vehicle Accident Detection and Messaging System Using GSM and GPS Modems [1] proposes a system that calibrates the accelerometer and checks the connectivity and response of GPS and GSM modules. In this system, accidents are monitored but not prevented. Automatic Engine Locking System Through Alcohol Detection [2], the system uses the MQ-3 sensor to continuously check the alcohol concentration level, and if the level rises above a certain point, it switches off the vehicle's engine. Intelligent Expeditious Accident Detection and Prevention System [3], using data gathered from the tilt sensor, this system determines the accident's severity. It can track the vehicle's tilt angle and provide monitoring for it.

III. REQUIREMENTS

A. DC Motor

DC motors are a type of electrically powered rotating machinery that transforms electrical power into mechanical power. Here, motor is used to replicate the vehicle motor.

IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
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SURVEILLANCE AND FIRE FIGHTING ROBOT

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Abstract: All areas of robotics and automation have undergone a qualitative change as a result of technology. Robots are widely utilized in a variety of fields today, including the military, academia, business, and research and development. A spy robot is a computerized device that is carefully programmed to carry out all of the programmed tasks, aiding in the replacement of human tasks with extremely accurate outcomes and easily surpassing human limitations. Disasters can be averted with little risk to human life by building and implementing an autonomous robot capable of surveillance, detection, and extinguishing flames. The goal of this project is to create a robot using an Arduino, an ESP32 camera, DC motors, sound sensors, fire sensors, and a water tank. The Arduino microcontroller is primarily responsible for regulating robot behavior. Our project's goal is to create a robot that continuously monitors all activity in a catastrophe region. It is designed to detect any type of fire with the aid of sensors and extinguish it by constantly sprinkling water until the fire and smoke go out. A camera and wireless transmitter for real-time video with vision capabilities are also included.

The robot is outfitted with a wireless camera that can relay live video of its surroundings. Four DC motors connected to a motor drive make up the robot, which is powered by a single 12V battery throughout. The water tank within can extinguish the fire when it has been discovered by a fire sensor. If the sound is heard, the robotic vehicle travels forward with a certain intention, pauses at a specific location, and then advances to the next place. Then it will use its camera to scan the surroundings to look for any exposed human faces. As soon as a human is captured, the robot immediately begins to transfer that image. In this study, we demonstrate an autonomous robot that can spot interior fires and move towards them to put them out. This enables wireless remote operation of a firefighting robot equipped with a water tank for putting out flames. Following processing of the commands, the DC motors are made to move the robot in the desired directions. In order to spray water, it also drives the pump direction motor and the water pump motor.

Keywords - Surveillance, Fire Fighting, Extinguishing, Robot, Arduino, ESP32 Cam, Sound Sensors, Wireless Camera, Fire Sensor, Water Tank, Water Pump.

I. INTRODUCTION:

The act of surveillance can be carried out by humans or with the aid of embedded technologies like robots and other automation equipment both indoors and outside. Any machine that operates automatically and takes the place of people. Robotics is a growing solution to guarantee the protection of the environment and human life. Robots are utilized in many ways to increase security. They can function in settings where humans are unable to. Firefighters are called in when a fire gets out of hand. But due of the intense fire, rescue workers frequently suffer injuries. A firefighting robot can help prevent accidents of this nature. Although firefighting is a crucial job, it is also an extremely risky one. Robots are made to locate fires before they spread out of control as a result. It could be utilized in conjunction with firemen to lessen the possibility of injuries to both victims and firefighters.

The term "autonomous fire fighter robot" refers to a robot that can detect and put out fires on its own. It employs a fire sensor to do so and a fire extinguisher to do so. The sensors mounted on the sides of the robot allow it to spin while actively searching for fire. Once the fire is found, the robot may proceed in its direction, halt in front of it, and activate an extinguisher to put it out. The purpose of this project is to create a fire-extinguishing robot. It is anticipated that this firefighting robot design would result in a little yet incredibly strong and adaptable robot. In the disaster-prone location, it finds fire. This will be put into practice using an Arduino board. By detecting the barrier and moving in the direction where there are no obstacles, the fire detection robot avoids the issue of running into it in this situation.

We have used IOT in the project's functioning model. A network of physically connected, networked objects that can be accessed online is known as the Internet of Things (IoT). The term "thing" refers to an object that has been given an IP address and the capability to gather and send data over a network without the help of a person or human intervention. Examples of such objects are a person wearing a heart monitor or an automobile with built-in sensors. The objects' inherent technology enables them to interact with interior conditions or the outside world, which has an impact on the choices made. In our project, we are in charge of driving our robot and issuing the necessary commands.

IJNRD.ORG ISSN : 2456-4184
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AUTOMATIC LPG CYLINDER BOOKINGAND LEAKAGE DETECTION USING IOT

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Abstract: ***LPG Gas cylinders play an important role in every household. Liquified Petroleum Gas (LPG) is a highly flammable mixture of the Hydrocarbon gases (Propylene, Butane, Butylene, Isobutane). When the LPG gasleakage goes unnoticed, it could lead to blasting of cylinder and can be life threatening. Therefore, constant monitoring of LPG is required. Generally, Gas booking is done by approximating the amount of gas left in the cylinder, which is not feasible. The main purpose of this project is to detect the gas leakage and to automate the booking of gas cylinder. When the gas detected by the MQ-6 Gas sensor exceeds certain level, buzzer and Exhaustfan will be switched ON immediately. Then the user is notified about the leakage through GSM Module to take necessary actions. To prevent further damages caused due to leakage, regulator of the gas cylinder will be switchedOFF automatically. When the weight measured by the Loadcell falls below a specified limit, it is notified to the gasstation directly to book the new gas cylinder. This system can widely be used in chemical industries, automobiles, domestic purposes. This project can further be improved by using a voice based feedback system, which will notifythe user through voice messages.***

Keywords— ***Gas Booking, Gas Leakage.***

1. INTRODUCTION

Home security has changed a lot from the last century and will be changing in coming decades. Security is an important aspect in the smart home applications. The new and emerging concept of smart homes offers a comfortable, convenient and safe environment for occupants. This system keeps home owners, and their property, safe from gas leakage by giving the indication in terms of short messages. Intelligent homes in simple terms can be described as homes that are fully automated in terms of carrying out a predetermined task, providing feedback to the home users and responding according to the situations. This paper is aimed at designing a GSM based automatic LPG cylinder bookingand leakage detection using loadcell and MQ-6 sensor respectively.

LPG is a highly flammable gas having a composition of Propane, Butane, Butylene, Isobutane. It is generally used for domestic purposes, automobiles and in industries. As LPG cylinders are more prone to leakages which are dangerous, therefore we need a gas leakage security system. This system requires Arduino UNO board, MQ-6 gas sensor,Loadcell, HX711 amplifier, LCD display, buzzer, GSM module, exhaust fan and servo motor. This system has two phases, leakage detection and automatic booking. The first step of this system is to detect the leakage of gas using MQ-6 sensor .When the gas leakage is greater than a specified level the buzzer and Exhaust fan will be switched ON immediately. Then the user is notified about the leakage through GSM Module to take necessary actions. To prevent further damages caused due to leakage, regulator of the gas cylinder will be switched OFF automatically. The second step is to measure the weight of gas cylinder using load cell. The HX711 amplifier is used as A/D converter . When
the weight measured by the loadcell falls below a specified limit, it is notified to the gas station directly to book the newgas cylinder.

IJARCCE ISSN (O) 2278-1021, ISSN (P) 2319-5940

International Journal of Advanced Research in Computer and Communication Engineering

ISO 3297:2007 Certified ⁜ Impact Factor 8.102 ⁜ Peer-reviewed / Refereed journal ⁜ Vol. 12, Issue 4, April 2023

DOI: 10.17148/IJARCCE.2023.124128

AUTOMATED PETROL PUMP SYSTEM

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Abstract: Petroleum products are one of nature's unique and valuable creations, thus it is important to use and distribute them properly. The project's goal is to develop an RFID-based system that can automatically deduct the amount of petrol dispensed from the user card. The fuel systems are currently manually controlled. These petrol pumps are time-consuming and labour-intensive. Simply place the RFID card close to the RFID reader whenever we wish to fill the tank from the fuel dispenser. The microcontroller then reads the information from the RFID reader and executes the action in accordance with the demands of the consumer. By eliminating human intervention, this automated petrol pump system also offers customers security when filling up at petrol stations, lowering the risk of carrying cash constantly. When RFID reader reads the card, the system asks for the amount and it also shows the balance amount. On entering the amount, the motor starts and petrol gets filled in the petrol tank from the fuel dispenser.

Keywords: RFID, Microcontroller, Fuel Dispensing System, Automation.

I. INTRODUCTION

The increase in the number of vehicles in India in recent years has led to congestion and traffic jams in almost all cities of India. The dispensing of the fuel to such a huge number of vehicles at the fuel stations has caused many complications in India. The vehicle driver has to pay for fuel and sometimes, they may have to pay more than the amount of dispensed fuel due to the lack of change available with station operator. Everything has been digitized. In many existing systems, almost all petrol pumps have a controlling unit to perform the tasks like managing the electrical pump, drive the display, measure the flow & accordingly turn OFF the electrical pump. But still a person is required to collect the money and there is a possibility of many human errors. RFID Based Automatic Petrol Pump is used to reduce human work, to develop an auto-guided mechanism and to implement the task sequentially by RFID technology. These dispensing systems are highly reliable and less time-consuming devices. This petrol pump system consists of 8051 microcontroller, RFID module, LCD display, push buttons, keypad, smoke sensor, moisture sensor, relay and an AC pump.

II. RFID TECHNOLOGY

An object, animal, or human can be individually identified using RFID (radio frequency identification), a type of wireless communication that uses electromagnetic or electrostatic coupling in the radio frequency region of the electromagnetic spectrum. A scanning antenna, a transceiver, and a transponder are the three parts of every RFID system. An RFID reader or interrogator is the name given to the device that combines the scanning antenna and transceiver. RFID readers come in two different varieties: fixed readers and mobile readers. The RFID reader is a portable or permanently fixed network-connected device. The signals that turn on the tag are sent via radio waves. When a tag is activated, it transmits a wave back to the antenna, where it is converted into information. The RFID tag is the built-in transponder. The type of tag, reader, RFID frequency, and interference from other RFID tags and readers are some of the variables that affect the read range of RFID tags. The read range of stronger power source tags is also longer.

An integrated circuit (IC), an antenna, and a substrate make up RFID tags. The RFID inlay is the area of an RFID tag that encodes personal data. In every RFID system, low-power, embedded non-volatile memory is crucial. RFID tags typically contain a unique identifier/serial number and less than 2,000 KB of data. Tags can be read-only or read-write, allowing the reader to add new data or overwrite already existing data.

IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
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OVER SPEED INDICATION THROUGH GSM

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***Abstract*- Rash driving is a major cause of traffic accidents all around the world. Traffic congestion is getting worse as the rate of vehicle increase accelerates. Most Indian cities experience a variety of traffic-related problems during peak hours, including congestion, accidents, pollution, and other problems. Young adults are most at risk for deadly accidents, and one of the main causes of the rise in accident frequency nowadays is over speeding. The methods used for over-speed monitoring are numerous. However, a lot of labor is needed to use these techniques. This project focuses on the design and execution of a system that enables parents or the vehicle owner to easily keep an eye on their cars from their homes. An IR sensor is used by this system to continuously determine the vehicle's speed. Any vehicle's speed is informed to the driver with a buzzer and is shown on an LCD screen when it exceeds the speed limit. Until the driver resumes driving at a normal speed, the buzzer will not stop.**

Additionally, the system has a GSM and GPS module. When a vehicle exceeds the posted speed limit, the GSM module notifies the owner of the car, and the GPS module provides location data for the vehicle. On the phone, an app is installed that enables car tracking whenever the owner desires. The gives out the live location of the vehicle. This system not only aims at the over speeding of the vehicle but also protect private vehicles from theft.

***Keywords* –IR Sensor, Over speed, GPS, GSM, LCD.**

1.INTRODUCTION

Among different modes of transportation, road transport is most widely used around the world. Public transit is more commonly used in India. As the years went by people began to enjoy the comfort of owing their own vehicle. There are atleast two vehicles in almost every Indian household. By the end of 2035, predictions indicate that there will be almost 2 billion cars on the road worldwide. Road accidents are on the rise in tandem with the percentage of vehicles on the road, and overspeeding is one of the major contributing factors. Young individuals are most at danger because they often feel the urge to drive faster than the posted limit. This poses a threat to everyone nearby in addition to them.

Speed control measures like speed breakers are kept but only in highly populated areas. Monitoring of speeding vehicles manually is difficult mainly in highways or cities, because a lot of vehicles keep passing by for every minute. Another way is radar guns, they are typically used by traffic enforcement to measure vehicle speed. They would have to ask the driver to stop and issue a speeding ticket if the vehicle's speed was beyond the specified limit. However, the driver frequently chooses to disregard the police and continue driving, which prompts the traffic police to pursue and stop the driver. The whole process is very tedious to the officers incharge.

The issue that we are attempting to solve here is that there is no method to keep track of this excessive speeding, and as a result, no means to keep track of this high speeding. Here, we want to make sure that overspeeding-related traffic incidents are minimized and closely monitored by the competent authorities. To accomplish our goal, we developed a hardware component that will be installed inside the car and will allow us to track the speed of the car while also securing it.

2.RELATED WORK

1. **Prof. S. B. Deokar et al. [1]** has proposed a system with two modules—one for track monitoring and the other for train tracking. It employs two ultrasonic sensors, one in the IR, to keep an eye on the track. In this scenario, the ultrasonic sensor determines the obstacle's perpendicular distance while the IR sensor identifies the obstacle on the track. The Raspberry Pi receives these sensor readings from the IR and ultrasonic devices.
Using Raspberry Pi increases the cost of the model, which is one of its drawbacks. when utilizing a Wi-Fi module is ineffective and may be accomplished with Arduino.

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Research Article

Turbo-Coded Mimo-OFDM Channel Estimation Using the Chaotic Grey Wolf Optimizer and Genetic Algorithm

Chennapragada Padmaja & Boleti Lakshmi Malleswari

Published online: 05 Apr 2023

Cite this article https://doi.org/10.1080/03772063.2023.2180227 Check for updates

Abstract

Turbo-Coded multiple-input multiple-output orthogonal frequency division multiplexing Channel Estimation, using Chaotic Grey Wolf Optimizer and the Genetic Algorithm (TC-MIMO-OFDM-Hybrid-CGWO-GA), is proposed in this manuscript. To enhance the performance of the bit error rate (BER), the proposed turbo code lessens

the maximal correlation of the channel in the frequency domain. Initially, the channel is estimated using LS-MMSE individually using Chaotic Grey Wolf Optimizer (CGWO)

JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

SMART COMPOST BIN FOR DOMESTIC WASTE

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Abstract : In India today, only 5% of waste is recycled, and 77% of trash is disposed of in open landfills. According to bin audits, between 40 and 60 percent of the waste being dumped in landfills is organic waste. In India, open dumps are quite prevalent, which promotes the spread of mosquitoes, flies, rats, cockroaches, and other pests. Environmental issues have increased as a result of the amount of organic waste in municipal solid waste. Estimates suggest that it can be composted to a level of roughly 50%. Instead, the majority of it is burned and disposed of in landfills. It highlights how the great potential of composting organic waste is being under-utilized. Reducing the quantity of trash entering the main waste stream at home is simple with composting. Vegetable peelings are a particular kind of kitchen waste that have a number of distinctive qualities, including a high water rate, a high percentage of organic matter, and good biodegradability. Such waste can be composted biologically to be recycled, reduced, and made harmless. By examining the experimental results for the composting and fermentation of vegetable peels and leaves, a home-use automatic composting bin was developed. The objective of this paper is to develop an automated compost bin for residential kitchens that decomposes organic waste more quickly when the correct conditions exist. It combines a bio-waste treatment method with an aerobic composting approach.

IndexTerms **– Composting bin, autonomous composting, smart composting, waste recycling , domestic waste recycling.**

INTRODUCTION

Growing organic waste in the environment is having a significant worldwide impact. Organic garbage makes up 50% of the total amount of municipal solid trash produced in India. Statistics show that by the end of 2016, there were around 80 million tons of kitchen garbage produced annually. At an annual growth rate of 8% to 10%, this amount is predicted to increase by 7-8 times by the year 2030. Vegetable peels and leaves, a significant part of kitchen garbage, have a moisture content of up to 70% to 80%, and 93% of the waste is organic. Moreover, the nitrogen, phosphorous, potassium, and other nutrient contents are reasonably high, thus the compost products can be utilized as organic fertilizers. However, due to the dispersed nature of the kitchen waste production areas as well as the high levels of moisture and organic matter, acidification, mildew, and corruption can easily result in the production of a wide range of pathogenic microorganisms that may pollute the environment when the waste is transported and recycled together.

The biological decay of organic matter is considered to be a more honorable procedure than many other organic waste disposal techniques, such as landfilling and incineration. Reusing organic debris and leftover nutrients on farmland is a practical and desired idea. Compostable waste producers can use land application as a cost-effective outlet, while landowners may find it to be an inexpensive source of organic matter and fertilizer components. For many years, composting has been used as a method of recycling organic matter back into the soil to improve soil structure and fertility.

Composting is one of the most promising technologies to treat wastes in a more inexpensive way. T. A. Saleh et al. (2011) [4]. One of the unique low-cost and budget-friendly biological deterioration processes is composting. Bacteriological activity surrounds the composting process. Compost temperature, moisture content, the C: N ratio, soil condition, and aeration are some of the significant factors impacted by this process.

Since different forms of organic wastes have varying percentages of nutrients, including nitrogen, phosphorous, and potassium (N, P, and K), which are the major macronutrients found in fertilizers, many factors can affect the quality of the compost products. Heavy metals' presence demonstrates how composts can be applied to soils without causing any harm. Temperature, pH, moisture content, and the carbon-to-nitrogen ratio (C:N) are the primary variables that impact how effectively compost is produced. In 2016[10], A.K. Kadir Aeslina et al. Several rural and suburban regions have long used traditional composting techniques (pit, heap) using various sorts of organic materials.

The physical, chemical, and biological characteristics of soil, such as their texture, structure, ability to hold water, porosity, particle density, and microbial activity, are changed by compost, which serves as an additional source of organic matter. These changes make soil more suitable for plants' nutrient needs. The bulk density value varied from 420 to 655 kg m-3. The readings for the moisture content were between 23.50 and 32.10 percent. The values for the water retention capacity ranged from 3.50 to 4.40 g water/g dry. For various compost types, the porosity values ranged from 60.69 to 72.47%. With various types of compost,

IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
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Sign Language to Text and Speech Conversion Using Image Processing and Machine Learning

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Abstract **:** Communication is crucial for understanding one another's feelings and thoughts. However, those who are mute or unable to hear or speak are unable to communicate their ideas or comprehend what others are saying. They can only understand sign language, and since many of us do not know sign language, communication has become quite difficult. With the advancement of technology, every issue may be solved. There is a way for deaf and dumb persons to communicate their thoughts and comprehend those of others through the use of machine learning and image processing. We are developing a human computer interface system in this project that accurately recognizes the language of the deaf and the dumb. As the hand plays a crucial role in communication, the vision-based hand gesture recognition system has been explored in this study. Various strategies for hand tracking, segmentation, feature extraction, and classification are mentioned. Webcams are used to record the images, which are then analyzed using image processing techniques like the OTSU method. The captured gestures are then classified using a linear classification algorithm. The gestures that were recorded are now saved in files with 120 copies of each gesture. Histograms are used to record image gesture.

Keywords: **Sign Language Recognition, Hand Gesture Recognition, Image Processing, OTSU Method, Feature Detection, Feature Extraction, Naïve Bayes Classifier, Machine Learning.**

I. INTRODUCTION

Deaf and dumb persons can communicate via sign language, a nonverbal form of communication. Regional sign languages include ASL (American sign language), ISL (Indian sign language), and BSL.(British Sign Language). However, as English is a widely spoken language in many areas, ASL is seen as a widespread sign language. An image-based, human-computer interface is created utilising machine learning and image processing. Using machine learning, we store all images of sign language in this. When sign language is displayed in front of a camera, an image can be captured, processed using stored images, and output displayed as text before being translated to voice.

There are numerous strategies used in this, including feature extraction, segmentation, and hand tracking. This method is used to process the image. The OTSU method, which performs picture thresholding by dividing pixels into foreground and background, is a key approach in image processing. This allows us to remove any unnecessary context and obtain precise input for picture processing. We can save sign language signals in learned data for machine learning. When classifying data using the Naive Bayes approach, the classifier makes the assumption that the existence of one feature in a class is unrelated to the presence of any other feature.

II. METHODOLOGIES

2.1 Sign Language

An organised language with a phonology, morphology, syntax, and grammar is sign language. A full-fledged natural language, sign language employs numerous modes of expression to facilitate ordinary communication. The communication is transferred from human-human to human-computer interaction through sign language recognition software. Therefore, sensor-based and vision-based approaches are the two basic methods employed in sign language recognition. Vision-based strategy. In this method, a camera captures a gesture, identifies its key features, and records the image. Image processing methods are used to capture the image, and machine learning methods are used to obtain audio and text based on the image. This method's primary benefit is that it provides the highest level of accuracy and resilience.

2.2 Image Processing

Image processing is a technique for applying certain operations to an image to produce an improved image or to extract some relevant information from it. It is a kind of signal processing where the input is an image and the output can either be another image or features or characteristics related to that image.

OTSU Approach: is employed to carry out automatic image thresholding in computer vision and image processing. The algorithm returns a single intensity threshold in its most basic form, dividing pixels into the foreground and background classes. This threshold is established by maximising inter-class variation or, alternatively, minimising intra-class intensity variance. Otsu's approach is comparable

IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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IOT BASED WIRELESS ELECTRONIC NOTICEBOARD

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Abstract: The proposed system aims to develop an IoT based wireless electronic notice board that can display messages from a remote location. The system consists of a microcontroller unit that is connected to the internet and receives messages from a cloud-based server. The microcontroller unit is connected to an electronic notice board, which displays the message, announces the message, and counts the viewers. The system is designed to be flexible and scalable and electronic notice boards to expand the system's coverage area. The system offers several advantages over traditional notice boards, including ease of use, convenience, and the ability to update messages remotely. IOT based Wireless Notice Board using Arduino is cheap, quick reliable and secured for any organization that requires to circulate notice regularly and reduce physical efforts. Overall, the IOT based wireless electronic notice board is a cost-effective and efficient solution for displaying messages in public spaces.

Index Terms **- IOT, Microcontroller unit, Arduino, internet, cloud-based server, Wireless noticeboard.**

I. INTRODUCTION

One of the most popular methods of mass communication, notice boards are utilized in everything from primary schools to enormous corporations. Numerous organizations utilize a lot of paper, which is then wasted. An IoT based wireless noticeboard is a smart device that allows for remote and automated display of messages and information. This device is connected to the internet and can be controlled via a smartphone. The system consists of an electronic display, wireless communication technology, and a microcontroller unit that receives data from various sources and updates the display accordingly. In addition to this this system also counts the number of viewers who watched the notice.

The use of wireless noticeboards in various public places such as schools, colleges, offices, hospitals, and shopping centres has become increasingly popular in recent years. These noticeboards provide a convenient and efficient way to communicate information to a large audience. The IoT based wireless noticeboards have several advantages over traditional noticeboards. They are more flexible and can be updated in real-time from any location. The system can be integrated with other IoT devices to provide a comprehensive and automated solution. Overall, IoT based wireless noticeboards are a powerful tool for communication and can greatly improve the efficiency and effectiveness of information dissemination in various public places.

II. RELATED WORK

"Design and Implementation of a Smart Notice Board Based on IoT" by S. Al-Sharif et al. This paper presents the design and implementation of an IoT based wireless noticeboard that can display real-time information such as weather updates and news feeds.[1]

"IoT Based Electronic Notice Board Using Raspberry Pi" by K. N. K. Rao et al. This paper presents a wireless noticeboard system based on the Raspberry Pi microcontroller unit that can display text messages, images, and videos.[2]

"Development of an IoT based Interactive Smart Notice Board for Educational Institutions" by R. H. Kulkarni et al. This paper presents the design and implementation of an IoT based wireless noticeboard system for educational institutions that can display class schedules, announcements, and other important information.[3]

"Smart Notice Board Using IoT: A Review" by N. Gupta et al. This paper provides a comprehensive review of various IoT based wireless noticeboard systems and their applications in different domains such as healthcare, education, and transportation. Overall, these studies demonstrate the potential of the IoT-based wireless noticeboards in various domains and highlight the need for further research and development in this area.[4]

IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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SMART LIBRARY MANAGEMENT SYSTEM

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Abstract: The library plays a crucial role in education, and its staff often face tedious tasks such as lending, and tagging books. Library users also encounter problems such as finding, borrowing, and renewing books. To overcome these obstacles, a proposed smart library management system based on RFID scanning can make the library experience more convenient and practical for both users and staff. The system will integrate ID cards into the library management process, automating many tasks such as borrowing and returning books. This will make it easier for users and staff to manage their workloads more efficiently. The project is motivated by several challenges faced by the current library system, such as loss of book information, slow transaction processing, and difficulty in updates.

The proposed library management system has a feature where the login and logout timings of students or faculty members are posted onto the Thingspeak server of the IoT cloud. This feature helps in maintaining a record of the entry and exit times of the students or faculty members, which can be useful in tracking their activity in the library. The data stored on the Thingspeak server can be accessed remotely and can be used for generating reports, analyzing usage patterns, and making informed decisions about the library's operations. This feature enhances the transparency and accountability of the system and ensures that the library management can keep track of the library's activity even when they are not physically present.

The system has a significant feature where it sends a text message to the registered mobile number if the due date for returning the book has passed. This feature ensures that the students or faculty members are reminded about the book they borrowed and prompts them to return the book within the stipulated time. This is a very important feature as it helps in maintaining the discipline of returning books on time and avoids fines or penalties. Moreover, it also helps in ensuring the availability of books for other students who need them. This feature makes the system more efficient and user-friendly, making it an ideal solution for library management.

Additionally, the system will include automation for fans and lights, reducing electricity waste. The proposed system, which utilizes Arduino sensors and a GSM module, will help overcome these problems and provide a smarter, more useful library management system. Overall, the proposed system aims to enhance the library experience for both staff and users, providing a more efficient and effective approach to library management.

Index Terms- RFID scanning, managing workloads, Thingspeak server, Due date reminder, Reducing electricity wastage.

I. INTRODUCTION

The library is a crucial resource for learning and education, as it provides access to a vast collection of books and information resources. However, traditional library systems often face problems such as inefficient management of book records, slow processing times, and high-power consumption.

To address these challenges, a proposed library management system using RFID technology can offer several benefits. RFID tags and readers can automate the process of issuing and returning books, reducing the workload on staff and providing more accurate and up-to-date information of book. Additionally, the system can automatically turn off lights and fans when not in use, reducing energy consumption and costs.

With the new system, library staff can work more efficiently and effectively, providing better service and support to students and faculty members. By automating the process, staff can spend more time on other critical tasks, such as organizing the library and helping patrons to issue/return the books they need. The proposed system can also provide real-time updates on login/logout timings, allowing staff to make data-driven decisions to improve library services.

II. PROBLEM DEFINITION

One of the major issues in today's library systems is the lack of accurate information regarding book issuance and return. To address this problem, a proposed smart library management system utilizing RFID tags and readers can be implemented. The system can automatically scan the tags and display the book's name and author on an LCD display, eliminating the need for manual entry by library staff. The system is powered by a +5v DC supply, requiring no human intervention for its operation.

Another problem faced in libraries is the wastage of electricity due to fans and lights being left on even when the library is empty. The proposed system can address this issue by automating the operation of fans and lights, turning them off when no one is present in the library. Overall, implementing this smart library management system can enhance the library experience by improving the accuracy of book records and reducing unnecessary energy consumption.

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Door Lock System Using Face Authentication and Arduino UNO

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***Abstract*- Privacy and Security are two of the most important universal rights. Over the course of the past decade, security and automation systems have been gaining an incredible amount of popularity because of the advancements made in the field of science and the concomitant risks of breaking into the system, and face recognition has played a significant role in both phenomena. In a wide range of applications, including biometrics, surveillance, security, identity, and authentication, face recognition plays an essential function. In this paper, we have described a smart security system for highly secured places where access is limited to people whose faces are available in the training database and if an unauthorized person tries to access the system, then the system will immediately capture that person's image and sends an alert email to the owner with the captured image.**

***Keywords* - LED, GSM, CCTV, CV, LBPH, GPIO**

1.INTRODUCTION

In today's world, as technology advances, so do human facilities. With the adoption of numerous technologies, people's daily life has significantly improved. Yet, it also leads to security problems. Traditional door locks have the drawback that virtually anyone can pick them up and gain entry to your home. As a result, solving these issues is extremely difficult. Most of the time, people use CCTV to secure their homes. Pictures will be kept in the database so that they can be retrieved when a suspicious situation occurs. This method of action is passive. Yet, a proactive strategy is required. This kind of strategy is nothing more than the one that allows for quick action once a security threat materializes. Thus, a face recognition system can be employed, which recognizes the face of the person standing close to the entrance and compares it to the uploaded faces saved in the database. The door will open to welcome everyone who is recognized. The owner will receive a mail with an image of the intruder.

2.LITERATURE REVIEW

1. Smart IoT-based Facial Recognition Door Lock System:
It is a smart IoT-based door lock system that uses facial recognition technology to detect intruders and take proactive security measures. The system works by comparing the faces of individuals near the door with those stored in a database, and if an unknown person is detected, a message and email with an intruder image are sent to the owner. The system employs Raspberry Pi, a Pi camera, DC motors, LEDs, and a GSM module to open the door, indicate its status, and send notifications to the owner's mobile number. However, while the system has potential benefits for security, it's crucial to address privacy and security concerns related to facial recognition technology and ensure that the system is reliable and accurate in identifying individuals.

2. Color Image Edge Detection" aims to reduce the amount of data required for facial recognition by decreasing the information needed to be stored for each user. By using this technique, it is possible to create a CV of a person's face using either greyscale or colored images, which provide sharp edges to the individual. This results in using less data traffic to transfer information between the accessor and the primary user. It can make the process of entering new user details more efficient and accurate, as the primary user performs image reconstruction and edging. However, the accuracy of edge defining may not be sufficient for verification purposes because people with similar face cuts may have comparable edges. Therefore, it is crucial to consider the limitations of this method before implementing it for facial recognition. Moreover, while this technique may speed up the process of entering new user details when the primary user is located remotely, it is important to prioritize accuracy to ensure the system is effective in verifying the user's identity. In conclusion, the Color Image Edge Detection technique is useful in reducing the amount of data required for facial recognition, but accuracy should always be the top priority.

International Journal of Engineering Applied Sciences and Technology, 2022
Vol. 7, Issue 12, ISSN No. 2455-2143, Pages 132-136
Published Online April 2023 in IJEAST (http://www.ijeast.com)

FACE RECOGNITION BASED ATTENDANCE SYSTEM USING ESP 32CAM

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Abstract: **Attendance recording is critical in current environment for increasing the quality of any industrial system. Accordingly, a strong computerised Face detection attendance recording system using an ESP32 camera is required. Every organisation has a stringent policy requiring attendance. Maintaining an attendance register manually involves effort and time. RFID and biometric technology, for instance, are two approaches to the same problem. This analysis describes an effective and inventive technique for validating attendance and detecting presence. The ESP32 microcontroller family has dual-mode Bluetooth and built-in Wi-Fi. In contrast to biometric attendance systems, this facial detection-based technology does not require someone to be close to the fingerprint reader module. When the same student or employee uses the biometric attendance system to record their attendance, the biometric device becomes contaminated. And in case of RFID chances of proxy is high. Using facial recognition technology, this forecast will track employee or student attendance.**

Keywords: **ESP32 CAM, Face Recognition, Face detection, IR Module, FTDI Module.**

I. INTRODUCTION

Face recognition-based attendance systems are dislodging other types of attendance systems, such as RFID systems and biometric systems. This endeavour aids in the reduction of proxies and the reduction of the infecting problem [1]. In this project, the ESP32 CAM module is used in conjunction with an IR module to detect an object, an FTDI module to control the board and transmit data from the cam module to the system, and a regulated power supply to provide the proper amount of power supply to the ESP32 module.

This solution is intended to reduce the shortcomings of the current manual approach by automating the organisation's attendance [2]. The infection spreads quickly using biometric attendance systems. The most popular attendance method is based on biometric technology in many institutions and colleges [3]. If an infected worker accidentally touches the biometric system to record attendance, the system will get contaminated, and the virus will have a chance to propagate quickly. The intention behind creating an attendance management system is to automate the manual process of taking attendance. The everyday tasks of attendance tracking and analysis are carried out by an automated attendance management system with little assistance from humans. The proposed approach in this paper makes use of facial recognition. Face recognition is frequently used in video surveillance, access control, and authentication applications. This technique uses an ESP32 camera sensor to track a person's face continuously. By eliminating the need for human attendance recording, this system will reduce the amount of paperwork. The new approach will also cut down on the overall amount of time needed to record attendance. To ensure the accuracy of the attendance data, the new system will collect individual attendance using facial recognition.

An effective method for face detection and recognition employing Viola-Jones, fusion of PCA and ANN approaches is presented by Deshpande, N.T., and Ravishankar [4]. When the suggested approach's performance is compared to that of other face recognition techniques now in use, it is shown that the proposed method achieves a higher level of recognition accuracy. Face detection and recognition using the Viola-Jones algorithm is essential for a variety of applications. Since a high rate of identification accuracy is sought in the majority of applications, the proposed approach can be weighed against others already in use.

The author [5] has talked about the state of the school system right now and other places where attendance is manually recorded. Despite the availability of numerous technologies, we continue to use the manual method of recording attendance. They personally record the attendance and update it on their separate portals. We can utilise RFID tags and the Internet of Things (IOT) to exploit this system, allowing us to automatically take attendance. With the Internet of Things, we may leverage the cloud as storage to boost speed

Because a person is too sluggish to attend a specific class, another person assists him/her in signing for attendance, despite the fact that the person did not attend the class, but the system misses this matter due to a lack of enforcement, according to author [6]. If the institution implements enforcement, it may have to waste large human resources and time, which is not feasible. As a result, the old system's recorded attendance is no longer reliable for research. The administrator enters the daily attendance into the database. When a specific student photograph is recorded, the

International Journal of Advances in Engineering and Management (IJAEM)
Volume 5, Issue 4 April 2023, pp: 1713-1718 www.ijaem.net ISSN: 2395-5252

Smart Helmet for Tracking Coal Miners

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Date of Submission: 20-04-2023 Date of Acceptance: 30-04-2023

ABSTRACT

Mining is required for the production of goods, infrastructure, and services that improve the standard of living for people. The society is fortunate to use a wide variety of industrially produced goods. By processing the mined raw resources, they produce these goods. The risk to a mineworker's life is extremely high. For the safety of those who work in mines, there are various issues that must be addressed. The suggested idea is a safety solution for the mining sector that uses a worker helmet-mounted microcontroller-based circuit. A GPS modem is built inside the helmet along with other sensors to track the worker's whereabouts. a GSM modem to communicate the dangerous circumstance and the worker's position. Additionally, each worker helmet circuit includes a panic (emergency) button. A message will be sent to a mobile device and a bell will immediately burst out when this panic switch is touched. Any emergency, such as the intake of hazardous gas or physical injuries, can be treated with this. The presence or absence of a helmet is additionally determined using an IR sensor. If the worker takes off his helmet, the buzzer will go off and a changing message will be sent to both his and the manager's mobile phones. The system therefore assures the security of mining employees.

Keywords: GSM, GPS, DHT22 sensor, IR sensor, MQ7 sensor, MQ2 sensor, Buzzer, Panic switch.

I. INTRODUCTION

Extraction of rich minerals from the earth is known as mining. Due to the need for metals and other resources brought on by the world's fast industrialisation and urbanisation, it is significant in today's society. India is a country with vast natural mineral and precious rock deposits. Some of the mining methods employed in the nation include quarrying, high wall mining, surface mining, and underground mining. In India, there are roughly 11 mines for coal, 13 mines for iron ore, 9 mines for bauxite (aluminium ore), 5 mines for manganese, 5 mines for copper, 3 mines for diamonds and 2 mines for gold.

Due to issues with mine ventilation, risk from hazardous gases, events like rock falls, and head injuries, the mining business has a significant risk of injury. These pose a serious risk to the security of miners. In the mining sector, there are occasionally minor mishaps, but two significant mining accidents that happened in India made people reevaluate the security of miners. The Jharkhand coal mine tragedy, which killed 11 miners and trapped more than 50, and the Chasnala mining catastrophe, which claimed 372 miners' lives. Therefore, a safety device is required to safeguard miners and save them in the event of such occurrences. The ground centre can be informed of environmental changes that could jeopardise the safety of miners using sensors. It is uncomfortable to operate a wired communication system underground due to the maze of tunnels. The expense of installation and upkeep is likewise significant. Also, traditional cable communication cannot be used in situations involving fire, rock falls, or explosions.

A mining helmet could be upgraded by adding technology to improve the safety of the miner. Each miner's helmet is equipped with a sensor circuit that monitors environmental changes, transmits them to a control unit, and then sends messages to mobile devices in response.

The development of this safety helmet took into account exposure to dangerous gases, changes in temperature and humidity, and the addition of a GPS module to track the worker's location when he is in a dangerous situation and send that location to a mobile device and the control unit. The miner is given an extra functionality, the panic button. When Miner wants assistance, he can press that button.

The majority of communication between the mining industry and the ground centre is done via cables and wired networks. When an accident occurs in a mine, the sensors and wires are

Published: 19 April 2023

A Novel Intelligent Channel Estimation Strategy for the 5G Wireless Communication Systems

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Wireless Personal Communications **130**, 2727–2751 (2023)

Abstract

Nowadays, the Multiple Input Multiple Output (MIMO) Orthogonal Frequency Division Multiplexing (OFDM) is an important method used in wireless communications, especially in 5G cellular communications. As in a wireless network, the input signals pass through a channel, and the input signal undergoes phase shift, attenuation, and interference. So, the information from the user side and the received signals differ. Thus, an effective channel estimator is essential to make cellular communication better. Hence, a novel hybrid technique called Chimp-based CatBoost channel

International Journal of Engineering Applied Sciences and Technology, 2022
Vol. 7, Issue 10, ISSN No. 2455-2143, Pages 76-79
Published Online February 2023 in IJEAST (http://www.ijeast.com)

AN ARTIFICIAL INTELLIGENCE-BASED SPEAKING SYSTEM FOR DUMB PEOPLE

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Abstract— **For deaf-mute people all around the world, Gestures are the main mode of communication for Deaf-Mute people worldwide. In this gesture-based voice system, machine learning presents a real-time vision-based system for monitoring hand finger gestures. It was developed in Python using Raspberry Pi along with a camera module, which is compatible with the Open CV library for computer vision. The Raspberry Pi includes an image processing technique that monitors the fingers of the hand using the extracted attributes. The main purpose of a gesture based speaking system is to develop control communication between humans and computers. This leads to a system that can recognize and monitor known objects and has surveillance and application capabilities. The major goal of the suggested work was to allow the system to function properly. The main objective is to enable the system to recognize and monitor certain properties of objects specified by the Raspberry Pi along with camera module using an appropriate image processing technique. The Open CV library's feature extraction technique of the Open CV library for Python programming runs on Raspberry Pi using an external camera. A gesture based speaking system using machine learning provides a new, intuitive, and simple way to communicate with computers that are more human-like.**

Keywords— **Machine Learning, Keras, Sequential Model, Raspberry pi, Camera**

I. INTRODUCTION

Pattern recognition and moving robot navigation are two applications of vision-based and image processing systems respectively. The fundamental activity in computer vision is object tracking, and extracting the features of the object, which can be used to control the traffic, interaction between humans and computers, gesture detection, augmented reality, and surveillance. Higher-level picture tasks will perform best with an efficient tracking technique. A surveillance system has been employed by people all over the universe to aid them in securing territory or specific locations. It led to the development of a surveillance system with applications for detecting and monitoring a known object.

The main goal of the work is to create a system utilizing a Raspberry Pi and a camera module that can detect and monitor specific features of the gesture images that are specified according to image processing techniques. The feature extraction technique was written in Python and tested on a Raspberry Pi with an external camera using OpenCV libraries. Even in low-light situations, this system performs admirably. A Raspberry Pi-based hand gesture algorithm is utilized to drive a mobile robot, resulting in a vision-based system that depend on human-machine interaction.

The present work is organized as follows. Literature Survey, Objectives, Proposed System, Implementation of the system, methodology, results and conclusions.

II. LITERATURE SURVEY

In most cases, communication between disabled and non-disabled people utilizes the form of synthesized speech, also known as sign language. Information is transformed into voice commands with the help of flex sensor and an Arduino Mega 2560, allowing disabled people to communicate with normal people [1]. In case of an emergency, the user's present location can be followed using GPS, and a text message can be sent to the guardian via GSM module. However, most people do not comprehend sign language, a new method based on vision is being developed. The system complexity grows in the proposed system, requiring picture extraction and categorization [2]. Different studies are being conducted to assess and evaluate how the device can help people with hearing and speech disabilities communicate more effectively, as well as to determine the device's limitations in contrast to other technologies and devices pursuing a similar goal. Their only means of communicating with others is through hand motions and expressions, and they have created a prosthetic speaking mouth for deaf people. This will also assist others in comprehending people with disabilities [3]. For silent patients, a device has been developed that uses flex sensors to translate the twisting movement of the fingers into a voice. When spoken through a speaker, the messages are displayed on the LCD [4]. Another solution to the same problem is given by utilizing hand gloves that translates any sign language to a globally recognized language such that any person who can read and write may understand the disabled people [5] [6]. Several writers have discussed and created a prototype model using expensive sensors such as the Kinect V2 sensor and the leap motion controller, with an 89.5 percent recognition accuracy [7]. The next generation of glove devices results in

A Novel Approach for Enhancing Cloud Based IoT SecurityUsing Cloud Administration

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Abstract - The Internet of Things (IoT) gives another worldview to the advancement of heterogeneous and appropriated frameworks, and it has increasingly twisted keen on a universal figuring administration phase. However, the absence of adequate figuring and stockpiling possessions committed to the handling as well as stockpiling of enormous volumes of IoT information, it will in general embrace a cloud-based plan to resolve the issue of asset imperatives. Thus, a progression of testing security moreover believe concern encompass emerged in the cloud-based IoT set. To this end, an original trust evaluation structure for the safety as well as notoriety of cloud administrations is planned. This structure empower the trust assessment of cloud administrations to guarantee the safety of the cloud-based IoT setting through coordinating safety based and notoriety based trust evaluation strategies.

Keywords — Cloud Computing, IoT, Security, CSP, QoS, SLA.

I. INTRODUCTION

The Internet of things (IoT) is an arising innovation that has developed rapidly as of late. The idea of the IoT is characterize as the association of definite article, gadget, vehicle, structure as well as dissimilar equipment to be insert through hardware, programming, sensors, as well as organization network to allow these things to accrue as well as trade information. The IoT has prompted the steady extensive association amongst individuals as well as things. Subsequently, the IoT has been usually applied in dissimilar application plus subsequent significant link in novel innovation area. In any case, because of the asset necessities of IoT gadget, the assignments through elevated computational intricacy as well as the enormous volume of information stockpiling in IoT setting be continually taken care of via the asset rich cloud worldview, which considerably improve their proficiency. For instance, IoT gadget produces immense events of information to put gigantic burden on the IoT. The Cloud can be utilize to process as well as store the enormous information shaped via IoT gadget, which resolve work on the general output of cloud-based IoT setting The cloud based IoT engineering.

Through the resolution of IoT plus Cloud, we encompass the precious chance to extend the utilization of the accessible innovation to be specified in cloud circumstances Nonetheless, likewise as through numerous novel advances, there be a few difficulty concerning making growth in the cloud-based IoT situation as well as IoT atmosphere Two of the difficulty for the cloud-based IoT situation be safety (e.g., the actual layer safety as well as access control the executive) plus trust (e.g., pernicious hub as well as information abuse). In this way, the reception of the cloud-based IoT worldview move the safety as well as faith issue of IoT to cloud. To resolve this concern, the safety of IoT set can be certain through a reliable cloud.

II. OBJECTIVES

The objectives of this undertaking are a few existing assessment endeavors to assess the consistency of cloud service provider (CSP) in Quality Of Service (QoS) of their cloud administration. These assessment center around assessing the consistence degree among the QoS upsides of the cloud administration of each competitor CSP as well as the QoS necessities of the Cloud Service Customers (CSC) otherwise cloud service level arrangements (SLAs) to choose their dependability, as well as afterward suggest the CSP through the most noteworthy steadfastness to CSC. There be likewise an assessment to endeavor to survey the dependability of CSPs via utilizing the disparagement appraisals of CSCs, specially, the rating-based reputation assessment, which has been generally in use on web administration base application.

III. LITERATURE SURVEY

Article [1] some broadly taken on trust appraisal technique

 DOI : 10.35291/2454-9150.2023.0022

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 3, Issue 1, January 2023
Impact Factor: 6.252

Surveillance Robot

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Abstract: *Security is always become a basic necessity in remote areas. It is not always possible for the police to patrol all the areas and a watch man to secure the premises all the time. In this scenario having the best security system makes life safer and more comfortable. The system uses GPS and GSM for securing any premises. The robotic vehicle will keep on detecting the sound and if any sound is detected, it moves towards the sound. It then takes pictures of the area using four ESP32 camera modules covering 360-degree view and transmits the images of that area to the preassigned Gmail ID and the location information through GPS is sent as an SMS alert to the effected person pre- defined number in terms of latitude and longitude with the help of GSM. A Buzzer is also interfaced to robot which make alert sound whenever it detects any sound from surroundings. Thus, we put forward a fully autonomous robot that operates tirelessly and patrols large areas on its own to secure the facility. It also acts as a surveillance system which reduces the human work.*

Keywords: LM393 Sound Sensors, GSM, GPS, ESP32 Camera, Buzzer.

REFERENCES

[1]. Dushyant Kumar Singh, Dharmender Singh Kushwaha, "Automatic intruder combat system surviellence", published in Defence Science Journal, Volume 67, December 2019
[2]. Kalpana seelam, K.Prasanti ,"A novel approach to provide protection by using smart security device", published in IEEE International Journal, Volume 1, June 2018
[3]. Punithavathani, D. Shalini, K. Sujatha, and J. Mark Jain, "Surveillance of anomaly and misuse in critical networks to counter insider threats using computational intelligence", January 2018
[4]. Takato Saito and Yoji Kuroda, "Mobile robot localization using multiple observations based on place recognition", published in IEEE International Conference on Robotics and Automation Road detection at night based on a planar reflection model, May 2013
[5]. P.Lavanya, GVNSK Sravya and N.Harini. "Smart Queue Monitoring Bot", published in Journal of Interdisciplinary Cycle Research, Volume 14, February 2022

IJRAR.ORG E-ISSN: 2348-1269, P-ISSN: 2349-5138

INTERNATIONAL JOURNAL OF RESEARCH AND ANALYTICAL REVIEWS (IJRAR) | IJRAR.ORG

An International Open Access, Peer-reviewed, Refereed Journal

SMART GLOVE FOR SPEECH IMPAIRED

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Abstract: ***Communication is the only way by which we are able to express our thoughts among the people. Generally people convey their thoughts effectively by establishing the discussion between them. But in our society, there are lot of people who are physically disabled like dumb who are not able to communicate effectively. A dumb person can't communicate, these smart gloves make it possible for users to transform hand gestures into prerecorded voices, that help alleviate the communication barrier. This particular Smart Glove possesses an additional functionality of Home Automation using which a specially-abled person can regulate and manage household appliances. Apart from this, this glove is also used for health monitoring of the person wearing the glove. The fundamental goal of this assembly is to create a dependable, easy to implement and use, lightweight smart hand glove that will reduce the communication boundaries between all human beings. So, disabled can also grow in their respective field. Using such system by disabled people can make nation grow.***

Keywords— ***Hand gestures, Home Automation, Health monitoring***

1. INTRODUCTION

Communication is important in today's data society to express our feelings. Everyday activities such as doctor appointments, shopping at the stores and meeting with friends would be difficult for the normal people without the ability of speaking in order to convey ideas. It actually becomes the same problem of two persons who knows two different languages, no one of them knows any common language so its becomes a problem to speak with each other. It is not always possible to arrange for a translator. The same kind of problem occurs in between the normal person and the speech impaired person. To overcome this problem, we introduced a desirable Interpreter which translates Sign Language, in form of gesture by a dumb person to speech.

Home Automation is the new emerging technology in the market. There are numerous home automation systems with different features and installations. Generally home appliances such as fan, air conditioner, light are controlled through a remote. The remote used for controlling appliances generally have keys or touch-based sensors. The old aged members find it really difficult to perform their day to day routines like drinking a glass of water, switching on a fan or controlling a TV remote etc. Most of the remote control devices require pressing of buttons, to control a gadget. Therefore, while these controls are useful for a normally abled person, they are not very useful for the physically handicapped or particularly, the old people, who do not have the capacity to apply enough pressure to press the buttons. So, a home automation system is also designed where home appliances like light and fan are controlled by gestures.

One in every five deaths are because of heart related diseases. So, we need to take special care of the patient suffering from Cardio Vascular Diseases. Thus, we need a smart and highly reliable system to help reduce the number of deaths for those types of patients and help patients in bed, because continuous and long-term monitoring is needed

International Journal of Computer and Internet Security.
ISSN 0974-2247 Volume 15, Number 1 (2023), pp. 1-6

https://dx.doi.org/10.37624/IJCIS/15.1.2023.1-6

Instagram Fake Profile Detection

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Abstract

All fake users' main intention is to send friend requests to normal users to hack their machine or to steal their data. By analyzing these features of all accounts, the classifier will mark whether the user profile is fake or genuine. This model uses MLP classifier and can process a large dataset of accounts at once. The MLP classifier will be trained with all previous users fake and genuine account data and then when we give new data then the system analyses the data and displays whether the account is fake or not. We have also listed the classes and libraries involved. Also, the accuracy of this classifier is very high compared to other machine learning algorithms. The technologies used in this project are HTML, CSS, Python and Flask.

Keywords: Fake profiles, MLP Classifier, Friend requests

1. INTRODUCTION

Now a days, the dependency of people on computer technology has increased to a very high level leading to crimes like data breach and hacking. These attacks are done in a very attractive way so that the users tend to believe them easily by creating fake profiles using attractive account names and details. Currently, there is little incentive for social networks to improve their data security. These breaches often target social media networks like Instagram. By 2022Instagram has reached a total population of 2.35 billion users making it the most popular choice of social media. Social media networks make revenue from the data provided by users. Average users do not realise that they give up their personal information the moment they start using social media networks. The solution presented in this paper intends to focus on the dangers of a bot or person in the form of a fake profile on your social media. This solution for this can be made

using an algorithm. The languages that we chose are flask, python, HTML, CSS. The classifier would be able to determine if a current friend request that a user gets online is an actual person or if it is a bot or is a fake friend request fishing for information. Our algorithm would work with the help of the details of social media accounts and the details that the user put on their accounts, as we need a dataset to train our model and then verify whether the profiles are fake or not.

2. RELATED WORK

[1] The paper is grounded in the fact that the posts of real users reveal varied categories of emotions such as joy, sadness, anger, fear, etc. based on their life experiences. On the contrary, fake users share posts to accomplish a specific purpose, and therefore, it is highly likely that their post content will contain similar types of emotions. By analyzing the unique dataset obtained by the software in combination with machine learning techniques, they developed classifiers, which can predict which Facebook profiles have high probabilities of being fake.

[2] This paper focuses on the analysis of individual social network profiles, with the aim of identifying the characteristics or a combination thereof that help in distinguishing the legitimate and the fake accounts. Specifically, various features are extracted from the profiles and posts, and then machine learning algorithms are used to build a classifier capable of detecting fake accounts.

[3] This paper is based on detecting fake profiles considering the characteristics of the user profile. This research utilized data mining techniques to detect fake profiles. A set of supervised (ID3 decision tree, k-NN, and SVM) and unsupervised (k-Means and k-medoids) algorithms were applied to 12 behavioral and non-behavioral discriminative profile attributes from a dataset of 982 profiles.

3. PROPOSED SYSTEM

To implement the detection of fake profiles we used MLP classifier we used the following architecture:

Data Collection: Collect data from a social media platform like Instagram because it is very popular these days and is also prone to many attacks recently. The data includes information about user activity, content posted, and other relevant features that can help distinguish real and fake profiles. We collected information related to the profile picture, username, length of the username, full name, length of the full name, name is same as username, description length, external URL, private account or not, number of posts, number of followers, number of people the user follows, and whether the account is fake or not for training.

The data is to read using the readCSV() method. This is read into the training set. The profile pic is a binary value representing whether the profile picture is present (1) or not (0). Nums/length username is ratio of the number of numbers in the username to the total length of username. Nums/length full name is the ratio of the number of numbers in the full name to the total length of full name. Name==username tells whether the username is same as the name of the user. Description length is the total length of the

description given by the user under their account. External URL is also a binary value which represents the presence of a link leading to external websites. Private is a binary value representing whether the account is private (1) or not (0). Posts is an integer value of the number of posts posted by the user. Followers represents the number of followers of the account. Follows represents the number of accounts the account is following. Fake is a binary value representing whether the account is fake (1) or not (0) which is used for training the classifier.

Data Pre-processing: Cleaning the data, removing any unnecessary columns or rows, and converting the data into a suitable format for the MLP classifier. Also, removing any duplicates and outliers from the data.

Feature Extraction: Extract important features from the data that can be used to differentiate between real and fake profiles. These features can include user activity level, the number of friends, the content posted by the user, the frequency of posts, and other social network characteristics. The feature extraction is done by the classifier internally by the MLP classifier by the multiple layers present in the neural network by using the MLP Classifier from sklearn.neural_network.

Split the Data: Now, splitting the data into training and testing sets. The training data will be used to train the MLP classifier, while the testing data will be used to evaluate its performance. We have split our data into train and test size of 0.8 and 0.2 respectively using train_test_split from sklearn.

Train the MLP Classifier: Use the training data to train the MLP classifier. Start with a simple architecture and gradually increase its complexity until it performs well on the training data. Now by using the instance of MLP Classifier we trained the model.

Test the MLP Classifier: Using the testing data to evaluate the performance of the MLP classifier. Not only accuracy but precision, recall, and F1 score are also calculated. To fully evaluate the effectiveness of a model, we examined both precision and recall. F1 score calculates how many times a model made a correct prediction across the entire dataset.

Improve the MLP Classifier: If the accuracy is low, try different hyperparameters, adjust the feature extraction method, etc.

Deploy the MLP Classifier: Once the MLP classifier performs well on the testing data, deploy it to detect fake profiles on social media platforms.

Once the database is collected from the information available in Instagram, the account details, pre-processing is performed on the database to make it ready for feature extraction. Now split the data into train and test data in the ratio of 0.8 and 0.2. Using the train data, train the MLP Classifier. Now the classifier is ready to predict the output for any new data set. Now the test data is used to test the classifier. Now the classifier is ready to predict output for any dataset. Not only the result, but also the accuracy, precision, recall and f1 score are calculated and displayed. If the accuracy is not enough the admin can modify the database by removing the redundant sets and noise in the database.

The MLP (Multilayer Perceptron) classifier is an artificial neural network (ANN) which has multiple layers of interconnected nodes or neurons. It is a supervised learning algorithm used for classification tasks.

The MLP classifier is composed of three types of layers: input, hidden, and output layers. The input layer receives the input data, which is then processed by the hidden layers before reaching the output layer. Each layer consists of multiple neurons, and each neuron is connected to every neuron in the next layer.

While training, the MLP classifier adjusts the weights of the connections between the neurons to reduce the error between the predicted output and the actual output. The process of adjusting the weights is called backpropagation.

The MLP classifier is capable of learning complex patterns and relationships in the input data, making it suitable for a wide range of classification tasks. It is a popular choice for tasks such as image classification, speech recognition, and natural language processing.

The MLP classifier is a powerful machine learning algorithm that can learn complex patterns and relationships in the input data, making it a useful tool for many classification tasks like detection of fake profiles.

This system detects a profile with highest accuracy than other machine learning algorithms because MLP Classifier is better than other Machine Learning algorithms.

Implementing detection of fake profiles using MLP classifier involves data collection, data pre-processing, feature extraction, training, testing, improvement, and deployment.

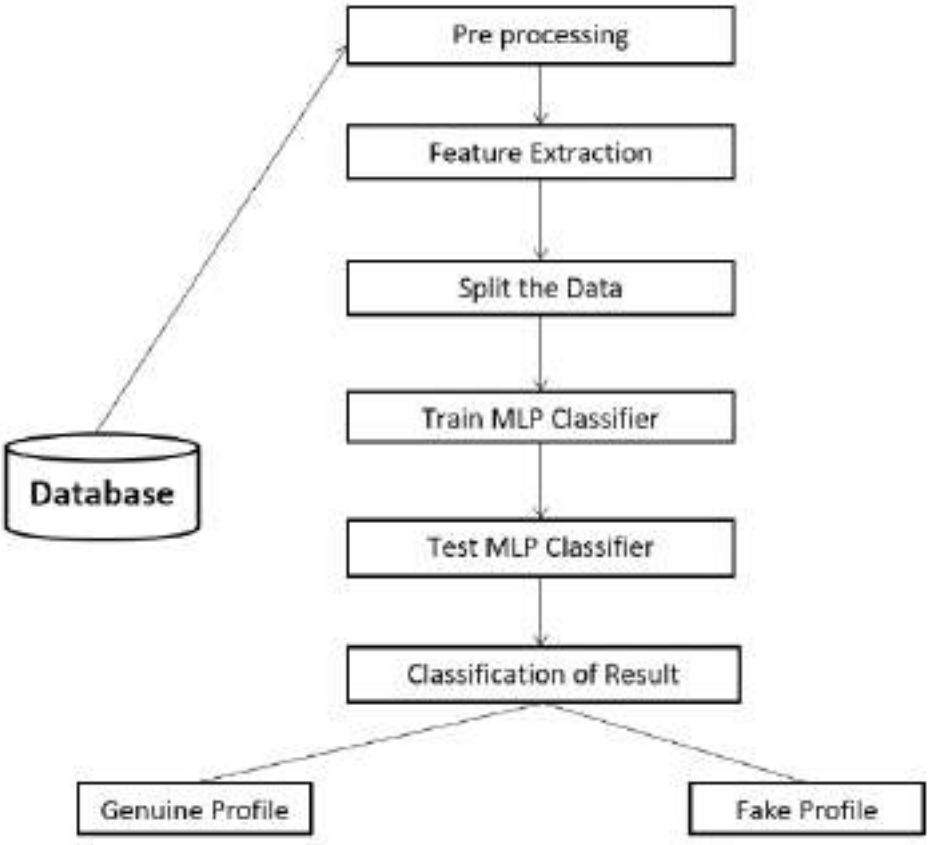

Figure 3.1: System Architecture

4. IMPLEMENTATION

To develop this system, we used MLP classifier with scikit-learn for simplicity, we used python and Flask as it is a light web framework. We created two files model.py and server.py.

In the model.py file, we developed and trained our model, in a server.py, we coded to handle POST requests and return the results and finally in the request.py, we sent requests with the features to the server and received the results.

In th**e** model.py file we developed our MLP model and trained it. We predicted whether a profile is fake or not based on the dataset provided to the model. Here we used the dataset 'Instagram fake spammer genuine accounts' from Kaggle.

Importing the libraries that we are going to use to develop our model.py numpy and pandas to manipulate the matrices and data respectively, sklearn.model_selection for splitting data into train and test set and sklearn.neural_networkto train our model using MLPClassifier. requests sends requests to the server and render_template() returns the result to the respective html file.

Here we imported the dataset using pandas library and later separated the features and label from the dataset. Now, we have split our data into train and test size of 0.8 and 0.2 respectively using train_test_split from sklearn. The object is instantiated as a calssifier of the class MLPClassifier() and trained using X_train and y_train. Later the predicted results are stored in the predicted.

In the server.py file, we have used the flask web framework to handle the requests that we will get from the request.py. And then we imported numpy to create the array of requested data.

Now, we created an instance of the Flask() and loaded the model. Here, we have the methodrender_template. The result is stored into the variable named result and we return this variable to the respective html file using render_template() method.

Finally, we will run our server. Here we have used port 1122 and have set debug=True since if we get any error, we can debug it and solve it.

5. CONCLUSION AND FUTURE SCOPE

This idea came up with Artificial Neural Networks besides machine learning algorithms because they construct the structure of human brain. From the social media sites, we can easily find fake profiles by implementing this technique. In this system to point out the fake profiles we have taken the Instagram dataset because many accounts have been hacked these days on Instagram. Implementing this system in social media sites can decrease the chances of hacking and help naïve users think before accepting any request. Also, the accuracy of the result using MLP Classifier is higher than other Machine Learning algorithms. We reached an accuracy of about 98 percent. Our major complication is that a person can have numerous Instagram accounts which is an added benefit for those who create fake profiles and accounts on social media sites. We can add 12-digit Aadhar card number while creating an account, as a result we can limit single account for single user and there is no probability of fake profiles in social networks. We can improve this project by using the external URL directly in the dataset so that the link can be checked whether it is malicious or not also.

6. REFERENCES

[1] Adam Breuer, Roee Eilat, and Udi Weinsberg. 2020. Friend or Faux: Graph Based Early Detection of Fake Accounts on Social Networks. In Proceedings of The Web Conference 2020 (WWW ’20), April 20–24, 2020, Taipei, Taiwan. ACM, New York, NY, USA, 11 pages. https://doi.org/10.1145/3366423.3380204

[2] Aleksei Romanov, Alexander Semenov, Oleksiy Mazhelis and JariVeijalainen (2017). Detection of Fake Profiles in Social Media. In Proceedings of the 13th International Conference on Web Information Systems and Technologies (WEBIST 2017), pages 363-369.

[3] Dr. Sanjeev Dhawan, Ekta (2016). Implications of Various Fake Profile Detection Techniques in Social Networks. In the proceedings of IOSR Journal of Computer Engineering (IOSR-JCE).

[4] Mohammed Basil Albayati* & Ahmad Mousa Altamimi (2019). Identifying Fake Facebook Profiles Using Data Mining Techniques. Article in Journal of ICT Research and Applications-September 2019.

International Journal of Computer and Internet Security.
ISSN 0974-2247 Volume 15, Number 1 (2023), pp. 7-19

https://dx.doi.org/10.37624/IJCIS/15.1.2023.7-19

Report on Automation of SDLC Using Devops in Cloud Environment

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Abstract

Lately, the efficiency of the work done by the project development team has been a major concern. To deliver the end product to the customers on time the internal functions between various teams involved in the project has to go smoothly without any miscommunications so that they won't blame on one another as the root cause for unsuccessful project delivery. Different knowledge basis present among various teams in the project should not affect the project progress. When the project is moving from one team to another there should be any discrepancy in understanding the state of the project and the successor team should be able to work without having to know the core details of how the project has been developed so far. The roots for agile software process or methodology is to provide the right track to develop the product or project as per the client's input. Agile process gives importance to the people which includes the teammates, clients and their interactions rather than the tools, equipment or technologies they've been or they will be using; it focuses on the work products and its fidelity against the customer requirements; its attention is towards the adaptability as per the situations rather than focusing on the predetermined plans which consumes so much time to come up with one and one such plan doesn't exists upon following which there won't be any hurdles thus the endurance towards changes and flexibility is must. Agile process is about developing the project in the incremental and iterative fashion which reduces the concept of "finished project".The two

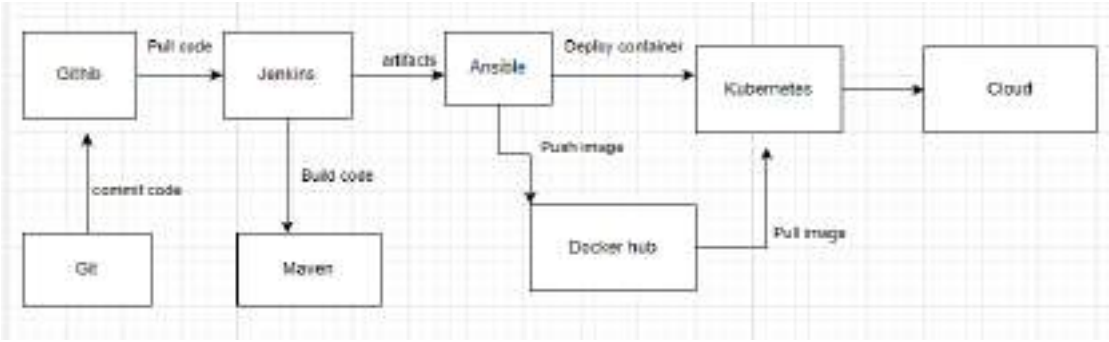
important areas of the software business is IT operations (ITOps) and Developmental operations (DevOps). ITOps focuses on the safety, reliability and compliance while DevOps focuses on designing the product and delivering it to the end users. DevOps work on pipeline optimisation and spotlights the continuous integration and installation of the software developed. Its major idea is on operational efficiency and end to end automation. Though the agile software development methodologies are more common many organisations realised that they have not reached a frequent release rate because of the gap between the development team and operations team. (thus, DevOps helps in automating the process from design to delivery of the product or process to the end user). DevOps removes the communication barriers among various teams involved and helps in constant delivery with continuous integration of developed with components with varying requirements.

Keywords: DevOps, Automation, software engineering, configuration management, agile methodology

Introduction

The business environment nowadays in terms of software & product design has evolved more rapidly. Project (a software project involves the execution of tasks to achieve added value outcomes) planning, evaluation, management (the planning, implementation, and monitoring of the tasks) of improvements, and quality control are some of the challenges that differentiate successful and failed projects. Agile methods (incremental and iterative approaches) are widely used and implemented worldwide to deal with these issues. Software developers concentrate on agile development, for increasing the productivity of their projects and meeting the competitive demands of their customers. Agile methodology has been developed to address the problems faced by the conventional model and to offer project teams multiple possibilities during the development process. But then here there is no end for the successful project completion there might be the chance that customer suggest at least one change at each increment due to which there will be unlimited time and resources consumed which leads to cost overrun; and as the outputs are generated in fragments at each increment they are difficult to track as well as the incremental development by different teams on different units of the project causes some teams to wait till the others do their work and if one team lags behind then all other must be on hold with causes misunderstandings and more time consumption to resolve internal conflicts thus management becomes hectic. Whereas when it comes to DevOps its main motto is to reduce the gap between the Development team and Operations team. The gap between both the teams arises because they come from different backgrounds (knowledge domain) that is development team knows about the software products and service whereas the team knows about the testing and production environments thus there will different business goals and priorities between both the teams. DevOps promotes automated continuous integration and deployment pipelines to enable frequent releases, to evaluate the work

products in sprints rather than focusing on the adaptability to change. DevOps reduces the complexity and helps in faster product delivery, issue resolution, resource utilisation, scalability, availability, stable operating environments, visibility into system outcomes and many more.



Literature Survey

Agile and DevOps are bombinate ideas that are commonly used in many organisations. There are many common features of both which overlap together and cause the ambiguity whereas the difference lies in the outcome and techniques followed though the core structure of providing the end product to the customer on time as per the requirements remains the same. DevOps focuses on the continuous integration, continuous deployment, continuous monitoring and continuous feedback and optimisation whereas the Agile methodology is all about the flexibility, adaptability, incremental and iterative development. DevOps is oriented towards the faster performance by proving various environments, tools and techniques to the allocated where the work products generated by predecessor teams will be clearly seen along with the configurable files and software which are required to run them.

Proposed System

The proposed system helps in automating the development process for building a project by provide the interface for clients, software client manager, software architect and developer to communicate with each other and it provides an integration point via Jenkins for developers to commit the code through git and develop the code through maven (which together provides the continuous integration) from there a pipeline is created from Jenkins to ansible(for handling the configurable files for deployment) and ansible to docker and Kubernetes (which provides the continuous deployment and delivery). Our system provides the communication media(chat application) for clients to pitch their ideas and once the client software manager likes the idea then he discusses with other teams about various factors(such as budget, resource allocation, technology used, tools and software required, time required to complete the project etc) and he may also convince the clients on what can be done based on the allocation to avoid the exception expectations from the clients. Then he forwards the reviewed requirements to the software architect via the proposed system so they start building suitable models

and once these models are built then they are forwarded to the software developers and then they start developing the code and commit them onto the git where there is ci/cd pipeline to the Jenkins and this code is checked against the code built by the Maven (which already has the pipeline to the Jenkins[central point]) automatically and the functionalities done till here from the code commit on git is known as the continuous integration. Then the built code is sent to the Ansible which generates the artefacts and these artefacts are given to the docker via pipeline which then generates images and these images are deployed onto the cloud with the help of Kubernetes. All the functionalities after the code generation to the image and container deployment is regarded as the Continuous Deployment (that is the code is automatically deployed into various environments as per the changes in the code committed on Git)

Implementation

The modules are implemented using AWS Management Console. The tools used are Jenkins, Git, Maven, Ansible, Docker and Kubernetes.

Creating CI/CD pipeline for Git, Jenkins and Maven:

In the continuous integration and continuous deployment process, we need to build our source code and play it in that target environment. The code should be already available in our GitHub account. Once the code is commited, we need to integrate GitHub with the Jenkins and Maven with the Jenkins so that we can pull the code onto Jenkins and build with the help of Maven.And if we need any changes to our source code with the help of Git from our local workstation station will mark play it and will commit that code on to GitHub.

Setup Jenkins Server:

STEP-1: Setup a Linux ec2 instance
STEP-2: Install Java
STEP-3: Install Jenkins
STEP-4: Start Jenkins
STEP-5: Access it on the web UI using port 8080

Setup an ec2 instance

STEP-1: Go to AWS Management Console click on "Launch Instance" and then **choose the AMI**(Amazon Machine Language) which is nothing but choosing the operating system for this project we'll be choosing Amazon Linux 2
STEP-2: Choose an **Instance type** we'll be choosing t2 micro
STEP-3: Then choose the **Configure instance details** as per the requirement but we'll be using the default details
STEP-4: Select the storage required we're going to use the default storage
STEP-5: Then we need to **Add tags** we'll give the Key as Name and Value as the Jeniks_Server

STEP-6: Then we need to **Configure security group** where we'll be creating an security group instead of using the existing one for which for the **Security group name** we'll be giving "Jenkins_Security_Group" and even **Description** we'll be giving the same and we'll give the **Port range** as 8080 as the Jenkins runs on the port 8080 and for **Type** we'll give Custom_IP
STEP-7: Then click on "Review and Instance" after reviewing what you've created
STEP-8: Then a window pops up saying for choosing the key_pair we'll be creating a new key pair and Give the Key Pair Name as DevOps_Project_key then download that key_pair and launch the instance

We'll be using MobaXterm to connect our ec2 Instances to connect to the Linux ec2 instance we'll use the **Session** there click on SSH and give the public IP address of the Jenkins ec2 instance which we've created and then check in the box "Use Private Key" and choose the downloaded key pair of Jenkins over there and give the Specific User Name as "ec2-user"

Installing Jenkins
For this we'll be writing the following commands in the ssh session we've created

```
sudo wget-O /etc/yum.repos.d/jenkins.repo \https://pkg.jenkins.io/redhat-stable/jenkins.repo
sudo rpm--import https://pkg.jenkins.io/redhat-stable/jenkins.io-2023.key
sudo yum upgrade
# Add required dependencies for the jenkins package
sudo yum install java-11-openjdk
sudo yum install jenkins
sudo systemctl daemon-reload
```

To check the status of the Jenkins server use: "service jenkins status"
To start the Jenkins server use: "service Jenkins start"

Integrate Git with the Jenkins
STEP-1: Install Git on Jenkins Instance
STEP-2: Install GitHub plugin on Jenkins GUI
STEP-3: Configure Git on Jenkins GUI

Jenkins Job to pull the code from GitHub
For that goto Jenkins GUI and then click on "New Item" and then enter the name as "PullCodeFromGitHub" and click on "Freestyle Project" and then click on "OK"
Then give the Description same as the job name that is "Pull Code From GitHub" and then under "Source Code Management" section choose "Git" then under Repository URL section you need to give the URL of the GitHub where the code is present and if it is a Private Repository you need to provide the credentials for the Public repository

there is no need for that and then click on “Apply” then “Save” and By default, Jenkins is going to store all the build related information under /var/lib/Jenkins/workspace

Integrate Maven with Jenkins
STEP–1: Setup Maven on Jenkins Server
STEP–2: Setup Environment variables [JAVE_HOME, M2, M2_HOME]
STEP–3: Install Maven Plugin on Jenkins GUI
STEP–4: Configure Maven and Java on Jenkins GUI

Building the source code through Maven via Jenkins
For that goto Jenkins GUI then click on “New Item” then give the name “FirstMavenProject” then click on the “Maven Project” and then on “OK” and then give the description as the “First Maven Project” and under the “SourceCode Management” choose “git” and in the “Repository URL” give the URL of the source code and in the “Build” section give the “pom.xml” then if want to specify any “goals” you can do that and then click on “Apply” and “Save”
If we goto our FirstMavenProject under the workspace in the webapp under the target directory is where all our build artifacts gets stored. This build generates the.war file as the output

Deploying our code in the target environment
Here the target environment we’re using is Tomcat Server. For this we’ll be creating an ec2 instance on top of that we’ll be installing the tomcat and we’ll setup Jenkins job such for deploying the code onto the Jenkins

Setup a Tomcat Server
STEP-1: Setup a Linux ec2 Instance
STEP-2: Install java
STEP-3: Configure Tomcat
STEP-4: Start Tomcat Server
STEP-5: Access Web UI on port 8080

Setup Docker Environment
For this setup we need a Docker host upon which we’ll install “Docker” and create “Docker container” Setup of Docker Host includes

- Setup a Linux EC2 instance
- Install Docker
- Start Docker services
- Basic Docker Commands

For integration the steps include

- Create a Dockeradmin user
- Install "Publish Over SSH" plugin to deploy the artifacts from Jenkins to docker container
- Add Dockerhost to Jenkins "configure systems" so that the Jenkins will be able to communicate with the DockerHost
  "cat /etc/passwd" to list all the users present
  "cat /etc/group" to list all the groups present

Now we need to create a user and add it to the docker group

- "useradd dockeradmin" to create a user dockeradmin
- "passwd dockeradmin" to create a password for that user
- "id dockeradmin" to check the group which it belongs to
- "usermod-aG docker dockeradmin" to add the dockeradmin user to docker group
- "vi /etc/ssh/sshd_config" and then search "Password" by /Password and then decomment the "PasswordAuthentication yes" and comment out "PasswordAuthentication no" by this it enables the password based authentication
- "service sshd reload" to reload do not stop and start because once you stop it you're going to loose the connection to dockerhost

Deploying on a Container

We're going to create a new job where a artifacts from Jenkins are deployed onto the docker container For that goto "New Item" then enter the name of the job as "BuildAndDeployOnContainer" and at copy from choose "BuildAndDeployJob" and then click on "OK" and then at "General" section give some description and scroll down to "Post-Build Actions" and delete the existing one and add the new "Post-Build Action" by clicking on it and choose the option "Send build artifacts over SSH" which is enabled because we've installed "publish over ssh" plugin and then at name choose the ssh server from what we added so far then at "Source Files" give "webapp/target/*.war" and then at "Remove prefix" give "webapp/target" as we only want.war files to copied and then click on "Apply" and then "Save"

Updating the deployment process

For that login to SSH by the instance created for docker
"exit" to logout
"cd /opt"
"mkdir docker" creating the docker directory
"chown-R dockeradmin:dockeradmin docker" to change the ownership of "docker" from root to "dockeradmin"
"mv DockerFile /opt/docker" to move the DockerFile into docker directory
"chown-R dockeradmin:dockeradmin /opt/docker" to change the ownership

Automate the build on Docker Container

For this edit the configuration of “BuildAndDeployContainer” by clicking on it and then select the “Configure” and then scroll down to “Exec Command” under “Post-Build Actions” there give the commands “cd /opt/docker; docker build-t regappv1. ” ; “docker run-d--name registerapp-p 8087:8080 regapp:v1” and then click on “Apply” then “Save” and then for the execution click on “Build Now” and you can access your application on the port “8087” but the problem here will be that you cannot use same given name “registerapp” for different containers which will be created for every change in the code

Thus to overcome that we’ll go back to our job and then click on “Configure” and then under “Post Build Actions” at the “Exec command” add two more line above the last line they are “docker stop registerapp ; docker rm registerapp ” that is we’ll be stop the existing container and then we’ll be removing it before creating the new container wit the same for different artefact

To install the latest version of AWS cli run the following commands in the SSH session curl

"https://awscli.amazonaws.com/awscli-exe-linux-x86_64.zip"-o "awscliv2.zip" unzip awscliv2.zip
sudo./aws/install

Setup the Kubectl by the following four commands

curl-o kubectl https://amazon-eks.s3.us-west-2.amazonaws.com/1.21.2/2021-07-05/bin/linux/amd64/kubectl
chmod +x./kubectl
mv./kubectl /usr/local/bin
kubectl version--short –client

Setup the eksctl by the following

curl--silent--location
"https://github.com/weaveworks/eksctl/releases/latest/download/eksctl_$(uname-s)_amd64.tar.gz" | tar xz-C /tmp
sudo mv /tmp/eksctl /usr/local/bin
eksctl version

Create IAM role and attach it an EC2 instance

For that go to AWS Management console and search for IAM and from the IAM dashboard select “Roles” and then click on “Create Role” as we’re this role to EC2 select an EC2 and then click on Next Permission then again search for “Administrative Access” and click on next then ignore tags i.e., just click on nex and then give the role name as “eksctl_role” and then click on “create role”.

Setting up Kubernetes on EKS
Use the following commands to create a cluster
eksctl create cluster--name valaxy \
--region us-east-1 \
--node-type t2.small \

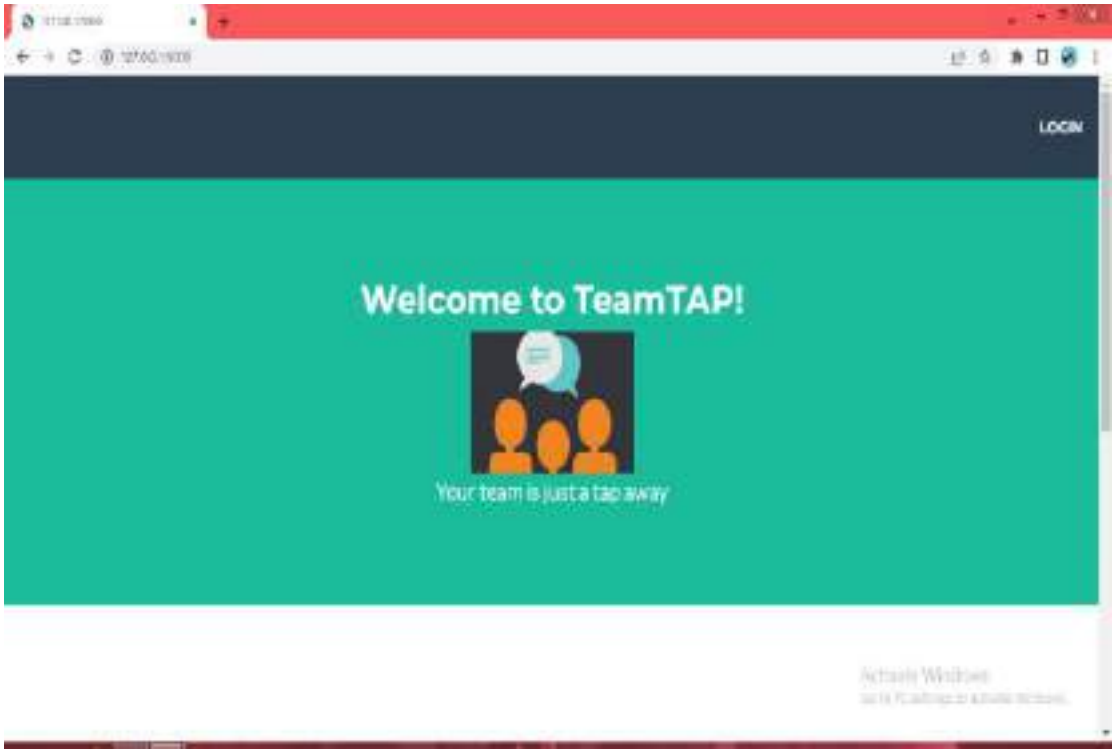
Create Jenkins deployment job for Kubernetes
Creating job so that artifacts from Jenkins are deployed on to the Kubernetes. For that login to your Jenkins and then click on "New Item" and then give the name as "Deploy_On_Kubernets" then choose "Freestyle Project" and click on "Ok" and after give some description and scroll down to "Post-build actions" there you choose "Send build artifacts over ssh" and then at the name section choose the ssh server then at "Exec Command" enter the necessary configurations required and then click on "Apply" and then "Save"

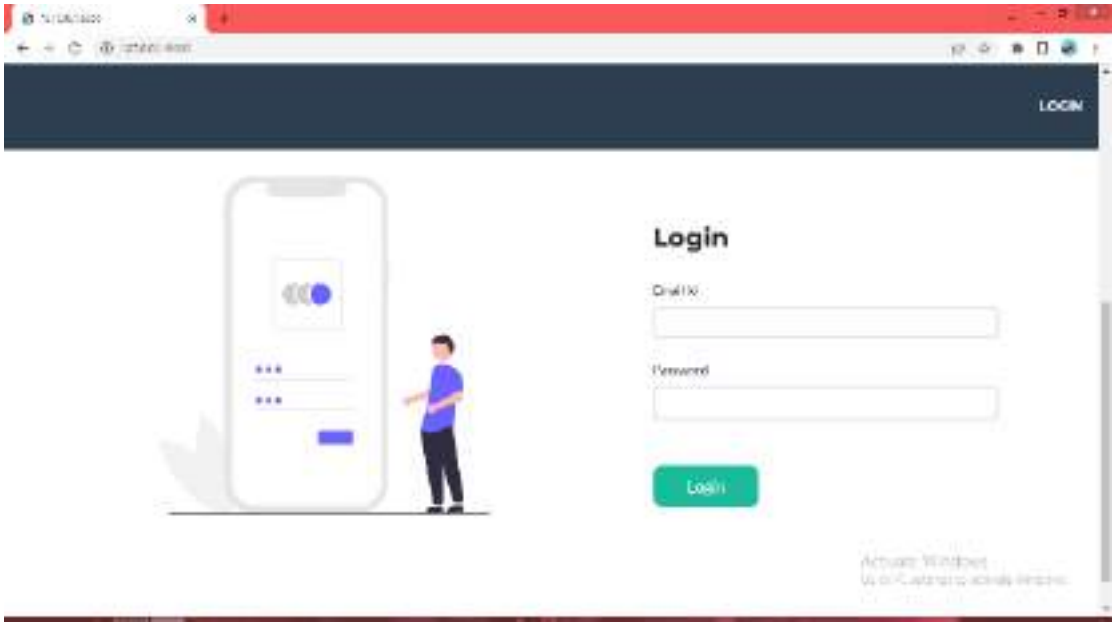
CI Job to create Image for Kubernetes
We've created a CD job which takes care of deployments now we'll create a CI job which will pull the code from GitHub and build the artifacts in Jenkins via Maven and we'll generate a new images for every artefact that is being generated and try to deploy that on the Kuberenetes to do this we'll create a new job for that go to Jenkins and click on "New Item" give it a name and copy from the "BuildAandDeployOntoContainer" and then click on "Ok" and then give the Description as "Build code with help of maven and create an image" then choose "git" and give the repository URL and then specify the branch as "master branch" and then under "Post-Build Actions" choose the SSH server and at the exec command give the following
"ansible-playbook /opt/docker/regapp.yml"
"sleep 10"
"ansible-playbook /opt/docker/deply_regapp.yml"
And then click on "Apply" and "Save"

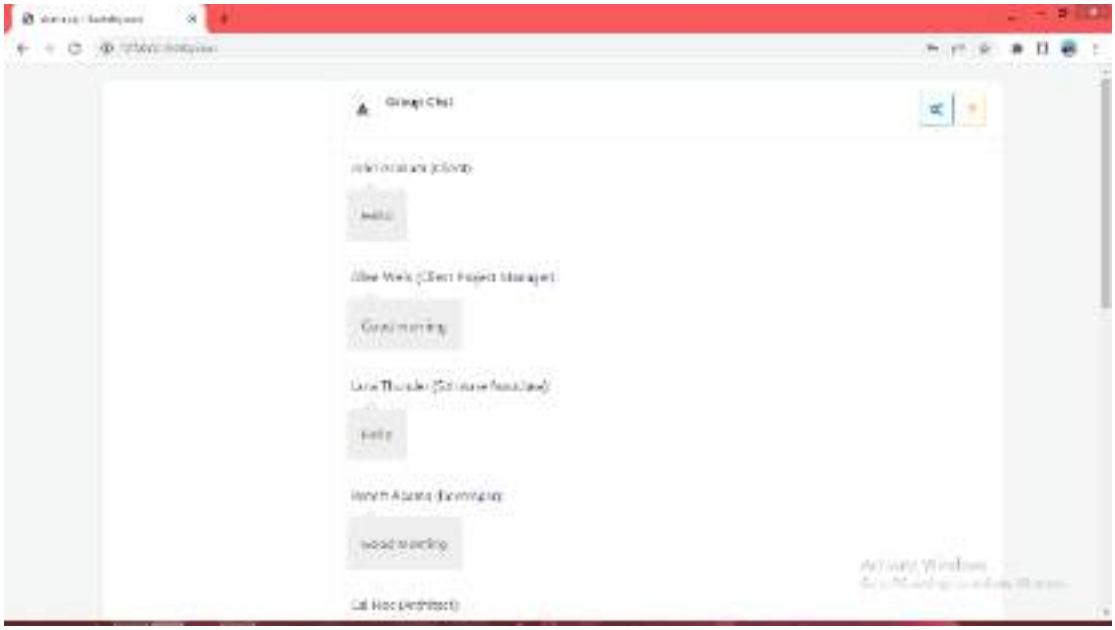
Results
The pipeline between the Jenkins and Docker is established to deploy every artifact that is generated for every code commit on the image which then containerised and the success of this job indicates the access of that container on the browser

This pipeline is created to deploy the containers that are generated after every commit on to the Kubernetes the success of this job reflects in the deployment of container on Kubernetes successfully after every change in the code that has been committed and that right deployment is showcased as per the display on the browser and corresponding change in the code

Chat Application that serves as the communication medium between stake holders







Conclusion

DevOps integrates the efforts of the development team and operation team and turns their work progress lead to a successful project with atmost quality and customer satisfaction. Our system provides the cohesive way to develop a project right from the requirements stage to the deployment stage as all the required DevOps tools are connected via pipelines considering Jenkins as the central point which helps from committing the developed code to deploying the container onto different environments and the chat window provides the interface to gather all the requirements. This system enables frequent updates based on the feedback given customers to make the product more user friendly with the maximum utilisations of components which are already built (that is provides component based development). There will be no specific timings scheduled for a client to interact with the manager he/she will be able to theirs requirements whenever they want on the chat window and they can expect the

Future Scope

1. Customer support 24/7 when the system is down reasons for it alternatives that can be followed….
2. Video and audio conference so that diff teams can interact remotely
3. Taking this to a high scale tor handling diff teams on diff project with diff set of customers
4. Providing customer to try what has already been built and get the initial feedback but not so frequently as it delays but after major quarters of completion
5. As Maven and Jenkins are extensively used on java based applications to use various devops tools where there won't be any restriction on the specific language based development

Acknowledgement
It is our proud privilege to express the feelings of gratitude to several people who helped us in completing this work We express our heartfelt gratitude to Dr. I. Ravi Prakash Reddy, Head of the Department, IT department, GNITS for his constant guidance and moral support. We would like to express our sincere thanks to Dr. K. Ramesh Reddy, Principal, GNITS for providing working facilities in the college. Finally, we would like to thank all the faculty and staff of IT department who helped us during our project and also our parents and friends for their cooperation in completing the project.

References

[1] Moreira, M. The Agile Enterprise: Building and Running Agile Organizations, 1st ed.; Apress: Berkeley, CA, USA, [**Google Scholar**]
[2] Fitzgerald, B.; Stol, K.J. Continuous Software Engineering: A Roadmap and Agenda. J. Syst. Softw., 123, 176–189. [**Google Scholar**] [**CrossRef**]
[3] Bosch, J. Continuous Software Engineering: An Introduction. In Continuous Software Engineering; Springer: Berlin/Heidelberg, Germany, ; pp. 3–13. [**Google Scholar**]
[4] Humble, J. Continuous Delivery vs. Continuous Deployment. Available online: **https://continuousdelivery.com/2010/08/continuous-delivery-vs-continuous-deployment**
[5] Jenkins. Build Great Things at any Scale. Available online: **https://jenkins.io**
[6] Chacon, S.; Straub, B. Pro Git, 2nd ed.; Apress: Berkeley, CA, USA,. [**Google Scholar**]
[7] Christof, E.; Gallardo, G.; Hernantes, J.; Serrano, N. DevOps. IEEE Softw., 33, 94–100. [**Google Scholar**] CHALLENGES IN PRACTICE‖, NOV 2016

International Journal of Computer and Internet Security.
ISSN 0974-2247 Volume 15, Number 1 (2023), pp. 27-37

https://dx.doi.org/10.37624/IJCIS/15.1.2023.27-37

Smart Learn: A Study on the Transformation from Traditional Learning to Technology-Based Personalized Learning

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Abstract:

In the last fifteen years, the professional education profession in education has developed. Internet-based "self-learning" has replaced traditional rote learning. A holistic science education program includes many subjects. SmartLearn is a learning application. The learning app provides knowledge, information and technology to keep students motivated and interested in learning. Users are encouraged to learn in their own unique way. Accordingly, the aim of this study is to investigate a small group of high school students and high school students and examine their participation in order to better understand the transition from traditional education to personalized learning. rating points-SmartLearn, M-learning, self-learning, strategic guidance.

Index Terms – SmartLearn, M-learning, selflearning, concept orientation.

I. INTRODUCTION

Education has undergone significant changes over time.

Gone are the days when you had to memorize medical records and remember everything else. In today's teaching and learning, self-learning is paramount. Teachers now act as mentors, facilitators and guides. It does more than just record. Teachers create knowledge through interaction with students.

Students complete all tasks according to the teacher's instructions. Lev Vygotsky (1896-1934), Piaget (1896-1980), Bruner (1915-2016) and John Dewey (1859-1952) are supporters of constructivism.

The constructivist school of thought in philosophy and science claims that knowledge is structured. (2005) Fischer and Mascolo, p. 49. Constructivism opposes behavioral theories led by Pavlov and Thorndike, which are based on the idea that learning occurs through conditioning. Education today is influenced by construction. Counselors create knowledge with the participation of learners. Students have freedom and are students studying. Teachers encourage students to think critically.

The information that users need is provided by multimedia resources, blogs, online forums, online libraries and various websites. Students all over the world are using technology for their education today. The use of multimedia classroom materials encourages greater engagement and emotional learning, which is beneficial for students at all levels of education. Students can use their individual learning interests to meet their needs as they apply what they have learned to current events. It is one of the most important features of multimedia educational software that it supports more imagination and helps knowledge production.

mlearning, commonly known as mobile learning, is one of the latest developments in education. "M-learning combines e-learning with mobile computing, including online resources, rich interactive content, creative thinking and assessment performance" (Quinn, 2001). With students now having smartphones, teachers around the world are starting to collaborate in their classrooms. One aspect of mobile learning is app-based learning. Students have access to a variety of educational programs that support self-learning.

App-based learning is self-paced and tailored to the user's needs.

Learning apps from Meritnation, SoloLearn, Coursera, Unacademy, The Learning App and more are student-centric. For example, it is one of the most used courses in the world. It is an old startup and currently serves around 300 million Indian students.

The software uses 3D animation, motion graphics and visual effects technology to enable effective learning. Raveendran is a Kerala native who founded the most valuable edtech company in the world. This article analyzes the big change that Biju's app has made in Indian education. It focused on a group of high school students and high school students from the Kerala Board and CBSE and analyzed their ideas to see how the app could help improve education.

II. HYPOTHESIS

The hypotheses expressed in this paper are as follows:

- How can M-Learning be used as a training program?
- Indian students rely on traditional teaching methods.
- Indian students do not trust the traditional teaching method.
- Apps are about personal learning of students;
- practices have little effect on students' self-learning.

III. LITERATURE REVIEW

The effectiveness of various teaching and learning methods has been studied in a variety of subjects and studies. Teaching methods have changed over time. One of the methods

used in teaching today is constructivism. According to constructivist theory, learning is a personal effort. According to Singh and Sangeeta (2015), “In the constructivist model, teachers are facilitators of learning, not innocent people on the stage.

Students who participate in the appropriate learning process "acquire knowledge through experience, observation, data, analysis and reflection" (Singh & Sangeeta, 2015, p. 4) instead of assimilating knowledge. Constructivist teachers evaluate their understanding. In constructivist classrooms, students they enhance learning through the analysis process.(2015) Bada and Steve.

In their article titled "Constructivist-Educational Research Research", Shumaila Bhutto and Imran Umer Chhapra (2013) stated that teachers involved in the design process "must be properly studied in all progress with good and lots of support and advice".

The quality and diversity of teachers' training and assessments are effective in the design process. Appropriate teaching methods can be used to teach and learn many things. According to Dr Sunita Singh and Dr Sangeeta Yaduvanshi, “Constructivism helps to know the truth of science.

For example, not just as a body of knowledge but as a process of understanding the environment", 2015's "Constructivism in the Science Classroom: Why and How" How". Students according to Nayak (2013, p. 13).), the ability to understand and apply mathematics and integrate learning content to build knowledge. Using a method allows students to learn complex and effective material.

In the current educational context, mobile learning has had a significant impact on the teaching process. Adnan Majeed (2015) explains in his thesis "A Research Report on Mobile Learning and Education" how mobile learning is changing the way we learn and how it works in business and education. Students use mobile phones, tablets, iPads, PDAs and online courses to improve their academic performance.

According to Ansari (2017) p. 33, "Mobile learning applications are effective in higher education." According to the research, students have sufficient knowledge about mobile phone and internet usage. The importance of mobile learning apps for education and research is widely recognized by students. In the current educational environment, teachers and students have to prepare for the wave of teaching and learning. Teachers should have the necessary skills to teach so that students can easily understand them.

According to Sarrab, Laila and Hamza (2012), p. 13, Mlearning can help teachers and students solve "traditional learning process" problems. 35. The teaching process has been simplified using an effective technique called mobile learning access. Both teachers and students need appropriate and practical methods to communicate with each other and support the teaching process.

Mobile learning technologies can be used in our schools and universities on a case-by-case basis to complete the learning process without replacing traditional classrooms.

(2012), no. 35 (Sarrab, Layla and Hamza). "The acceptance of technology and mobile learning in higher education: A study by the Faculty of Humanities and Social Sciences in addition to mobile devices.

Ann Marie Casanova (2018), " Case Study-Increasing the Love of Learning in K 12: Learning Apps, Deeply Improving Learning Skills How It Facilitates Conceptual Understanding (English) How "promising to change the way millions of students think and learn".

Blended learning, which combines ancient and modern methods, is a popular practice. Modern teachers need the necessary skills to use modern classroom technology.
Classrooms in India are getting smarter over time. Students receive technology education from primary school. With the popularity and popularity of the Internet and other technologies, many students will be able to use mobile learning.
Mobile learning is one of the major trends in Indian education. They offer a wide variety of services, including home study programs, educational materials suitable for school use, help with preparing for competitions, and more. India's education landscape is undergoing a massive transformation thanks to one of the world's most influential edtech businesses. Major investors such as ChanZuckerberg Initiative, Tencent, Lightspeed Venture and Sofina have bought shares in the company.
The company expects faster growth as it already serves customers around the world.
The aim of the current research is to inform educators (including teachers, parents and students) about the many benefits that learning practices bring to teaching. One of the M-Learning apps called App supports the learning of complex topics by making the content easier to understand.
This article will help others learn and explain how mobile apps can enhance personal learning. The findings of this research will help to understand how practices can change the learning environment by being involved in today's self-learning process. It also provides a starting point for further research in this area by other interested researchers.

V. RESEARCH DESIGN

To analyze data from questions distributed by Google Sheets, this article SmartLearn-Learning Applications: A Research Study on the Transition of High School and Home Higher Students from Academic to Vocational Education-Based on Self-Education, using a variety of methods. The aim of this study is as follows:

- To show the role of the implementation program.
- Research on how students transition from traditional learning to contemporary technology learning.
- Determine which part of the application supports education.

Using a descriptive and inferential analysis method, the study focuses on the effectiveness of instructional design in self-learning technology. This questionnaire consists of ten multiple choice questions and is designed to ask for answers from a group of students who are already enrolled in the app. All aspects of the app's usability-performance, comfort, interactivity and design-were examined. Personal information of the defendant was also obtained. The pie chart is created by arithmetic and analysis. Participants chose answers to multiple-choice questions based on their opinions.

VI. DATA COLLECTION PROCESS

Data collection in research is the process of obtaining and evaluating data in order to address research questions, evaluate hypotheses, and evaluate what has been discovered. To obtain the data for this study, the researchers selected students in grades VIII to XII

from CBSE and the state board. A questionnaire was distributed to students in more than 25 schools in Kannur, Malappuram, Palakkad, Thrissur and Thiruvananthapuram, Kerala to understand how the app is affecting and changing students' learning.
They had approximately two weeks to complete the questionnaire and send it back to the researcher.
Users of the app are involved in writing questions. Of the 115 respondents, 100 were selected to participate in this study. Others were excluded due to missing data.

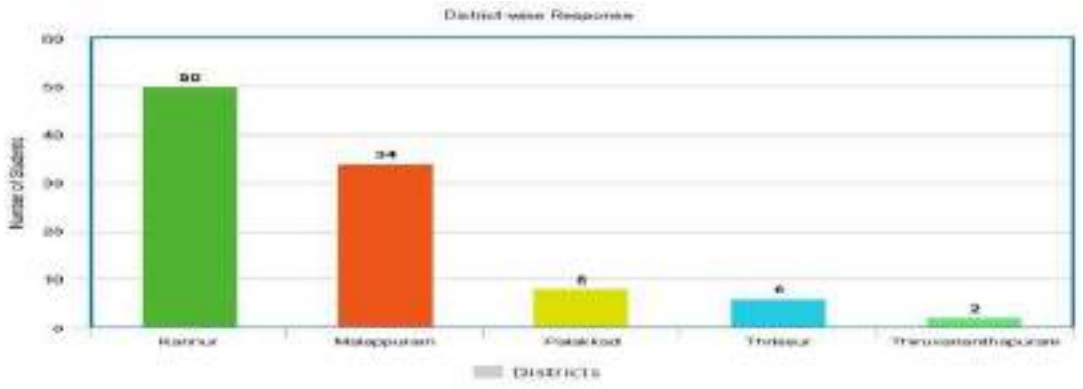

Figure 1: number of students participated in different districts.

The number of students from Kannur, Malappuram, Palakkad, Thrissur and Thiruvananthapuram districts in Kerala is shown in figure 1.
Fifty students from Kannur responded, followed by 34 students from Malappuram, 8 students from Palakkad, 6 students from Thrissur and 2 students from Thiruvananthapuram.

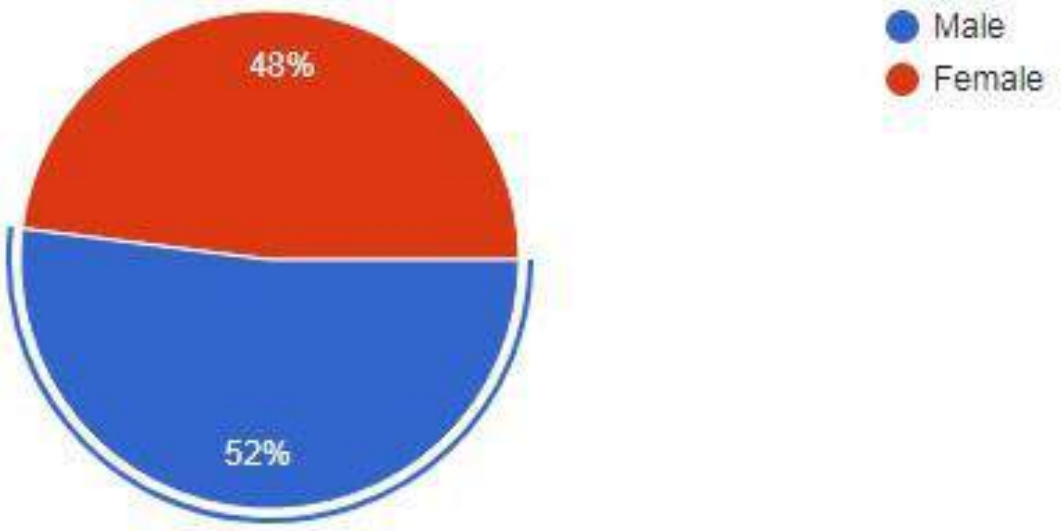

Figure 2: percentage of male and female student respondents.

Figure 2 shows the percentage of men and women who responded. 52% of the students are male and 48% are female. Figure 2 shows the student's learning process.
58% of respondents are from the State Board (Kerala syllabus), 42% are from CBSE. Eight men and 34 women from the CBSE board and 40 men and 18 women from the state board responded.

VII. FINDINGS AND DISCUSSIONS

For statistical model-based analysis, we collected and compiled data from respondents. Statistical models help draw conclusions or make decisions when the population is limited. Charts, graphs, charts, and graphs are used to represent data. After completing the data presentation, researchers can analyze the data using descriptive and statistical analysis. Inferential data analysis is an analysis that helps evaluate ideas based on patterns taken from various topics. The main features of the collected data are explained through data analysis.
The theme of the app is "Fall in love with learning". According to its announcement, the app uses technology to make learning better by simplifying the content. Researchers examine how the use of modern education in apps can change the way users learn. The answers given by the students to the questionnaires were carefully analyzed using descriptive and quantitative research methods. The app uses a research analysis to help it draw some conclusions.
Among the variables taken into account are the degree of students' use of the application, the scope of the application, their preferences, ease of use, focus, efficiency, study, etc. All the information selected here is based on the questionnaire given to the students. The application can reach a wider audience thanks to advertisements in visual media such as TV and printed media such as the internet. 74% of students started offering the program through work. Only 1% of students use it to review the app, 4% to complete assignments, 24% to prepare for exams, and 70% to understand content.
72% of students say software helps them prepare for exams. 46% of the participants requested to use other training methods. The table below summarizes the results of the study.

Table 1: Transformation, Personalisation, Promotion of Learning, Effectiveness, Easiness.

FINDINGS OF THE STUDY					
SI. NO	**PARTICULARS**				
1.	**Penetration of the App**	Advertisement-74%	School12%	Family-10%	Printed Media-4%
2.	**Scope**	Understand Concepts70%	Exam Preperation-24%	Homework-4%	Revision-1%
3.	**Attractiveness**	Good68%	Average22%	Very Good-8%	Not at All-2%
4.	**Easiness**	Quite50%	Very-44%	Not Very-4%	Not at All-2%
5.	**Subject Focus**	Maths42%	Science42%	Language8%	Any Other-8%
6.	**App Usage**	30 min to 1 hr-60%	Less than 30min26%	1-2 hrs10%	More than 2 hrs-4%
7.	**Orientation for Exams**	Very-36%	Quite36%	Not Very-20%	Not at All-8%
8.	**Effectiveness**	Very-50%	Quite34%	Not Very-12%	Not at All-4%
9.	**Self-Learning**	Very-52%	Quite32%	Not Very-14%	Not at All-2%
10.	**Use of Other Learning Apps**	Yes-46%	No-38%	Some16%	Many-NIL

Undoubtedly, this represents a change in the way we learn from the past. regular process work. "Personalize" and "Encourage Learning" look at how much the app encourages students to learn independently. Fifty-two percent of respondents said the app facilitates self-learning and provides a hands-on experience.:

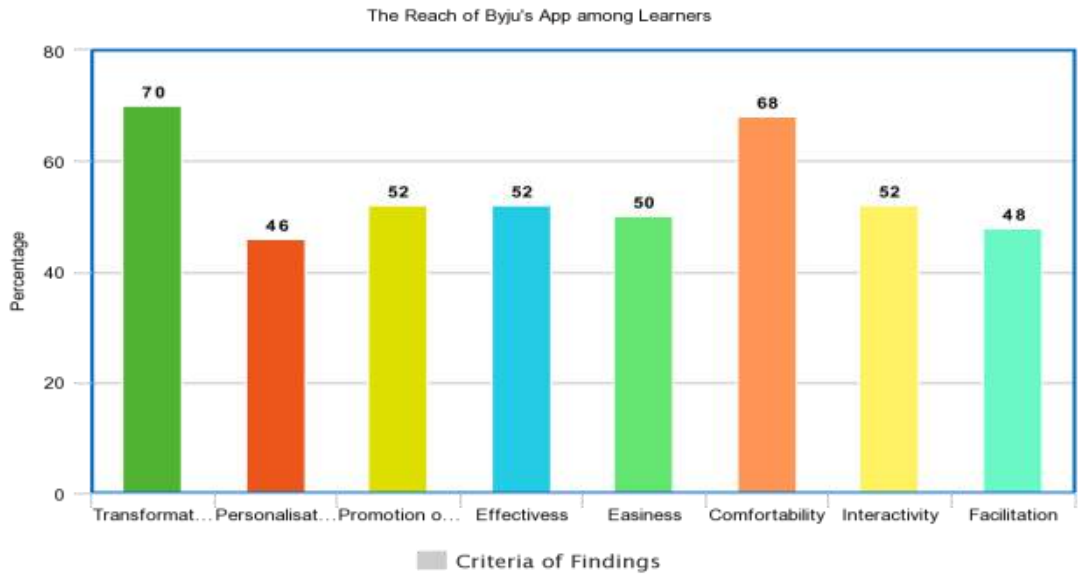

Figure 3: Graph for criteria included Transformation, Personalisation, Promotion of Learning, Effectiveness, Easiness

The competency section covers how the app can help users prepare for and reduce exam stress. 36% of the participants said that using the app reduced their test anxiety and 50% said that using the app helped them to be successful in the exam. The Ease of Use study shows how easy the program is to use. 50% of students found the app very easy to use. The "Comfort" app has been tested and seen how easy it is to use.
68% think the app is good. The term "interactive" was chosen because practice testing is attractive and functional.
Help discover how software helps students understand complex concepts and makes difficult topics easier to learn. 42% of respondents use the app to learn math, and 42% use it to learn science. Understanding how practices can help eighth to twelfth graders achieve academic success is the ultimate goal of research. Not surprisingly, the chart below shows students in Class X using the app the most, followed by XI and XII. It shows the classes are coming. Students in middle and high school take education seriously. Repetitive learning is not good for them because most of the test questions are practice.

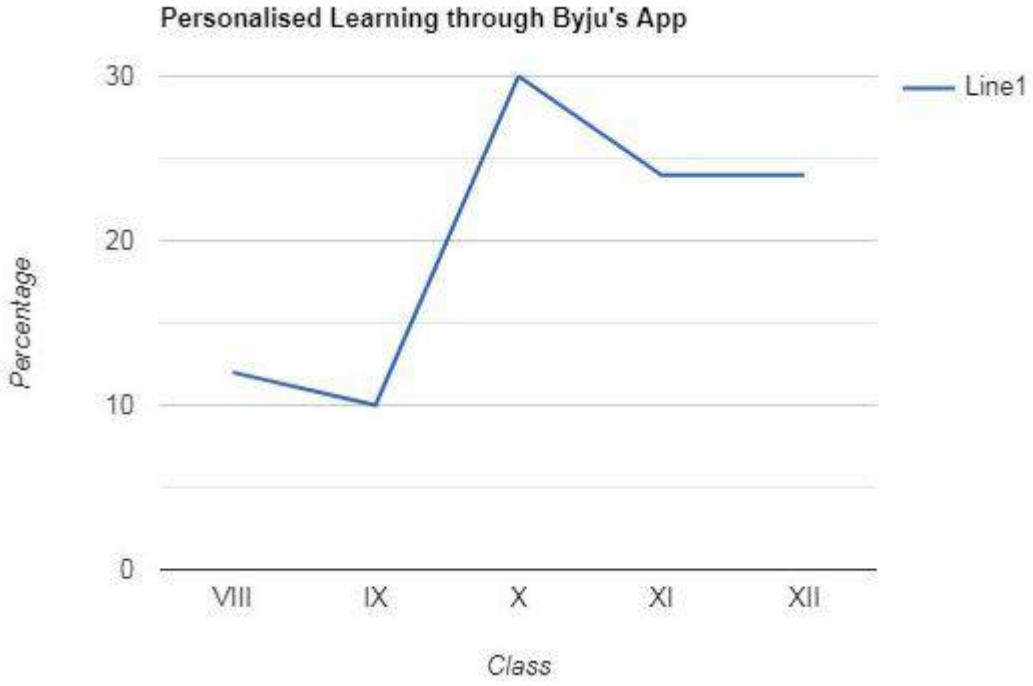

Figure 4: Graph for Personalized Learning through Byju's App

Students need to understand the specific topic in order to answer these questions. Memorization doesn't work in the long run.

Today's teachers believe in self-directed learning. Constructive teaching methods are frequently used in education because they are practical and student-centered. In this case, the Application is correct and its success speaks for itself. From the chart below, it is seen that students in X, XI and XII classes use the application more frequently.

VIII. CONCLUSION

By assisting users in comprehending complex concepts, the SmartLearn App is recognised for enabling students to learn at their own pace. The software uses a number of modern instructional techniques, such as web-based learning, visual graphics, video-based education, etc. to provide a fully immersive learning experience. These developments allow students to better study foundational concepts and prepare for exams. This study shows how an app successfully used helpful teaching and learning methods to transform Indian education.

The majority of respondents agree that the app is engaging, comfortable, and practical. The study does, however, also show that some users, who are not regular app subscribers, are unable to utilise this programme for individualised learning. A standard subscription is expensive for Indian students. The software will surely reach a big audience and alter the way that education is delivered if it can be made more affordable.

IX. ACKNOWLEDGMENTS

The authors would like to express their gratitude to the respondents who made it possible for them to complete their survey work by promptly responding to the questions.

X. REFERENCES

[1] Ansari, Mohd Shoaib. An Investigation of Effectiveness of Mobile Learning Apps in Higher Education in India. International Journal of Information Studies and Libraries, Vol. 2(1), PP. 33-41, 2017.

[2] Ausubel, D., Helen, Hanesian, & Joseph, D. Novak. Educational psychology: A cognitive view. New York, NY: Holt, Rinehart, & Winston. 23-78, 1968. [Book Style]

[3] Bada, Dr. and Steve Olusegun. Constructivism Learning Theory: A Paradigm for Teaching and Learning [PDF file]. IOSR Journal of Research & Method in Education (IOSR-JRME), Vol. 5(6), PP. 66-70., 2015.

[4] Bhutto, Shumaila and Imran Umer Chhapra. Educational Research on "Constructivism"-An Exploratory View. International Journal of Scientific and Research Publications, Vol. 3(12), PP. 1-7, 2013.

[5] Biggs, J. Enhancing Teaching through Constructive Alignment. Vol. 32(3), PP. 47-64, 1996.

[6] Brooks, J.G. & Brooks, M. In Search of Understanding: The Case for Constructivist. Association for Supervision and Curriculum Development (ASCD), USA, PP. 45126. (Book style).

[7] Bruner, J.S. The process of education, Cambridge, MA: Harvard University Press. PP. 12-88. (Book style).

[8] Casanova, Ann Marie. Case study-Cultivating a love of learning in K 12: BYJU's: how a learning app is promoting deep conceptual understanding that is improving educational outcomes in India (English). Washington, D.C.: International Finance Corporation. World Bank Group, PP. 1-28, 2018

[9] http://documents.worldbank.org/curated/en/2929315253 44147810/BYJU-s-how-a-learning-app-is-promotingdeep-conceptual-understanding-that-is-improvingeducational-outcomes-in-India. (URL Link).

[10] Majeed, Adnan. Survey Paper on Mobile Learning and Education. Scientific Research Journal (SCIRJ), Vol. 3(5), 39-43, 2015.

[11] Majumdar, Shyamal. Emerging Trends in ICT for Education & Training. PP. 1-13, 2006. Mascolo, M.E. and Fischer, K.W. Constructivist theories. Theories of Development. PP. 47-49, 2005. http://www.academia.edu/8906476/Constructivist_Theor ies

[12] Motiwalla, Luvai F. Mobile learning: A framework and evaluation. Computers and education, Vol. 49(3), PP. 581-596, 2005.

[13] Nayak, DR. Rajendra Kumar. A Study on Effect of Constructivist Pedagogy on Students' Achievement in Mathematics at Elementary LeveL. PP. 1-15, 2013.

[14] Piaget, J. The psychology of intelligence. London: Routledge and Kegan Paul. PP. 23-88, 1950. (Book style).

[15] Prosser, M. and Trigwell, K. Understanding Learning and Teaching, The Experience in Higher Education., Buckingham: Society for Research into Higher Education and the Open University Press. PP. 10-143, 1999. (Book style).

[16] Quinn, C. Get ready for m-learning. In Kurubacak, Gulsun, Altinpulluk, Hakan (Ed.), Training and Development. An Augmented–Reality-Based Intelligent Mobile Application for Open Computer Education Vol. 20(2), PP. 20-21. United States of America: IGI Global. 2001. (Anthology, Book style).

[17] Ruffini, M. Screencasting to Engage Learning. 2012.

[18] Sarrab, Mohamed, Laila Elgamel, and Hamza Aldabbas. Mobile Learning (M-Learning) and Educational Environments. International Journal of Distributed and Parallel Systems (IJDPS), Vol. 3(4), PP. 31-37, 2012.

International Journal of Information & Computation Technology.
ISSN 0974-2239 Volume 13, Number 1 (2023), pp. 1-6

https://dx.doi.org/10.37624/IJICT/13.1.2023.1-6

A Secure Land Asset Transfer System using Blockchain

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Abstract

Property transfer is one of the use cases that involves a lot of intermediaries to put trust in the system. In the present scenario, property transactions are carried out on paper, giving rise to countless conflicts. Maintaining accurate records of land ownership and transfers is a very difficult task, made even more challenging by fraudulent or incomplete registries that can be extremely hard to trace back through history. The integrity of these records is crucial, but ensuring their accuracy is a complex undertaking. Blockchain can be utilized to overcome these predicaments faced in land dealings. The transparent nature of blockchain makes it possible to securely track the transfer of ownership from one individual to another reliably. Blockchain's immutable, auditable, and traceable features makes it a suitable solution for this use case. IPFS is a decentralized protocol and peer-to-peer network that facilitates the storage and sharing of data in a distributed file system. It's designed to enable efficient and secure sharing of files across a network of computers without relying on a central server. A solution of decentralized application or DAPP on Ethereum Blockchain is proposed through this work, which will be a one stop platform for buying, selling, or registering land. A systematic approach is used, right from the registration of the land inspector/buyer/seller to the registration of lands, making it available to sell, etc.

Keywords: Blockchain, Smart Contracts, Ganache, Ethereum, IPFS, Decentralized Application

1 Introduction

In our country, property ownership is a contentious issue because of the lack of proper documentation and legal conflicts. The system's weaknesses lie in legacy paper trails and poorly maintained centralized systems, which can be easily manipulated by

fraudulent users. To address these issues, an Ethereum blockchain-based Decentralized application is being proposed. Blockchain technology is created by combining a blockchain system or network with a data structure. The data is stored in blocks which are interconnected and also has hash references to the previous block. The hash references are also used for storing transaction data. A hash function is a tool that takes in data of any size and converts it into a specific and unchanging string of bits called a hash value or hash reference. While these hash values can be quickly calculated, it's extremely challenging to reverse the process and turn the hash value back into the original data, according to computational theory. The proposed system uses the IPFS, which is a distributed file system for storing the confidential land and user identity documents. The proposed system aims to create a secure, decentralized, and tamper-proof platform for buying, selling, and registering land. By enabling direct communication between buyers and sellers and eliminating the need for intermediaries, the system will increase transparency and efficiency. The goal is to create a one-stop decentralized application that can maintain immutable and tamper-proof records of transactions.

2 Related work

In 2021, Suganthe et al. [1] proposed a system that provides the precise details of land records and ownership. The major drawback of this system is that it can only get the land details and store them within the blockchain and hence it doesn’t enable users to buy/sell the land or transfer the ownership of land.

The proposed work of Mohammed Moazzam Zahuruddin et al. [2] is implemented on Ethereum blockchain with solidity. The system being proposed employs a double consensus mechanism for transactions, where the landowner initiates the transaction and the buyer completes it. This approach addresses situations where the landowner is unavailable, and assigns ownership to the government. The major drawback of this system is offline land details verification.

This paper [3] proposes a land document registration system based on Ethereum and IPFS. This method ensures that user papers kept in the IPFS garage are secure. They expanded an information garage software to illustrate the process. The log files are saved on the IPFS network, which also provides the Hash. The major drawback of the system is that it simply secures the documents stored on IPFS and doesn’t provide any provision for communication between the land buyers and sellers.

3 Proposed system

The system we propose is a decentralized application which provides a user-friendly interface for direct communication between the buyers and sellers without any middle man. We aim to implement this system using Solidity and Flutter. The DAPP will be a one stop platform for buying, selling and transferring land assets. The system has user/land authentication and verification to prevent fraudulent activity. The system facilitates the users to buy/sell land assets conveniently and every transaction is recorded on the blockchain to maintain transparency and immutability. IPFS is used to

store the land and identity documents in a decentralized way. The GIS mapping software is used to draw and display the layout of the land. All the transactions take place in Ethers using Metamask wallet. As a proof of ownership transfer, a land sale deed document is generated and stored in IPFS.

4 Implementation

4.1 Module Description

Authentication Module.

In this module, the verification of the user and the lands is done. The user first registers with the help of his private key and identity documents. After the user has registered, the Land Inspector verifies his identity documents and authenticates him. If the user adds a land to his profile, the Land Inspector should verify the land documents in order to enable the user to take further actions.

User Processes Module.

In this module, the user can add lands to his dashboard, make lands available for sale or buy the available lands from the land gallery. Each of these actions are followed by verification in every step. Finally, the transfer of ownership takes place and a digital document is generated and stored.

Transactions Module.

Metamask is used for making transactions in our system. Right from the buyer's payment to recording the transfer of ownership, all the transactions are tamper-proof and unchangeable.

4.2 System Design

There are three stakeholders namely, contract owner, land inspector and the user interact with the decentralized web application. It is built using flutter and solidity. Web3.js is used as API support for communication between the DAPP and blockchain. An Ethereum wallet is required for performing all the blockchain transactions. The documents are stored on IPFS which is a decentralized file system.

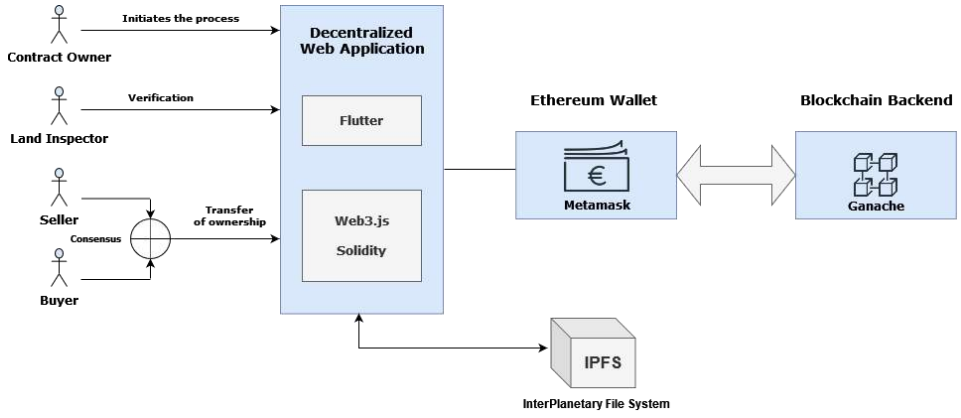

Figure 1. Proposed System Design

4.3 Working

The contract owner initiates the whole process by deploying the smart contract on the Ethereum blockchain and acts as the Admin of the system. The contract owner can add/remove the Land Inspectors. First-time users have to register into the system by using a private key and by providing personal information. The system verifies the user and the land inspector verifies the identity document produced at the time of registration. Once the user is authenticated, the option to add lands is enabled. The land inspector verifies the land documents before approving the addition of land to the user's profile. Once the land is verified, it gets added to the land gallery of all the users. The user can make it available for sale or can buy an already available land. If the seller accepts the request, payment is made and transaction begins. The land inspector verifies the transaction and transfers the ownership of the land. A transfer of ownership document proof is generated and stored in IPFS securely.

5 Results

Figure 2: Land Inspector Dashboard

Figure 3: User Dashboard-Land Gallery

Figure 4: Land Details Page showing Land Map drawn using GIS

Figure 5: Payment Confirmation Page

Figure 6: Payment in transit using Metamask wallet

Figur 7: Land sale deed document generated and stored using IPFS

6 Conclusion and Future Scope

The proposed system is a single platform for the users to buy/sell/register a land. By providing the details of the user, identity documents and land documents which are verified by a Land Inspector, the system ensures the credibility of the data. On the contrary, if these were provided in the traditional system, the data could be altered easily. With the help of blockchain and by storing the data on a decentralized file system, we have ensured that no fraudulent activity takes place and the data remains tamper-proof.

As we know that there's always a scope for improvement, there are certain aspects that could be added to our system to increase its overall efficacy. The system can be further enhanced by automating the user and the land verification process. We can also predict the approximate price of land and suggest the users about the current land price trends. We can also include land splitting or gifting options.

References

[1] Suganthe, R. C., Shanthi N., Latha R. S., Gowtham K., Deepakkumar S., and Elango R.: Blockchain enabled Digitization of Land Registration. In: 2021 International Conference on Computer Communication and Informatics (ICCCI)(2021)

[2] Mohammed M.Z., Gupta S., Shaik W.A.: Land Registration using Blockchain Technology. In: International Journal of Emerging Technologies and Innovative Research (2021)

[3] Kumar K.V.R., Gokul A.R., Kumar.V.N.: Blockchain and Smart Contract for Land Registration using Ethereum Network. In: International Journal of Engineering Research & Technology (IJERT)(2022)

[4] Roopa.C,, Suganthe, R. C., Shanthi N.: Blockchain Based Certificate Verification Using Ethereum And Smart Contract. In: Journal of Critical Reviews(2020)

International Journal of Information & Computation Technology.
ISSN 0974-2239 Volume 13, Number 1 (2023), pp. 7-14

https://dx.doi.org/10.37624/IJICT/13.1.2023.7-14

College Knowledge – A Networking Portal

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Abstract

A networking site called College Knowledge is devoted to creating communities within college to strengthen networks. We all had to stay at home because of circumstances like COVID, so we only knew the people in our classes. If we had been offline, we would have had a much larger network. Although our placement officer informs us about the options, the purpose of the portal is to inform the students about the opportunities that are accessible at the appropriate moment. However, occasionally students learn more information that they can share with their peers on this website. Additionally, when encouraged by their other students who have already done it, pupils are more likely to apply and offer their best effort. The portal's primary goal is to facilitate communication. The article goes into detail about the portal's implementation and functionalities. The portal's primary features include the ability for students to blog about their interview experiences, the ability for anyone to submit links in case they learn of any off-campus placements, and the ability for staff to utilise the website to post any course-related materials. Together, these factors facilitate communication among the pupils. Additionally, clubs can utilise this website as a platform for promoting their activities and making any necessary notifications.

Keywords: Web Application, Organization, Access control/Authority, College networking

1 Introduction

There are various apps available now that can be utilized to connect with one another and expand one's network, including StackOverflow, Geeks for Geeks, and LinkedIn.

Students and working professionals use these apps to have their questions answered, learn about job opportunities, and build a larger community. A closed organization may use the networking site known as College Knowledge. Through the portal, college students can blog and exchange content. Students do not need to follow one another in order to see what others publish. Club presidents can also submit information about current events and forthcoming college activities. The primary goal of this website is to encourage students to take advantage of off-campus placement options; however, for this to happen, they must be aware of the opportunity and submit an application in a timely manner. Students can also share their interview experiences in the blogs, giving other students some advice on how to do better.

2 Literature Survey

There are websites that help us to give share technical content with each other and answer each other's doubts. The websites which we consider are listed below:
GeeksforGeeks – It is a one-stop destination for programmers. It is a global website used by programmers in which articles and content about technical topics are shared by people all over the world.
[1] StackOverflow – It is a community-based space to find and contribute answers to technical challenges.
LinkedIn – It is the world's largest professional network on the internet to connect with the people you know and be updated about what is happening with their careers.

3 Proposed System

It is an open platform within a closed organization where students can communicate with each other. It is a platform where we get answers to technical questions from our faculty and students. This is a platform that will be exclusively used by the students of our college.

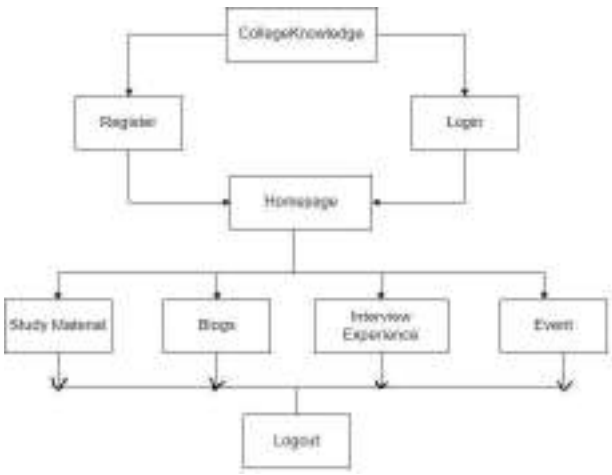

Figure 1: Proposed System of College Knowledge

4 Results and Discussion

4.1. Environmental setup

[2] React.js is utilized as the frontend system to fabricate a quick, responsive, and dynamic UI that can connect with the backend. Additionally, we make use of [3] React Router, a standard library for routing react. In a React application, it is used to move between the views of various components. [4] This application allows users to post blogs and interview experiences. The backend is constructed utilizing [5] Node.js and [6] Express.js, which is a strong mix for making server-side web applications. We have used [7] MongoDB, a well-known NoSQL database, to store the data in a database. The website's smooth operation is due to the integration of the front end and backend. The front end sends the data to the backend, where it is processed, validated, and stored in the database when a user submits a blog post or interview experience. At the point when a client solicitation to see a post, the backend recovers the pertinent information from the data set and sends it back to the front end, where it is shown. React.js, MongoDB, Node.js, and Express.js all work together to create a robust and scalable architecture for a website where users can post blogs and experiences from interviews. A user-friendly, fast, secure, and responsive experience is made possible by the seamless integration of the front end and backend.

Interesting features like, comment and save have also been introduced using some simple algorithms. The most liked posts are shown under the Trending posts block and the most viewed posts are shown under the Popular posts block. Access control has been introduced to protect the data. Admin has access to all the data and information. Students can only write blogs and interview experiences, some students who are the presidents of clubs have some special access rights and can also post about events and happenings in the college, and students can also comment on a post. When a post is reported more than five times the Admin receives an email showing an alert message that there has been some unusual activity, the Admin can take action to either delete the post, warn the user or deactivate the user’s account. Faculty has all access rights as a Student and some special access to upload study materials also.

4.2. Results

Figure 4: The home page of the portal:the navigation bar helps to switch between different sections of the portal. We have login/register options on the top right. We have a search bar in the home page which allows us to search by keywords for the content we are looking for.

Figure 5: Detailed view of the blog:When we click on a blog and open it, we can view the blog completely, author name, number of likes and views. To the left most side we have options to Like, save and comment.

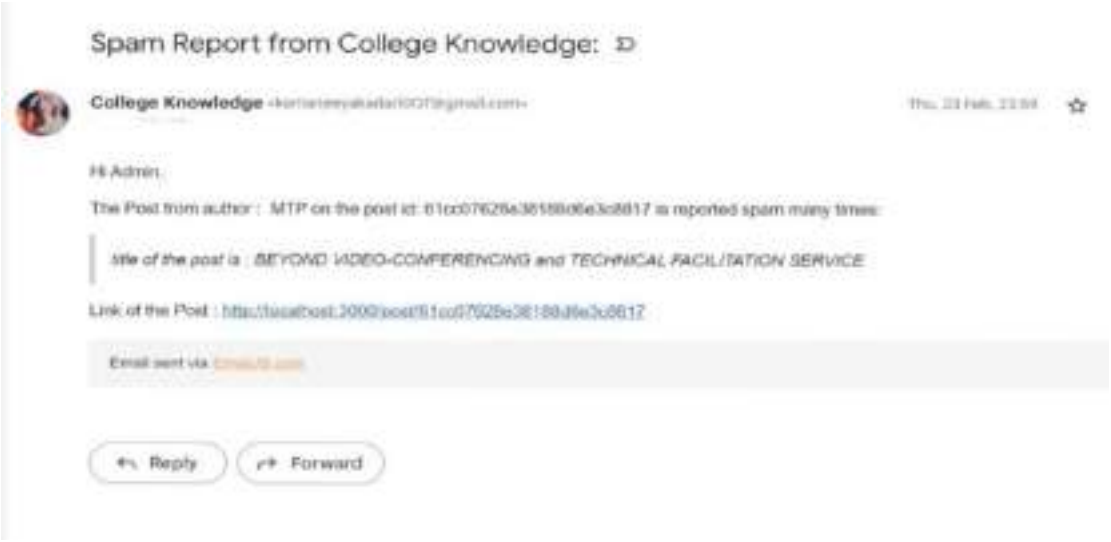

Figure 6: Report page of College Knowledge:This is a screenshot of the email which the Admin would receive when a post is reported more than 5 times by different users

Figure 7:the figure shows the add blog page of the website, where the user can choose their appropriate filter and make their post.

Figure 8: Events tab of the website, students with special access can create new events, while others can view it

Figure 9: Interviews Experience tab in the website, this tab has all the interview experiences uploaded by all the users, we can also search for interview experiences by Company name

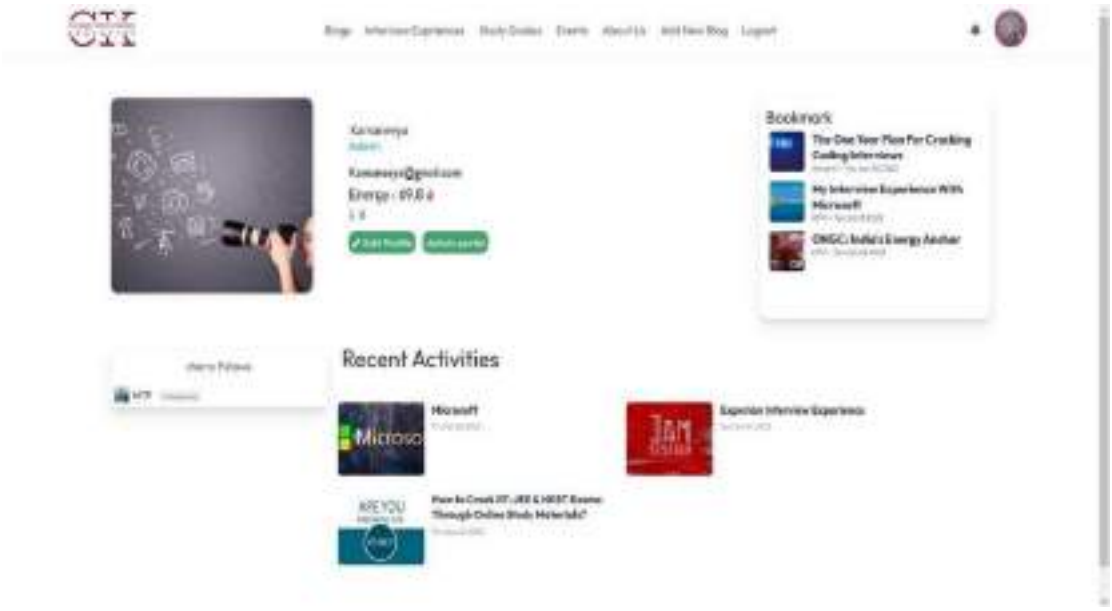

Figure 10: User profile page, the current user is a student. It shows the user details like email id, username and energy and the posts saved by the user.

4.3. Discussion

The article discusses College Knowledge, a gateway for colleges that helps to strengthen their internal network. This website is comparable to many others that already exist, but it also offers some unique features. The answers provided by scholars and technical experts on the well-known website Stack Overflow, which is used to answer technical queries, are frequently difficult for students to understand because they are new to the field and have a limited grasp of the subject matter. Students can submit questions using this site, and their peers and college instructors will respond. Another website that solely provides content through searches is geeksforgeeks.com, where trending posts and popular posts are shown while taking into account the most liked and most watched posts. While this portal is solely for students and faculty members within a college to communicate with one another, LinkedIn is a social media platform used by seasoned and business professionals that would be challenging for novice users.

5 Conclusion & Future Scope

The application is user-friendly and is used to improve the network within the organization and be updated with all the opportunities around. The application is built with basic functionalities fulfilling the required objectives. The application is validated and the users are provided with minimum security. The application is built such that it is user-friendly for naïve users also. The application has features like, save and comment options. Trending posts and Popular posts are displayed on the main page depending on the highest number of likes and views respectively. Proper access control

is provided to different stakeholders depending on their designation in the organization. Overall, the application is suitable for an organization to improve the network between the members of the organization. However, the scope of the application can be further extended by improving the security and privacy of the application. Future scope by improving the privacy of user data and security of the data can be increased by making servers handling database access more secure. All creating multiple levels of database access so that any error created while running the website should not get affected. The application can also be made portable and can be made accessible on any type of device with any software – Android/iOS. The application is currently running on a single server; this can be extended to multiple server applications.

6 References

[1] Analysis of the reputation system and user contributions on a question answering website, StackOverflow:https://ieeexplore.ieee.org/abstract/document/6785805

[2] Research and Application of React.js technology https://legacy.reactjs.org/docs/getting-started.html

[3] Research and Application of React router dom technologyhttps://www.geeksforgeeks.org/reactjs-router/

[4] Integrating Online Blogging Instruction:Exploring Students'Perceptions:https://www.atlantis-press.com/proceedings/eltlt-18/125910534

[5] Research and Application of Node.js Core Technology:https://ieeexplore.ieee.org/document/9424850

[6] Research and Application of Express.js Core Technology:https://expressjs.com/en/5x/api.html

[7] Research MongoDB Technology:https://www.mongodb.com/docs/manual/

International Journal of Information & Computation Technology.
ISSN 0974-2239 Volume 13, Number 1 (2023), pp. 15-25

https://dx.doi.org/10.37624/IJICT/13.1.2023.15-25

Deep Learning Approach for Auto Counting Complex Plants

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Abstract

In order to address the issues affecting crops and their pro-ductivity, plant phenotyping is one of the emerging research topics that requires attention. In this paper, we use Convolutional Neural Networks architecture to count the plants in agricultural areas. Regression is used in place of classification to estimate the number of plants in a field pho-tograph. This eliminates the requirement to know (or estimate) the max-imum anticipated number of plants. The CNN will be trained on these images and evaluated using them. Our tests demonstrate that using the Inception-v3 CNN architecture, we can get a Mean Error as low as pos-sible.

Keywords: Plant Count, Deep learning, Phenotyping, Neural Net-work, Regression

1 Introduction

Plant density, or the number of plants per square metre, and crop productivity, or grain yield, are closely related in significant seeds like cotton seed [1, 2]. There-fore, efforts to improve crops by genetic and managerial means frequently centre on the plants that are being measured. Usually, hand counting methods are used for this, which calls for greater labour. Such methods are time-consuming, expensive, prone to mistakes, and slow. Thus, there is a definite demand for technology that make it possible to count plants accurately and efficiently at various crop growth stages

Using the Convolutional Neural Networks (CNN) architecture, we solve the phenotyping job of counting crop plants in a field in this research. To evaluate number of plants, we employ multiple CNN architectures with few alterations. The number of plants

There is a respectable corpus of work on counting plants and other items in the literature. By using 3D laser scanning scans from a vehicle that is being driven through the field, plants are counted in [3]. The derived plant skeleton in [4] is used to estimate the population of maize plants and their locations. A poplar plantation's tree crowns are counted in [5] by minimising an energy func-tion that represents the plants as uniformly spaced ellipsoids. Using an estimated item density function, objects are tallied in [6]. The training process needs that the object localisation be provided (i. e., pointing at the object).

In order to learn illustrations of data with various degrees of thought, DL is a class of machine learning methods that employs a stack of many processing layers, with each succeeding layer using output from preceding layer as input. DL models are frequently created using multilayer neural networks, in which neurons serving as the connections between two successive layers of features basically reflect different parametrized nonlinear transformations. Weights and biases of the neurons, which are multiplied and added to the input, are two examples of model parameters. Up until the target layer or the decision layer, input data is converted forward in a layer-by-layer method. For instance, in order to alter an input image for a challenge of image classification, hierarchical nonlinear transformations and finally image class becomes the output at the target layer.

An primary attribute set for deep neural network (typically picked at ran-dom) is used to start training such a model (DNN). At the target layer, errors are calculated between desired outputs provided by training data labels and the actual outputs for a huge number of instances. Settings are then updated using a feedback methodlogy layer by layer (from target to input) until the target layer reaches a suitable degree of judgement accuracy. For this training phase, error back-propagation algorithm is typically used.

The typical features that a DNN learns have a hierarchical structure, mean-ing that while the lower layers of abstraction capture basic low-complexity fea-tures, the higher layers of abstraction form more complex features by combining the low-complexity features in intricate ways. DNNs have been trained using stochastic gradient descent (SGD) and its derivatives, including minibatch gra-dient descent [8], ADAM [9], and ADMM [10].

Many computer vision tasks have been addressed using deep learning tech-niques [7, 8, 9]. To develop a classifier or other predictions, deep learning uses nonlinear attributes which will themselves trained to describe the input data [8, 10]. Deep learning has recently been applied to distant sensing tasks like target detection, image restoration, and pixel-based classification [11]. There has been research on counting the number of objects in photos using CNNs. In [12], a neural network with two convolutional and two linear layers is utilised to count objects. The MNIST dataset [13] and the UCSD dataset [14] are specifically used for counting digits and pedestrians, respectively. [15] describes two methods for counting items in photos. A density function is clustered using one. The second method makes use of Support Vector Machines (SVM) for the VGG19 CNN's first two fully connected layers and final pooling layer in the CNN [16]. A ResNet architecture variant is suggested in [17] for enumeration and localising automo-biles from satellite photos. [21] uses a custom CNN to degenerate population in compact crowds.

2 Collection of Data

Due to the dearth of publicly accessible datasets for task of plant counting, we created our own dataset for training and testing. This dataset comprises of 4,316 RGB photos of cotton field regions taken by a UAV when it was flying at a 45-meter altitude. Three samples of the RGB images from our dataset are shown in Figure 2.1 which are taken on from July 13, 2022. Each photograph has a resolution of 540 by 140 pixels and between 0 and 20 plants. These pictures were created by cropping orthoimages of a cotton field that were taken by a UAV at different times during the growing season [19]. The UAV cameras are calibrated to establish their internal settings before producing the orthoimages. Triangulation is used to estimate the coordinates of sparse points as well as the location and positioning of each UAV image. [19] describes process used to create the orthoimages. Produced from UAV pictures taken on July 11, 2021.

A panel is one of the field's three primary divisions. Because it is the only part of the central panel that can be groundtruthed, only the upper half is used for analysis. The plants in other parts of the field are too closely packed together to be physically counted. Ranges are divisions within a panel that run parallel to the direction of the plant alignment, while rows are divisions that run perpendicular to that direction.

A part of the orthoimage in Figure 3 with two ranges and five rows, gen-erating ten sub-rows, is an example of a panel with M rows and N ranges and MN sub-rows, which is an aligned ensemble of a few plants. The orthophoto is used to create the images in our dataset in the manner described below. The orthophoto's Region Of Interest (ROI) is first cropped using the user's specified coordinates. The central panel of Figure 2 is ROI for our dataset. The panel & a few pixels of the neighboring soil must be totally included in the ROI, although the coordinates do not need to be extremely exact. Next, we create a mask utilising the segmentation method, we described in [19]. Summation of P (x)=I (x,y) (Equation 2) where each column x of the ROI receives a vertical sum for each. We refer to the "horizontal profile" as ph. An illustration of a horizontal profile is shown in Figure 4. The vertical lines separating the field's ranges are shown by the valleys in ph (). These lines should ideally only cross soil that is not covered by plants and not interfere with any vegetation. In actuality, the rows of field are not perfectly straight, and there may even be unanticipated weeds, so pH at the troughs is higher than zero. The increase around x=22, 745 can be attributed to weeds & grass from external field encroaching on it. We predict the range-separating lines will be located as follows: Xn=X0 + n X (Equation 3) where N is the field's total number of ranges. Due to the low dimensionality of the issue, brute force is used to perform the optimization in Equation (3). Equation (3) makes the assumption that the field's ranges are separated by a constant distance (X). For orthophotos that are well-aligned, this assumption is plausible. The procedure described above is applied to each range independently after the field has been partitioned into ranges. Getting lines that separate each array into rows is the aim here. As we move forward, we only choose the area of mask that corresponds to each array a I (x,y)=1 if I (x,y)=1 (Equation 4)=0 else for all arrays a=0,..., N 2. For each array a, vertical outline is attained p (y)=I (x,y) (Equation 5) where the ROI's picture rows y each have a horizontal sum. We calculate the field row dividing lines in each range r as Y r=Y r + m Y r (Equation 6) m is number of field rows. A grid of NM coordi-nates is produced by the points where the vertical and

horizontal lines connect. The bounding boxes are created with the help of coordinates across sub-row of the plant There is a chance that these bounding boxes will differ in dimensions. All bounding boxes are reformed to the intermediate bounding box magnitude while maintaining identical centroid for each bounding box in order to produce a collection of photos that are the same magnitude. The images in our collection are made up of the pixels inside these bounding boxes.
We gathered photos on July 13, 2022, and July 21, 2022, which are two separate days. The photos from July 13, 2022 were obtained using the bounding box coordinates for July 11, 2021. By physically counting number of plants in each shot, we groundtruthed the dataset. The spreading of ground truth for each time is depicted in Figure 2.3. The other 1,240 photos are for July 11, 2021, while 1,240 are for July 3, 2021. Between these two periods, there is a marginal rise in the number of plants.

Figure 1: Three samples of the RGB images 16 plants each with one sub-row of plants

Figure 2: Cotton Crop field acquired on July 21,2022

Figure 3: Acquired Segment of the orthophoto on July 21, 2022

Figure 4: Difference in leaf counting

3 Methodology

3.1 Image Phenotyping System

While gathering data at the plant level yields accurate information correspon-dence, the expert cess is time-consuming, demanding, and occasionally challeng-ing. Crops are densely cultivated in an outside climate. Accessing plants can be difficult and costly. As a result, high throughput plant phenotyping benefits less from information gathering per plant. For instance, UAVs have made it possible to secure aggregate information during current imaging stages. These steps can capture a field's general information in less than an hour, but developing precise information correspondence is more difficult. The physical organisation of the captured images and their naming are time-consuming tasks. The ghostly data collected from UAV symbolisms is projected to a level surface with geocoordi-nates using orthorectification techniques as shown in [4]. We may assign each region with its pixel-level sensor information, which is used for quality assess-ment, using its geocoordinates. We present an RGB image based picture based plant phenotyping system that compiles the information correspondences and evaluates attributes at the plot or plant level. Additionally, this framework in-cludes a web interface and an adequate processing stage, making it simple for plant researchers to access and employ our apparatuses. Figure 3.1 depicts the Linear and Non-Linear Functions of Plant Pixels data generated by the UAV platform as input, and outputs the estimated properties for selected regions. We'll probably add an image showing the number of plants. Our method dif-fers from in that we don't take the plant into account when determining the class number. Last layer of a CNN typically has the same number of neurons as greatest number of plants in image. This a strategy solves a categorization issue. The cross entropy is a typical loss function in a classification task. [9, 18, 23] H (q,p)=p (x) logq (x) (Equation 7) where p (x) is the label and q (x) represents the activations at each of the final layer's x neurons. Using one-hot encoding to set p (x), i.e. p (x)=1, x=ci (Equation 8) the loss function only considers one neuron where Ci is plant count label of ith picture (Ci-th neuron) H (q, p)=log q (Ci) (Equation 9). This suggests that we would ignore any persistent activation while training. P (x) can be understood as the degree of assurance that image goes to class x. When classes are independent, equations (8) and (9) apply. The modules in our dataset are not entirely autonomous, though. The illustration would be a picture with two plants in it. The difficulty to network should be significantly less if the evaluation is three than if it is five. Due to significant label noise in our dataset, this is even worse. When plants are grouped together, the label may differ significantly from the actual value by more than one count.

The need to predetermine the maximum number of classes is another issue with the classification approach. We use the Lp norm as the loss function to be minimised in order to solve these issues: Lp (x, Ci)=|x Ci|p (Equation 10) where x is the projected number of plants. The Mean Squared Error (MSE), a standard loss function for regression, replaces the Lp loss at p=2. This inaccuracy can be seen as the usual mistake we make when estimating the plants count in an image even though p=1.

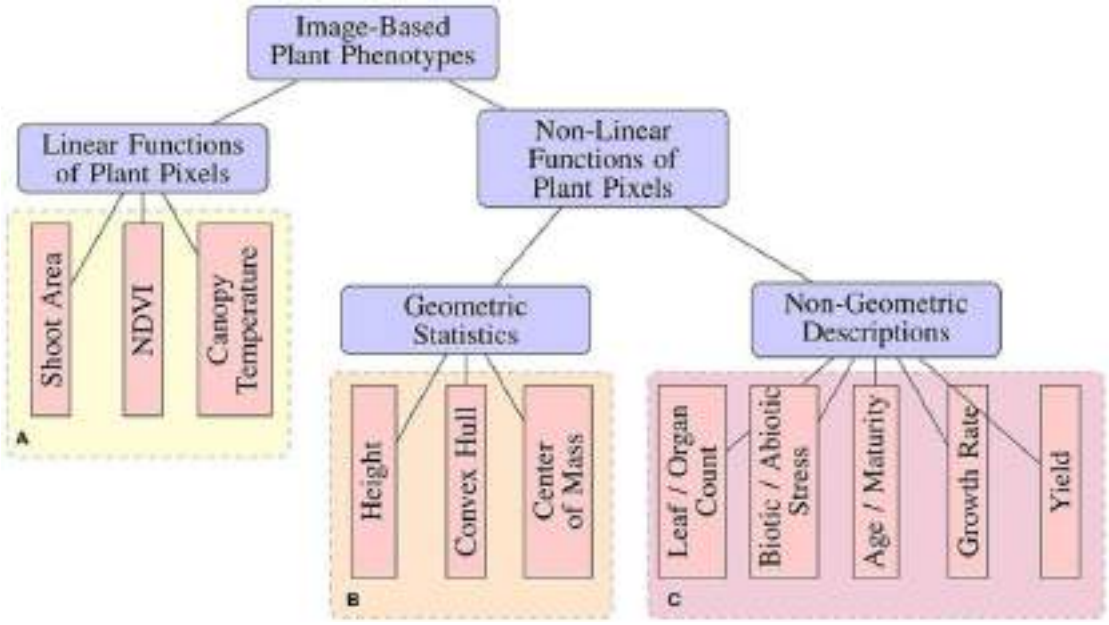

Figure 5: Block Diagram of Image Phenotyping System

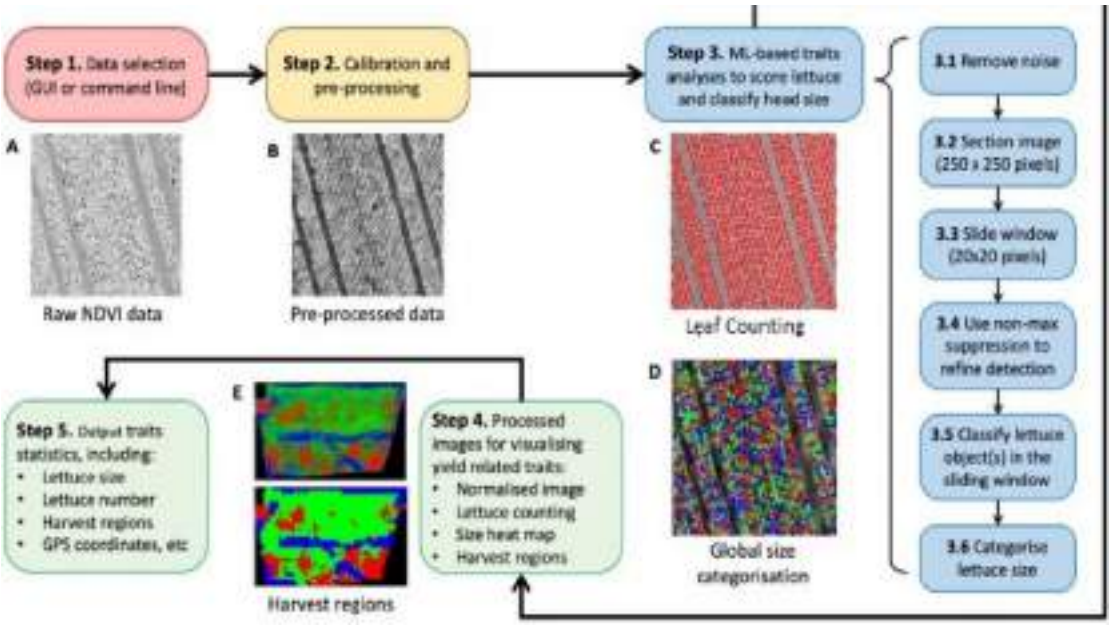

Figure 6: A high-level analysis workflow of leaf counting

4 Experimental Results

Here, we'll discuss the findings of various counting task methodologies and con-trast them with one another. Our comparison will centre on how well various models did when counting on raw image, using the ground truth palms count of 15947. The amount

of the training dataset required to reach the desired accuracy level is another crucial factor to consider

4.1 Regression with density maps

Heatmap on 4.1 was produced as a result of applying the density map regression model to the entire image. The majority of palms had white circles on them that deep neural networks were trained to identify and create from obscured photos. After summarising the resulting heatmap, we were able to count 15784 palms with a 98.9% accuracy rate. Finding coordinates Blob detectors may be used to determine the coor-dinates of the palm centre since the mask we acquire has circles of the same hue that are easily distinguished from one another. We utilised "SimpleBlobDetec-tor" from Bradski, 2000 to get the coordinates. The outcome is displayed on 4.2

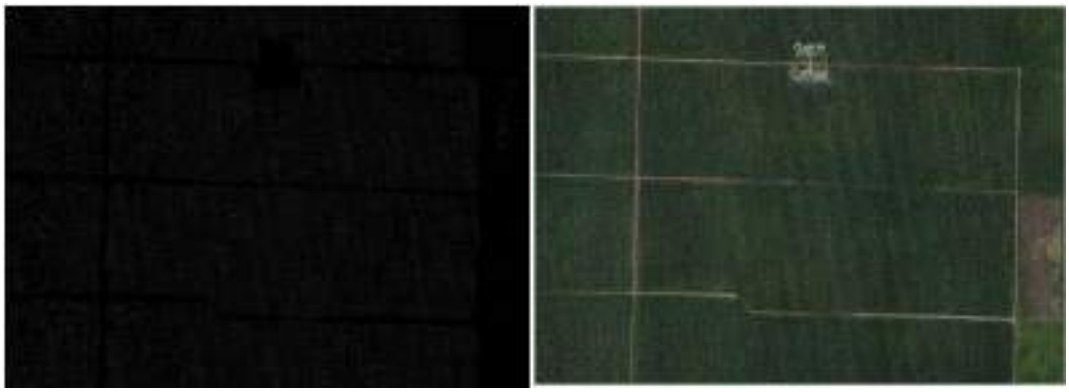

Figure 7: (a)Cotton HeatMap (b) stacked on top of input image

4.1 Regression using a classifier

When the procedure from section 4.4 was applied to the entire dataset, the result was 20448. This gives us a 28% inaccuracy when compared to the 15947 plant instances that make up the ground truth value. This margin is unsatisfactory for the task of counting crops since it introduces a lot of uncertainty when employed in additional plant lifetime modelling and revenue projections. The method might be enhanced by expanding the training set with more data, but this task was excluded from the current study's scope because one of the work's prerequisites was a small training dataset

4.2 Extracting the Foreground

A mask with a surface area of 76023641 square pixels was produced by the foreground extraction technique used in the sugar beet example. We can estimate that there are 37710 plant instances in the field based on the average plant size of 42 48 pixels. With the aid of agricultural professionals, further projections and estimates might be made using this method's 93% accuracy.

4.3 Slider window

Since this strategy was causing several classifier activations on the palm class for a

single plant instance, as can be seen on 4.3, evaluation of the approach when we tried to classify patches was not finished.

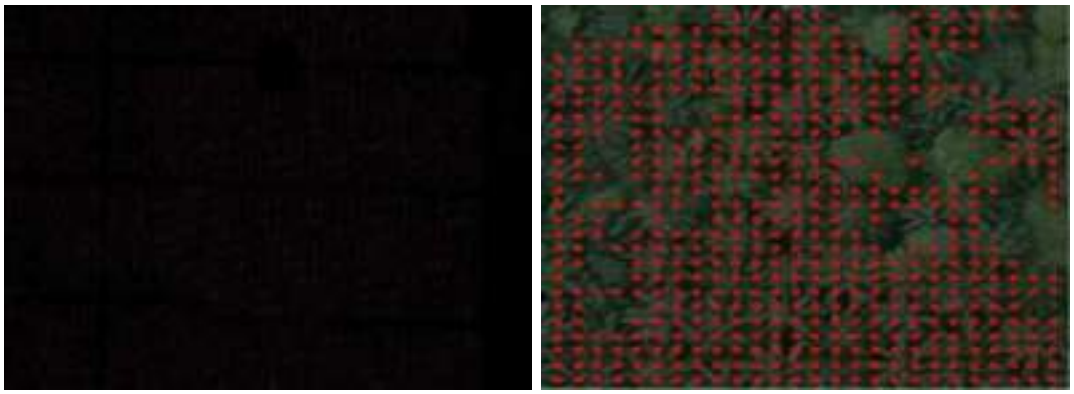

Figure 8: (a)Blob detector results (b) Sliding window iteration result

5 Conclusion

Employing our own collection of RGB UAV images of cotton plants, we demon-strated a method using CNNs to estimate the number of harvest plants in a field. We evaluated how well various neural networks presented themselves for the task of plant counting while making minor design changes. On the testing set, the Inception-v3 design had the smallest Mean Error. Because it produced the least amount of error in our tests, p=1 was the reward for p in the Lp stan-dard. Future work will involve adding more data, using other methodologies for data augmentation, and calculating other plant characteristics like the number of leaves.

References

[1] Dale JL. Banana bunchy top: An economically important tropical plant virus dis-ease. Advances in virus research. 1987; 33:301326.

[2] STEWART L, CAMPAGNOLO D, DANIELLS J, LEMIN C, GOEBEL R, PINESE B, et al. Tropical banana information kit. Nambour: Queensland Department of Primary Industries. 1998.

[3] Bastiaanssen WG, Molden DJ, Makin IW. Remote sensing for irrigated agriculture: examples from research and possible applications. 2000; 46 (2):137155.

[4] Mulla DJ. Twenty five years of remote sensing in precision agriculture: Key advances and remaining knowledge gaps. 2013; 114 (4):358371.

[5] Zhang C, Kovacs JM. The application of small unmanned aerial systems for pre-cision agriculture: a review. Precision agriculture. 2012; 13 (6):693712.

[6] Turner D. Banana plant growth. 1. Gross morphology. Australian Journal of Experimental Agriculture. 1972; 12 (55):209215. https://doi.org/10.1071/EA9720209

[7] Ke Y, Quackenbush LJ. A review of methods for automatic individual tree-crown detection and delineation from passive remote sensing. International Journal of Remote Sensing. 2011; 32 (17):47254747.
[8] Singh K, Sohlberg S, Sokolov V, et al. Conceptual framework for the selection of appropriate remote sensing techniques. 1986.
[9] Pinz A. Tree isolation and species classification. Automated Interpretation of High
[10] Spatial Resolution Digital Imagery for Forestry, Victoria, BC; 1998. p. 127139.
[11] Gougeon FA, Leckie DG, et al. Forest regeneration: Individual tree crown detection techniques for density and stocking assessment. BC; 1998. p. 1012.
[12] Brandtberg T. Automatic individual tree based analysis of high spatial resolution
[13] aerial images on naturally forests. 1999; 29 (10):14641478.
[14] Pollock R. Individual tree In: Proc. of the International Forum on Automated Interpretation of High Spatial Resolution Digital Imagery for Forestry. Victoria, British Columbia, Canada; 1998. p. 2534
[15] Johansen K, Sohlbach M, Sullivan B, Stringer S, Peasley D, Phinn S. Mapping
[16] banana plants from high spatial resolution orthophotos to facilitate plant health assessment. Remote Sensing. 2014; 6 (9):8261 8286.
[17] She T, Ehsani R, Robbins J, Leiva JN, Owen J. Applications of small UAV systems
[18] for tree and nursery inventory management. In: Proceedings of the 12th International Conference on Precision Agriculture, Sacramento, CA, USA; 2014. p. 2023.
[19] Guldogan O, Rotola-Pukkila J, Balasundaram U, Le TH, et al. Automated tree
[20] detection and density calculation using unmanned aerial vehicles. In: 2016 Visual Communications and Image Processing (VCIP). IEEE; 2016. p. 14.
[21] Gnaĺdinger F, Schmidhalter U. Digital counts of maize plants by unmanned aerial
[22] vehicles (UAVs). Remote sensing. 2017; 9 (6):544.
[23] Weinacker H, Koch B, Weinacker R. TREESVIS: A software system for simulta-neous ED-real-time visualisation of DTM, DSM, laser raw data. Remote Sensing and Spatial Information Sciences. 2004; 36:9095.
[24] C. Ramesh, K. V. G. Rao and D. Vasumathi, "Evaluation of Key Management
[25] Scheme Based on Identity," 2016 IEEE International Conference on Advanced Computing, 2016, pp. 545-550, doi: 10.1109/IACC.2016.107. Feburary 27-28,2016
[26] Wallace L, Lucieer A, Watson CS. Evaluating tree detection and segmentation
[27] routines on very high resolution UAV LiDAR data. 2014; 52 (12):76197628.
[28] Mohan M, Silva C, Klauberg C, Jat P, Catts G, Cardil A, et al. Individual tree detection from unmanned aerial vehicle derived canopy height model in an open canopy mixed conifer forest. Forests. 2017; 8 (9):340.
[29] Srestasathiern P, Rakwatin P. Oil palm tree detection with high resolution multi-
[30] spectral satellite imagery. Remote Sensing. 2014; 6 (10):97499774.
[31] Ramesh Cheripelli and A. N. K. Prasannanjaneyulu Generating Automatic

Ground Truth by Integrating Various Saliency Techniques, Pro-ceedings of Second Inter-national Conference on Advances in Computer Engineering and Communication Systems,2022, Springer Singapore, 371384, DOI:10.1007/978-981-16-7389-4-35

[32] Lowe DG. Distinctive image features from scale-invariant keypoints. International journal of computer vision. 2004; 60 (2):91110.

[33] Huang GB, Zhu QY, Siew CK. Extreme learning machine: theory and applications. Neurocomputing. 2006; 70 (1-3):489501.

[34] C. Ramesh; K. Venu Gopal Rao; D. Vasumathi Comparative analysis of applica-

[35] tions of identity-based cryptosystem in IoT Electronic Govern-ment, an International Journal, 2017 Vol.13 No.4, pp.314-323 DOI: 10.1504/EG.2017.088003

[36] LeCun Y, Bengio Y, et al. Convolutional networks for images, speech, and time

[37] series. The handbook of brain theory and neural networks. 1995; 3361 (10):1995.

[38] LeCun Y, Bengio Y, Hinton G. Deep learning. nature. 2015; 521 (7553):436.

[39] Pan SJ, Yang Q, et al. A survey on transfer learning. IEEE Transactions on knowl-edge and data engineering. 2010; 22 (10):13451359.

International Journal of Information & Computation Technology.
ISSN 0974-2239 Volume 13, Number 1 (2023), pp. 27-32

https://dx.doi.org/10.37624/IJICT/13.1.2023.27-32

Find Your YOGA Guru

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Abstract

Science has supported the comprehensive health advantages of yoga, which include both the mind and the body. Due to the rise in demand for qualified yoga instructors, remote yoga practice sessions have become increasingly popular. In order to overcome this difficulty, we developed a web application called "FIND YOUR YOGA GURU," which aims to - provide personalized training based on each person's fitness objectives, such as improving strength, flexibility, reducing stress, improving overall health, and losing weight. This app links users with the top yoga instructors who can be of assistance.
The functioning of the application is as follows: once a user registers and submits their fitness goal, the application displays a list of suitable trainers based on the user's preferences. Users can then select a trainer from the list, and once assigned, they will be added to a yoga group. The instructors conduct online video classes, which are also recorded for users to review. Users can track their daily progress through feedback forms and get their queries addressed during live classes conducted by the instructor. This unique approach allows users to receive professional yoga training tailored to their fitness goals remotely and at their convenience. Unlike many online yoga websites that provide only prerecorded videos on a subscription basis, our application offers live classes for a more interactive and personalized experience.

Keywords: Web Development, Python, Flask, localhost, PhpMyAdmin.

1 Introduction

Yoga has witnessed a surge in the popularity of remote practice sessions due to advancements in technology and increased demand for professional yoga instructors. However, many of the existing yoga websites primarily offer prerecorded videos for training, which may not be as effective. Access to instructor-led yoga videos is often

limited to premium members. Our innovative idea is to provide online live yoga sessions conducted by experienced instructors, catering to the learners' convenience and schedule.

2 Literature Survey

Currently, numerous yoga websites offer yoga classes taught by renowned yoga instructors, available as prerecorded sessions, or live online sessions daily.[2] Users have the flexibility to select from a wide variety of classes in different styles such as vinyasa, hatha, restorative, prenatal, yin, and more. They also have the option to upgrade to premium on-demand yoga classes taught by top instructors. Upon becoming a member, users gain full access to all the classes and can practice by viewing the classes.

- [1]Existing yoga applications offer generic online training sessions that are not tailored to individual users.
- Existing yoga applications cannot offer personalized training that aligns with users' specific fitness goals, such as weight loss, immunity boosting, and flexibility enhancement.
- In Existing yoga applications, users are required to conduct their research to identify the specific asanas (poses) they need to perform for their particular fitness requirements. This search process can be time-consuming and may cause users to lose interest in practicing yoga.
- Existing yoga applications do not take into consideration the medical conditions of users, such as diabetes, cholesterol, hypertension, thyroid issues, physical injuries, or PCOS, which may restrict them from practicing certain types of asanas (poses).

3 Proposed System

The proposed website "FIND YOUR YOGA GURU" aims to offer customized training based on individuals' fitness goals, which may include enhancing strength, improving flexibility, weight loss, and advancing yoga practice. Our training is conducted through online yoga classes, making it convenient for users to learn and interact with trainers by asking questions in real time through the chat option on the website as well as during live sessions. Additionally, the classes are recorded, allowing users to review them for their future reference at their convenience.

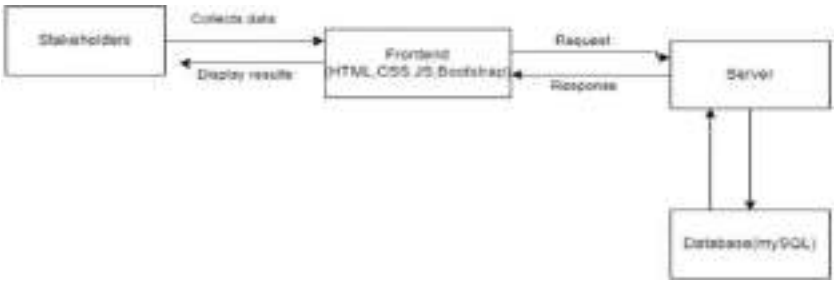

Figure 1: System Architecture of Proposed Model

4 Implementation

The operational approach of the project can be outlined as follows:

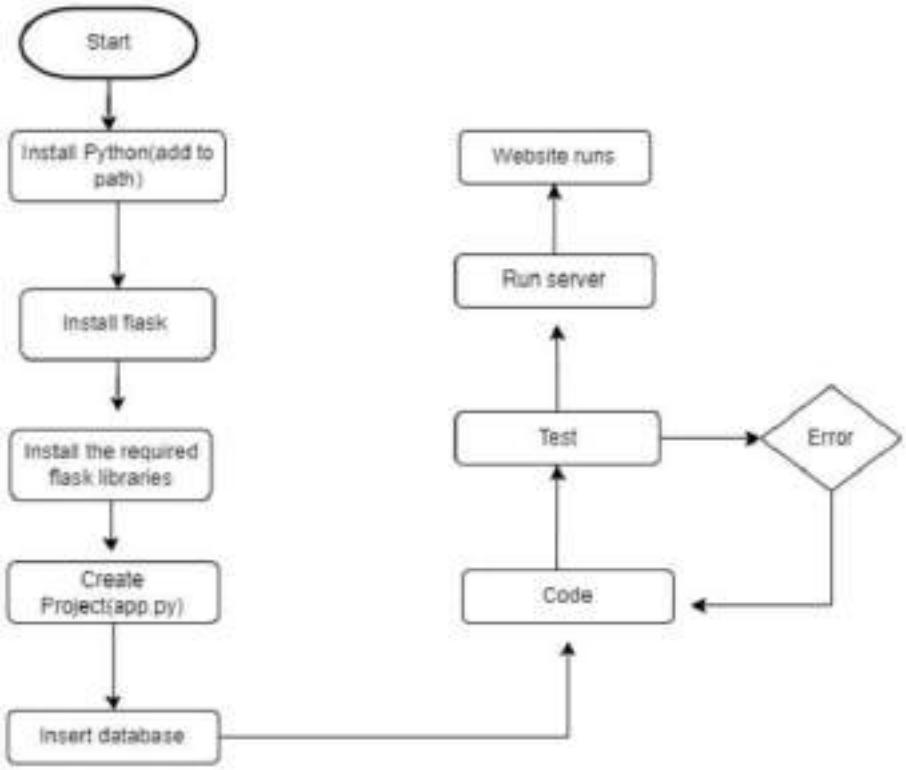

Figure 2: Working Methodology of Proposed Model

The operational procedure for each module is outlined as follows:

- **User**

This module encompasses the functionalities performed by the users. It consists of a registration form where users can register by providing information about their medical conditions, fitness goals, and preferred timings. Based on the user's requirements, instructors are displayed on the screen, and the user can select their preferred instructor. If the instructor approves the user's request, the user is added to the yoga group and gains access to live sessions. The user is also required to fill out a daily feedback form, which is then used to generate a progress graph. Additionally, the user can provide ratings to the instructor for their services.

- **Instructor**

The primary objective of the instructor is to provide high-quality yoga sessions to the users. The instructor is required to complete a separate registration form, which includes details such as preferred timings, years of experience, specialized areas, and fitness goals expertise. The instructor's profile is made visible to users only after verification and approval by the admin. Once approved, suitable instructors are

displayed to the users. If a user selects a particular instructor, the instructor receives a request to accept or reject the user. If the instructor accepts the user, the user is added to the yoga group by the instructor. The link for live sessions is shared in the chat, and these sessions are also recorded for future reference. The recorded videos are stored in the chat for users to access again. Additionally, the instructor can send text, links, and files, such as audio or video, through chat.

- **Admin**

The admin holds a key role in approving instructors. This is determined by evaluating the details provided by the instructor, which includes years of experience, specialized areas, specialization in fitness goals, and certifications obtained. The admin verifies the authenticity of the instructor by reviewing their certifications in specialized areas, and only after approval, the instructors are displayed to the users.

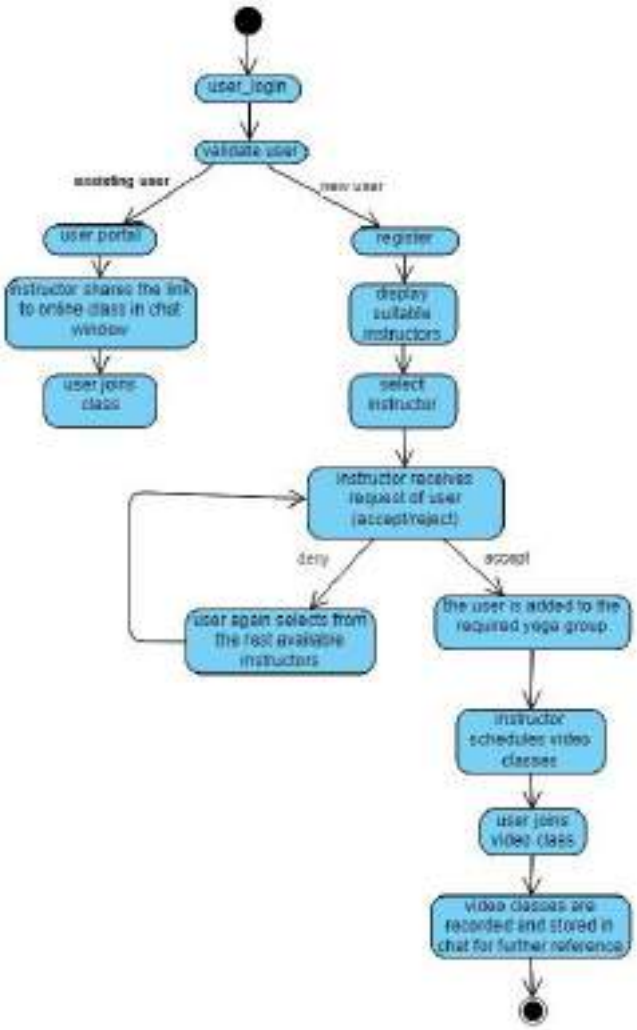

Figure 3: Working Process of Project

5 Conclusion & Future Scope

In conclusion, the numerous health benefits offered by yoga have captivated many individuals, inspiring them to adopt it to lead a healthy lifestyle. Yoga incorporates physical postures, breathing exercises, and relaxation techniques that promote the alignment of the mind and body. As a result, practitioners of yoga are likely to experience various physical and mental well-being advantages. For instance, yoga can help lower blood sugar and pressure levels, while also facilitating inner peace. Therefore, consistent, and mindful practice of yoga can positively impact individuals' physical and spiritual well-being. To facilitate the integration of yoga into daily life, we provide online classes and expert mentors for guidance, making it accessible from anywhere. We encourage individuals to utilize our website as a resource to enhance their lifestyle. In the future, we plan to expand our offerings to include:

- Healthy diet recommendations
- Online payment options for user convenience
- Personalized tutors for individual guidance.

6 Acknowledgment

We would like to express our sincere thanks to **Dr. K. Ramesh Reddy, Principal**, GNITS, for providing the working facilities in the college. Our sincere thanks and gratitude to **Dr. I. Ravi Prakash Reddy, Professor and HOD**, Dept. of IT, GNITS for all the timely support and valuable suggestions during the period of our mini project. We are extremely thankful to **Dr.V.Supriya, Associate professor,** and **Dr.L.Smitha, Assistant professor** Dept. of IT, GNITS, the major project coordinators for their encouragement and support throughout the project

7 References

[1] Yaseer A. Nanda (2018, January), ‘Yoga Mobile Application Using XML”. Journal of Scientific and engineering research. volume-4(11). pp:135-144

[2] Deepak Kumar, Anurag Sinha (2020, December) Yoga Pose Detection and Classification Using Deep Learning. International Journal of Scientific Research in Computer Science Engineering and Information Technology. volume 6. Issue 6. pp:160-184.IJSRCSEIT

[3] Dr.Sheetal Dhande Dandge, Bhumika Rangari, Mitali Agarwal, Sanjana Maheshwari, Shruti Agarwal(2022, April), Implementation of Health Care Chat-Bot using Python. volume 10 Issue 4. IJCRT

[4] Dunlu Peng, Wenjie Xu, Lidong CAO(2011, December) Using JSON for Data Exchanging in Web Service Application. Journal of Computational Information Systems. Volume 16 Issue 7. JOFCIS

[5] Ashutosh Kumar, Atul Singh(2022, May) Research paper on Group Chat Application. Researchgate

[6] https://www.healthifyme.com

[7] Shi Yuzhuo, Hao Kun, "Design and Realization of Chatting Tool Based on Web”2013 3rd International Conference on Consumer Electronics, Communications and Networks.IEEE

[8] Muhammad Haroon, Yousaf Kanza Azhar, Hassan Ahmed Sial,2015 International Conference on Communications, Signal Processing, and their Applications (ICCSPA'15).IEEE

International Journal of Information & Computation Technology.
ISSN 0974-2239 Volume 13, Number 1 (2023), pp. 33-38

https://dx.doi.org/10.37624/IJICT/13.1.2023.33-38

Hostel Website

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Abstract

The idea behind the project is to design an online website to the hostel in the college. There will be information regarding the hostel like coordinates of the hostel, menu for the hostel mess,online pass permissions where students request the warden. The students can send request in the website with the necessary details and the warden will verify the details and give permission to the students to move out of the hostel. In this website the warden can upload the circulars into the website. This websites also contains the fee structure of the hostels.

This project is based on web based application which is developed through php. Through this web application the students has to login to his/her account in order to get any information or to request the pass. The warden should also login to his/her account in order to post or update information or to accept the permission. The pass may include the name,roll no,In time,out time and other details required.

This idea is developed in order to help the students to know the information as soon as possible about the hostels and also to help the students to ask for the permission in online instead of waiting for long time in the queue.

1 Introduction

The idea behind the project is to design an online website to the hostel in the college. There will be information regarding the hostel like coordinates of the hostel, menu for the hostel mess and even online pass permissions where students request the warden. The students can send request in the website with the necessary details and the warden will verify the details and give permission to the students to move out of the hostel. In this website the warden can upload the circulars into the website. This website also contains the fee structure of the hostels.

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any information or to request the pass. The warden should also login to his/her account in order to post or update information or to accept the permission. The pass may include the name, roll no, In time, out time and other details required.
This idea is developed in order to help the students to know the information as soon as possible about the hostels and also to help the students to ask for the permission in online instead of waiting for long time in the queue.

2 Related Work

The existing system is a traditional system. All the work is done manually. The students have to go to warden and take the permission by standing in a queue. They have to write the passes which is a time taking process. If the warden rejects student's request the student have to go to their respective hod to take the permission. If the hod approves the request then the student can go out. To know mess menu also the student have to go to mess and see the menu. To know hostel details the student have to go to warden or the hostel coordinators. The traditional system is very time consuming process. So this hostel website helps in reducing the manual work and saves time.
We have an idea of developing a Hostel website which manages the home pass for students leaving the hostel.The student can request for the pass in online to move out of the hostel and the warden or HOD will approve or disapprove it.
This hostel website will also have the information about the hostels like coordinators of the hostel, number of hostel blocks and their fee structure, menu in the hostel. Any announcements related to hostel can also be posted by the hostel warden in the website where the students can easily know them in advance.

3 Methodology

Authorized users such as student, Warden and HOD can login to the website inorder to access the website.All the login details are stored in the database and the details entered are validated using the values stored in the database. When the student login to the account, the student can get the details of hostel like no.of blocks, names of the warden and other details. There is also a option to know the hostel menu based on each individuals choice. Student can also view the circulars which are uploaded by the warden. The main feature of this website is that the students can request the warden to move out of the hostel. For requesting the permission the student should fill all the details in the form. After filling the details by submitting the form the request will be sent to the warden.
When the warden logins to the website, the warden can get the details of the hostel, hostel menu. Only warden can upload the circulars that are viewed by all the users of the website. Warden can get all the requests sent by the students and requests can be accepted or rejected. If the request it is accepted then it is updated to the student with a status in green color and if the request is rejected it is sent to the respective HOD of the student with the status in red color.
When the HOD logins to the website, HOD can get the details of hostel, hostel menu. HOD can also view the circulars uploaded by the warden, HOD can get requests

rejected by the warden. HOD can accept or reject the requests, if HOD accepts the request it is sent to the student with the status in green color. If HOD rejects the request it is sent to the student with the status in red color. All the users can log out from the website.

3.1 PHP

PHP(Hypertext Preprocessor) is mainly used in web development for creating dynamic pages and pages.It is most widely used as serverside scripting language.Rasmus Lerdorf has developed it in 1994.According to the survey made almost 79% of the websites are developed through php.It not only used for developing the web appas but also used for building many Content Management Systems.

It is actually know as the backend of a website and can actually do anything related to the server.PHP can generate dynamic pages,use sessions,cookies send mails and etc.To provide security for the user it also have many encrypting the information using the hash functions which is very much reliable to use as a server side scripting language. It can run on Windows,Linux,Unix,Mac OS etc. PHP also allows using wide range of databases for storing the data. PHP is easy and free to download which is considered as the most important factor.

4 Results

Figure 4.1 Homepage of the website

Figure 4.2 Login page

Figure 4.3 Page for requesting the out permission

Figure 4.4 List of requests

Figure 4.5 Rejected request

Figure 4.6 Rejected requests

Figure 4.7 List of accepting and rejected requests

5 Conclusion

This website helps the students living in the college hostel to get the information about the hostel and can also request for the permission to move out of the hostel. The future scope of this project may be getting the notifications for the warden in case of any request by the student and in the same way the students can also get the notifications in case of accepting or rejecting the request by warden or the HOD. There can also be an

additional feature of adding the student attendance to the website by the warden. There is also a scope of sending a message or a notification to the student's parent as soon as they request the warden to move out of the hostel. There can also be a chat box where students can share their ideas and problems related to the hostel.

References

[1] https://github.com/shefali11/Online-Gate-Pass-Generator
[2] HaiyaHamood Al Ghaithi, Umapathy Eaganathan, (2016), A BRIEF STUDY AND IMPLEMENTATION OF VISITOR MANAGEMENT SYSTEM FOR ASIA PACIFIC UNIVERSITY, MALAYSIA.
[3] Prof. Abhay Gaidhani 1, Suraj Sahijwani 2, Parag Jain 3, Shantanu Jadhav 4, Ankush Jain 5, (2015), System for Visitor Pass. Department of Computer Engineering, Sandip, Institute of Engineering Management, Nashik.
[4] Honeywell International Inc. US7362210 B2 by-Rida M. Hamza, David W. Meyers System For Gate Access Control.
[5] Oki Electric Industry Co. Ltd. US6734783 B1 byNoriyoshi Anbai Gate Management System.

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INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54214

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Instant Plasma Donor Management System

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Abstract: Instant Plasma Donor Management System offers a first-class system to solve all the problems of blood donors and non-blood donors. Blood bank management app is a way to synchronize customers (partners) and non-customers. The world is going through the COVID 19 crisis and we haven't found a vaccine yet. However, there is another way we can help reduce the death rate or help those affected by COVID 19, and that is by donating blood from healthy patients. There is no agreement to treat the virus against the dangerous COVID-19 disease, plasma therapy is an experimental method to treat COVID-positive patients and help them recover.
Treatment is seen as preventive and promising. If a person has fully recovered from COVID 19, they can donate plasma. This app will help users find blood donors or donate plasma to help others. Customers can register, log in and submit plasma gift requests with comprehensive information on their COVID 19 recovery. Customers can also voluntarily request plasma in an emergency.

I. INTRODUCTION

Hemoglobin is a large, higher molecule that contains a circular supramolecule (globulin) and a colorful, iron-rich molecule called a heme. Each hemoglobin molecule consists of 4 heme chains and 4 heme units, each carrying an iron atom (Fig. 46). It shows that because each iron atom mixes with a drug molecule, one blood protein molecule can carry up to four molecules of a drug, and that an average body red blood cell theoretically carries about 280 million hemoglobin molecules that make up each cell. carry a chemical The ability of a single molecule to exceed one billion molecules of a chemical element.
Iron is transported in the blood to transport supramolecular beta-globulin and stored in the liver.
The production of red blood cells normally requires a gradual supply of iron. Although iron is found in foods, it is absorbed very slowly from the intestines, so if too much is lost, iron deficiency can occur quickly.

II. LITERATURE SURVEY

Writing a review is a big step forward in measuring progress. Before deploying a device, it is important to determine time, economy and organizational strength. Once these are done, the next ten steps determine which operating models and languages can be used to train the device. When software engineers start building tools, developers need outside help. This help is available from major manufacturers, books or websites.
Before creating the framework, the above ideas are considered to support the request framework.

III. EXISTING SYSTEM

People have to go to registered clinics and contact their homes to find the right people, sometimes they can't get out of their place and go to work. In this case, the patient's health will deteriorate further. This is a very expensive method and is useless in an emergency. As the population grows and clinical trials progress, so does blood. Since there is no relationship between donor and donor, many patients who need blood cannot receive blood on time and die.
There is an urgent need for synchronization between blood donors and clinics and blood donation centres. Improper blood management can lead to blood banks full of blood. Poor communication and coordination between blood donors and emergency services can lead to blood shortages.

IV. PROPOSED SYSTEM

In this paper we will create a web application so that after registration the client can choose to contribute to the application or search for blood donors and find free donors near. In this web application, customers will register and enter the application and they will be able to get the important things they want and on the other hand it will keep the donors high enough for helping the less fortunate people.

FIG 1. System Architecture

V. RESULT

FIG 2. Index Page

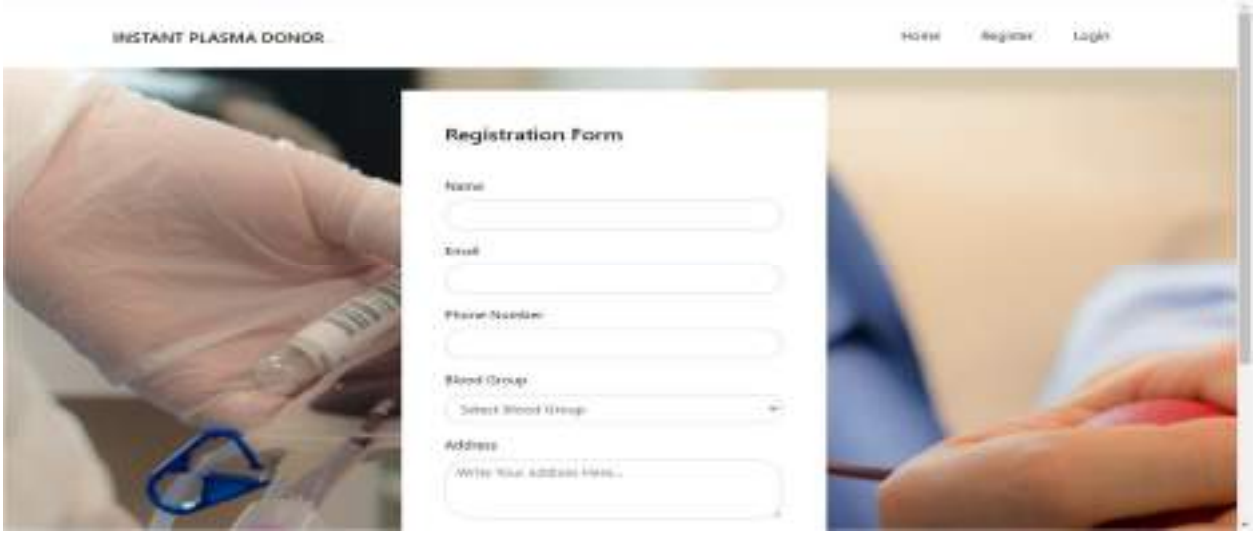


FIG 3. Register Page

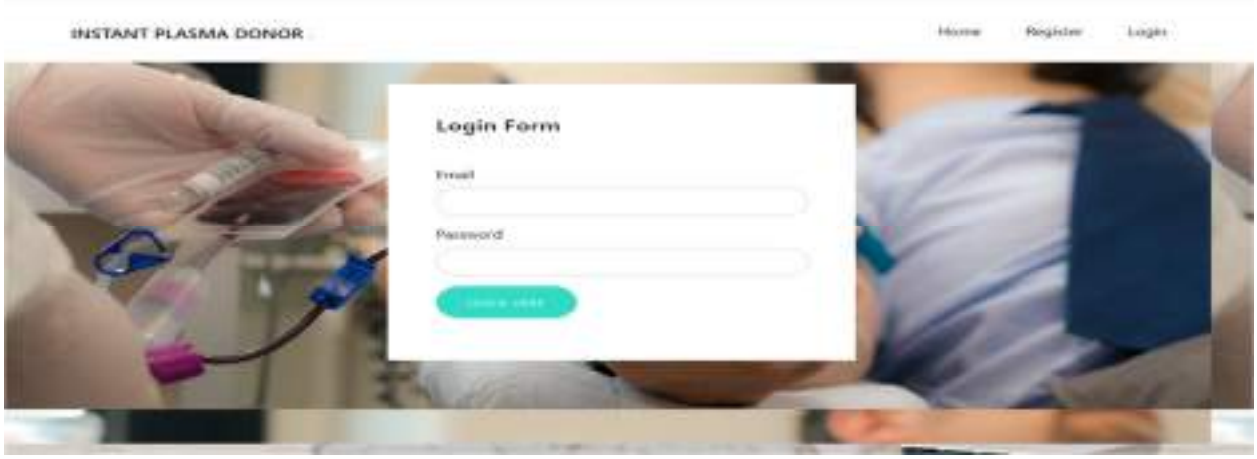


FIG 4. LOGIN PAGE

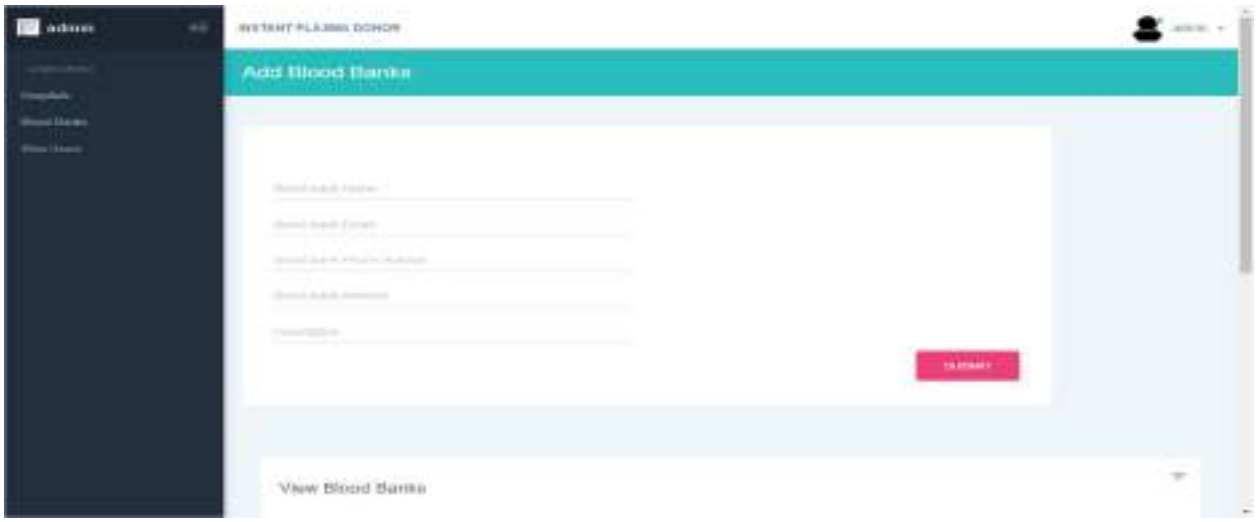


FIG 5. Blood Donation Centers Adding Page

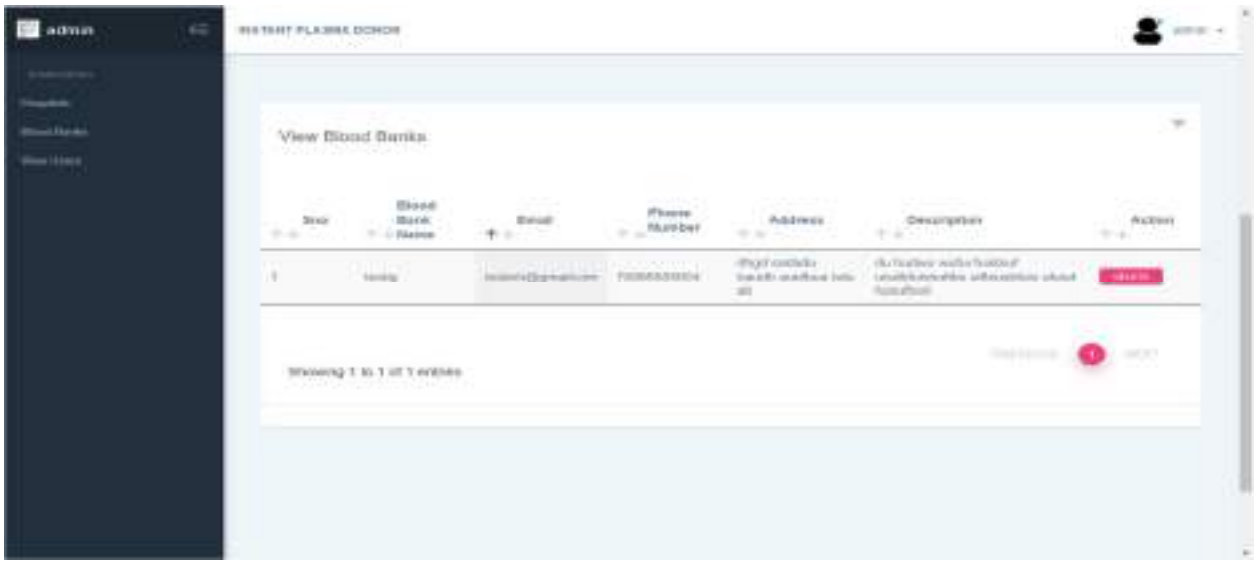


FIG 6. View Blood Banks

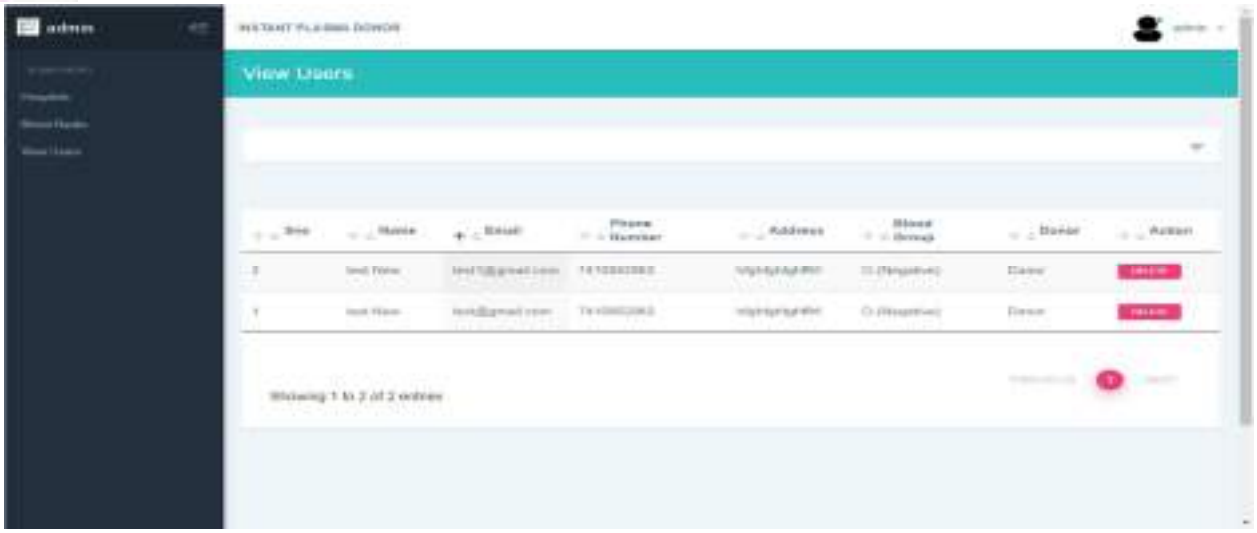


FIG 7. Contributors/Users Search Page

FIG 8. Sample Notification About Availability Of Required Blood Group

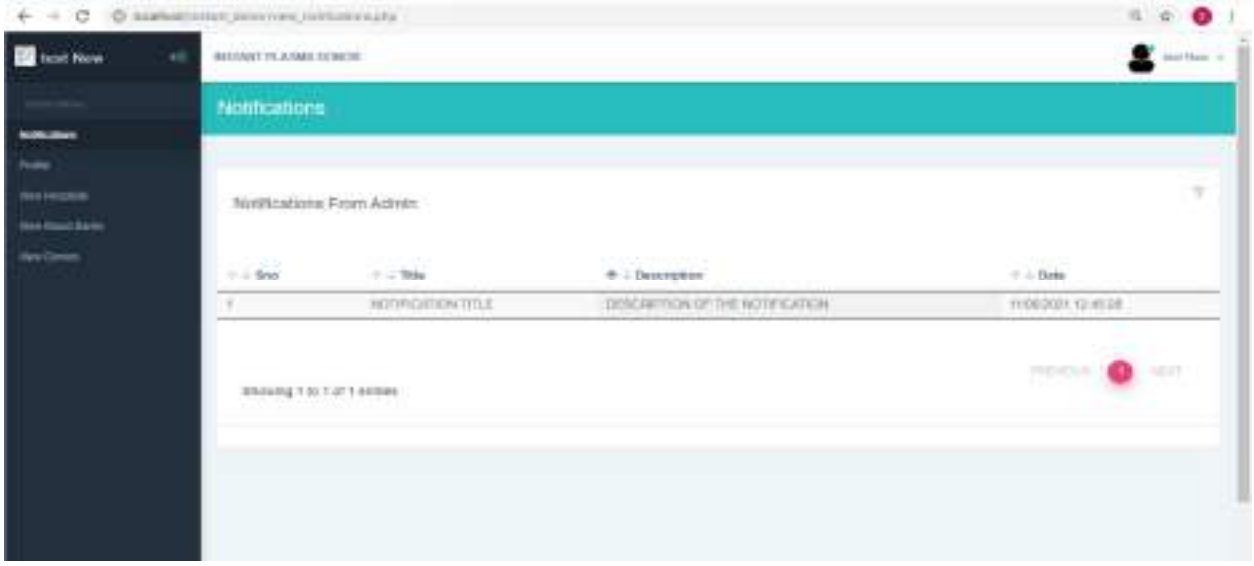


FIG 9. View Notification

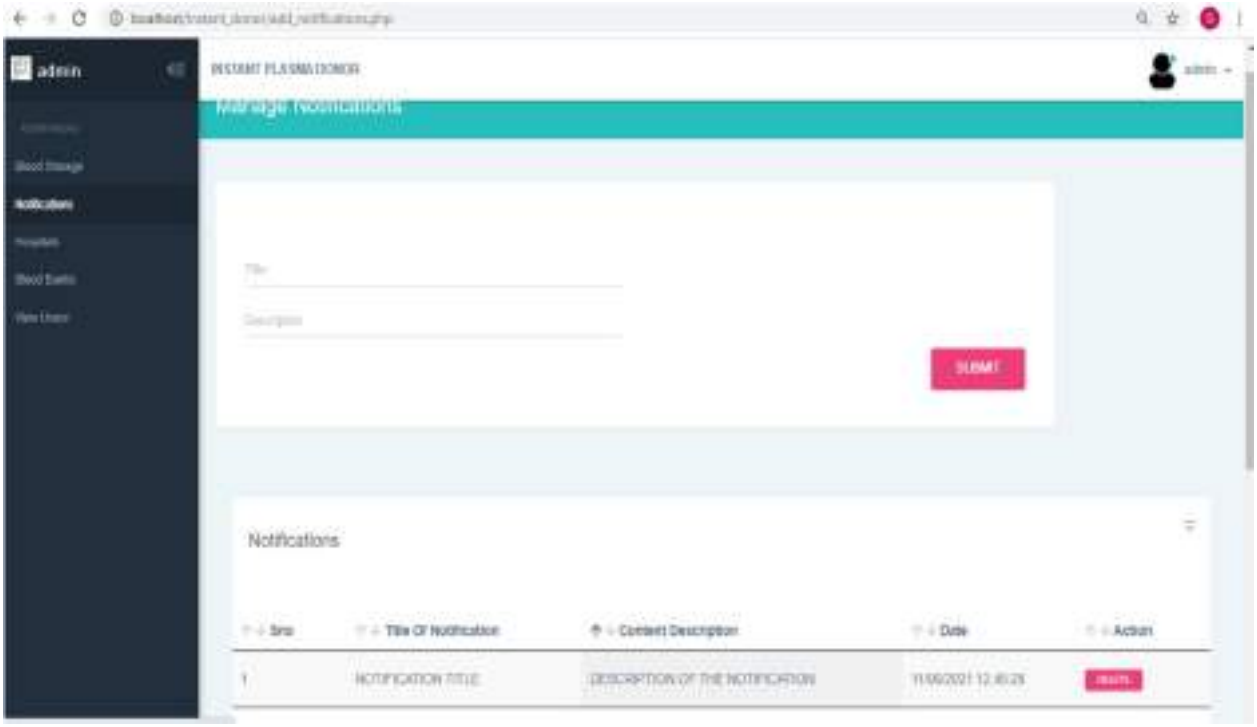


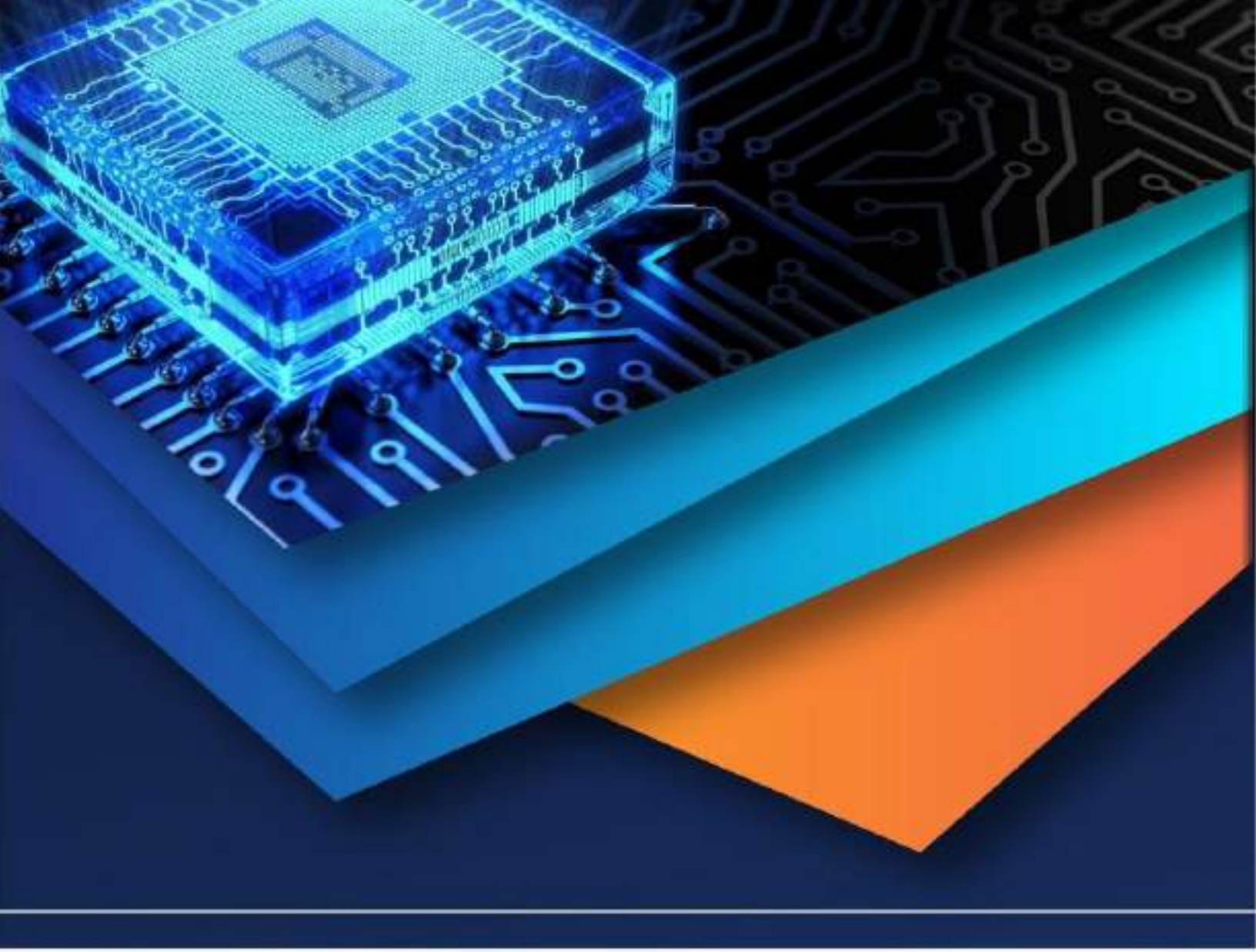
FIG 10. Manage Notifications

VI. CONCLUSION

Innovation gradually introduces new developments that reduce the time it takes to complete. The prepared system can be used to reduce the time required to deliver blood to those in need in an emergency. Those who want to donate blood can find the nearest blood donation center and benefit from it. Web applications provide communication and connectivity between users and the poor.

REFERENCES

[1] Abdelmalak BB, Cata JP, Bonilla A, You J, Kopyeva T, Vogel JD, Campbell S, Sessler DI: Intraoperative tissue action associate degreed surgical outcomes when major non-cardiac surgery: an experimental study. Br J Anaesth 2013; 110:241-249
[2] Ahn SW, Shim JK, Youn YN, Song JW, Yang SY, Chung SC, Kwak YL: impact of tranexamic acid on transfusion demand in twin antiplatelet-treated anemic patients undergoing off-pump arterial blood vessel bypass graft surgery. Circ J 2012; 76:96-101
[3] Ak K, Isbir CS, Tetik S, Atalan N, Tekeli A, Aljodi M, Civelek A, Arsan S: Thromboelastography-based transfusion algorithmic program reduces blood product use when elective CABG: a prospective irregular study. J Card Surg 2009; 24:404-410
[4] Aksoy MC, Tokgozoglu AM: glycoprotein for autologous blood donation in total hip surgery patients. Arch Orthop Trauma Surg 2001; 121:162-165
[5] Alanay A, Acaroglu E, Ozdemir O, Ercelen O, Bulutcu E, Surat A: Effects of deamino-8- D-arginin internal secretion on blood loss and activity factors in spinal curvature surgery. A double-blind irregular run. Spine 1999; 24:877-882
[6] Almeida MF: surgical normovolemic hemodilution in aesthetic cosmetic surgery. Aesthetic Plast Surg 1999; 23:445-449
[7] Amanor-Boadu Coyote State, Malomo A, Komolafe EO, Adeolu AA, Abdullahi A, Shokunbi MT: Acute isovolaemic haemodilution in 2 Jehovah's Witnesses presenting for major intracranial surgery. Afr J Master of Education Sci 2002; 31:79-81
[8] Andersen ND, Bhattacharya Coyote State, Williams JB, Fosbol EL, Lockhart EL, Patel MB, Gaca JG, Welsby IJ, Hughes GC: Intraoperative use of low-dose recombinant activated coagulation factor throughout pectoral arterial blood vessel operations. Ann Thorac Surg 2012; 93:1921-1928
[9] Andreasen JB, Hvas AM, Christiansen K, Ravn HB: will RoTEM® analysis be applied for haemostatic observance in pediatric inherent heart surgery? Cardiol Young 2011; 21:684-691
[10] Andreasen JJ, Dethlefsen C, Modrau IS, Baech J, Schonheyder HC, Moeller JK, Johnsen SP: Storage time of allogeneic red blood cells is related to risk of severe surgical infection when arterial blood vessel bypass affixation. Eur J Cardiothorac Surg 2011; 39:329-334
[11] Velagaleti, Sesha Bhargavi, Dr M. Seetha, and Dr S. Viswanadha Raju. "A Simulation And Analysis Of Secured S-DSR Protocol In Mobile Ad Hoc Networks." *International Journal of Computer & Organization Trends* 3.9 (2013): 425-430.
[12] Velagaleti, Sesha Bhargavi, Seetha M. GNITS S, and S. V. Raju. "A novel method for trust evaluation in a mobile Ad Hoc network." *Inernational Journal of Computer Science and Information Security (IJCSIS)* 18.2 (2020).
[13] Andreasen JJ, Nielsen C: Prophylactic tranexamic acid in elective, primary arterial blood vessel bypass surgery victimisation respiratory organ bypass. Eur J Cardiothorac Surg 2004; 26:311- 317



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IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54206

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

A Cost Effective Smart Home Automation System Using NodeMcu

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Abstract: ***The Internet of Things (IoT) is paving the way for a smart, computing-enabled future in some aspects. Using wireless connectivity and rising automation technologies, all of the appliances in a home may be connected and communicated with.It aims to delegate other responsibilities, such as simple monitoring of various phenomena around us, and to make a variety of tasks easier for users.In this tutorial, we will use NodeMCU to build a cost-effective home automation system. This platform is used to control home appliances such as lighting, fans, and air conditioning from a distance. The fundamental purpose of this proposed effort is to design a system that is affordable (cost-effective), small, and scalable.***
Keywords: NodeMcu, Light, Home Automation, IoT.

I. INTRODUCTION

In some ways, the Internet of Things (IoT) is laying the groundwork for a smart, computerised future. Computing will be integrated into everything as a result of ubiquitous computing, operating automatically and without human intervention. The Internet of Things also uses the terms "things," "objects," or "machines" to describe the environment and everyday items. Generally, in our homes the power outlets have sockets and switches with wired connections .To operate the home appliance, one has to move physically and operate. The individual who is away from home is unable to control or keep an eye on the appliances' current condition. The Internet of Things (IoT) in this context offers a platform that enables objects to be identified, linked, and remotely managed via a network architecture. Numerous home appliances, including as heaters, televisions, air conditioners, washing machines, electronic security systems, and other electrical gadgets, can now automatically link thanks to the Internet of Things. This scenario can considerably reduce the wastage of energy and improves the living environment.

II. EXISTING SYSTEM

A. Wired Home Automation System

In this type of home automation, a primary controller is linked to all of the home's appliances via a communication link. Actuators link apparatus to the central controller. The PC that is in constant communication with the central controller handles all duties.

B. Wireless Home Automation

This innovation in wired automation permits remote control via wireless technologies such as IR, Zigbee, Wi-Fi, GSM, Bluetooth, etc.

III. PROPOSED SYSTEM

In the proposed system, we develop a cost optimization home automation satisfies the remarkable requests of the increasing global population. Our method has the benefit of making it easy to regulate the functionality of a wide variety of electrical apparatus. Our busy lives and activities frequently make it difficult for us to work diligently at home. This allows us to remotely turn off lamps, fans, and other electronic equipment.

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

The main advantage of our model is its ease of control over a wide range of electrical and electronic device functions. Due to our hectic schedules and traffic, it can be difficult to be at work and at home at the same time. It is made feasible by one of our model's features, which allows for remote access to home systems, saving a significant amount of time. Another component of our proposed strategy is the ability to remotely turn off lights, fans, and other electrical and electronic devices when they are not in use, which aids in energy consumption control in the home. The NodeMCU is utilised as an embedded kit because smart devices must be synchronised in order to be controlled remotely.

When the NodeMCU is activated through its USB port, it searches for the wireless network to which it was previously connected using the SSID and password. This access point allows users to connect to the Internet via wired, wireless, or cellular networks. To get the code and libraries onto the NodeMCU, the Arduino IDE is used. The ESP8266 joins the network after it has successfully connected to the access point by entering the right SSID and password. The NodeMCU is preconfigured to function as a web server on port 80. The server's local IP address, denoted as Server_IP, can be seen in the serial monitor of the Arduino IDE. Once the server has begun listening on port 80, the client can send data to it. The information instructs the ESP8266 to alter the state of its GPIO pins, which in turn triggers the relay connected to that pin. The relay governs the 220 volt AC power to the household appliance by acting as a switch.

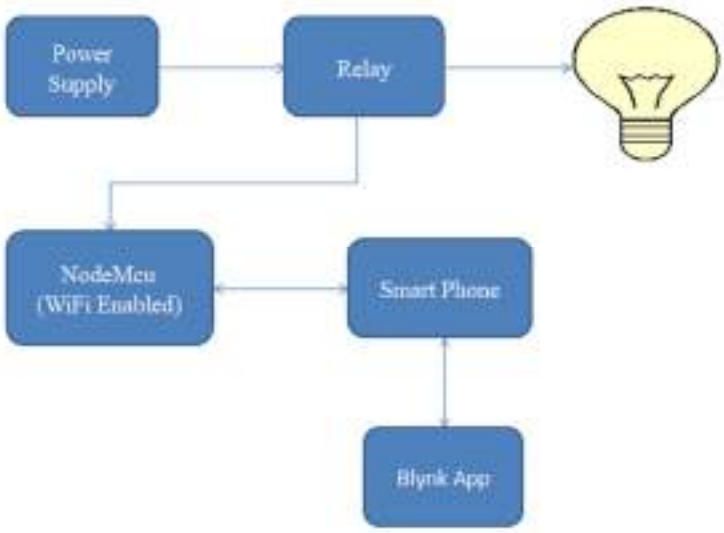


Figure 1: Architecture of the Proposed System

In our work we use a Hardware ESP8266 and Relay. An ESP8266. For rapid prototyping, it is a low-cost development board with GPIOs, I2C, UART, ADC, PWM, and WiFi. The 3.3V-powered ESP-12 module consists of an ESP8266, a voltage regulator, and a USB-to-serial converter. To write programmes for this device, use the Lua-based Arduino IDE or the Lua-based ESPlorer. It is fueled by a Tensilica Xtensa L106-based 80MHz 32-bit RISC CPU. Boot RAM is 64KB in capacity. External Flash memory is accessible via SPI.

A relay is a straightforward electromechanical switch composed of a collection of contacts and an electromagnet. There are hidden relays in a variety of devices. In actuality, some of the very first computers utilised relays to implement Boolean gates. Each relay consists of four components. Composed of an electromagnet, a spring, and an armature that the electromagnet can pull, electrical contacts are created using these components. A relay is a switch that is electrically operated. Numerous relays employ electromagnets to manually activate a switch. A contactor is a relay that can manage the high power required to directly control an electric motor or other applications.

In addition, we programme using the Blynk application and the Arduino integrated development environment. The Arduino Integrated Development Environment (IDE) consists of a text editor for composing code, a message box, a text console, a toolbar with icons for frequently used functions, and numerous menus. A connection is required to upload code and communicate with the Arduino and Nodemcu hardware. When using the Arduino IDE, sketches are written using computer code. The terminal presents all error messages and other information generated by the Arduino Software (IDE). In the lower right corner of the screen, the configured board and serial interface can be seen.

Blynk is a free and open source startup that was developed with the IoT in mind. With Blynk, you may remotely control and monitor the data from any Smart Power-Strip. The server, the libraries, and the application are the three main parts of Blynk. The app may be downloaded for nothing and works with any modern smartphone. The programme allows the user to configure the interface for the plugged-in device using a variety of readouts, buttons, and switches. The software provides a virtual interface for operating the controls. When a user creates a new project in Blynk, they are provided with a distinct project ID. Then, simply add the appropriate affiliation number to the code as seen below: You can find the text "Your Blynk association number is displayed here" in the char auth[] variable. Pin modes can be set on Blynk for each of the inputs and outputs on the WeMos-D1 microcontroller. A Blynk connection is established between a device and the Blynk server whenever that device connects to the Internet via a router or hotspot. Since Blynk libraries are freely available, they can be used by anyone.

IV. RESULTS AND DISCUSSION

In our Work we uses an Arduino IDE, Blynk and NodeMcu the work is mentioned below:

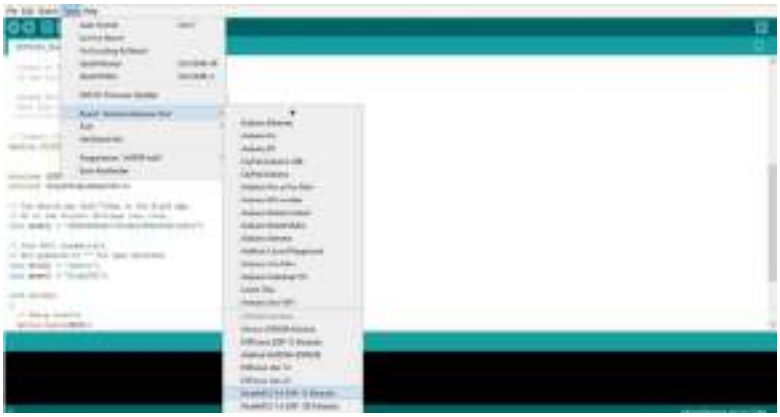


Figure 2: Opening the Arduino IDE and setting the NodeMcu board settings

Figure 3: Open Blynk app by entering Username and Password

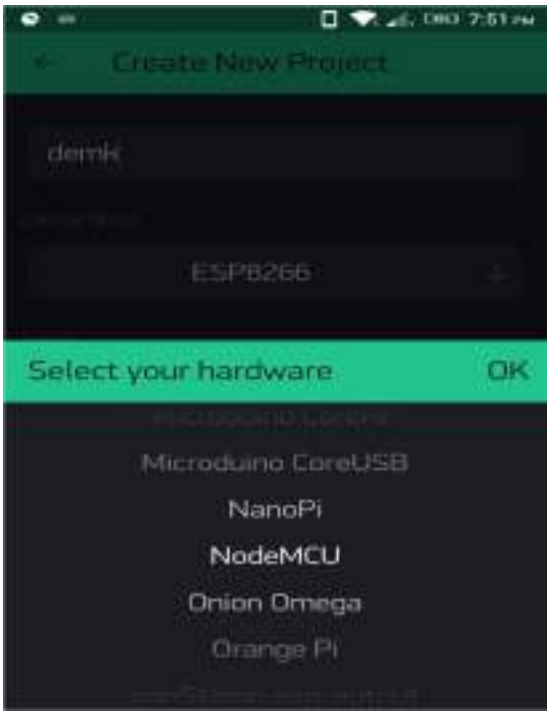


Figure 4: create new project and select NodeMcu

In the figure 3 we have to create an account in the Blynk app, After that we have to create a new project in Blynk app and select the NodeMcu board.

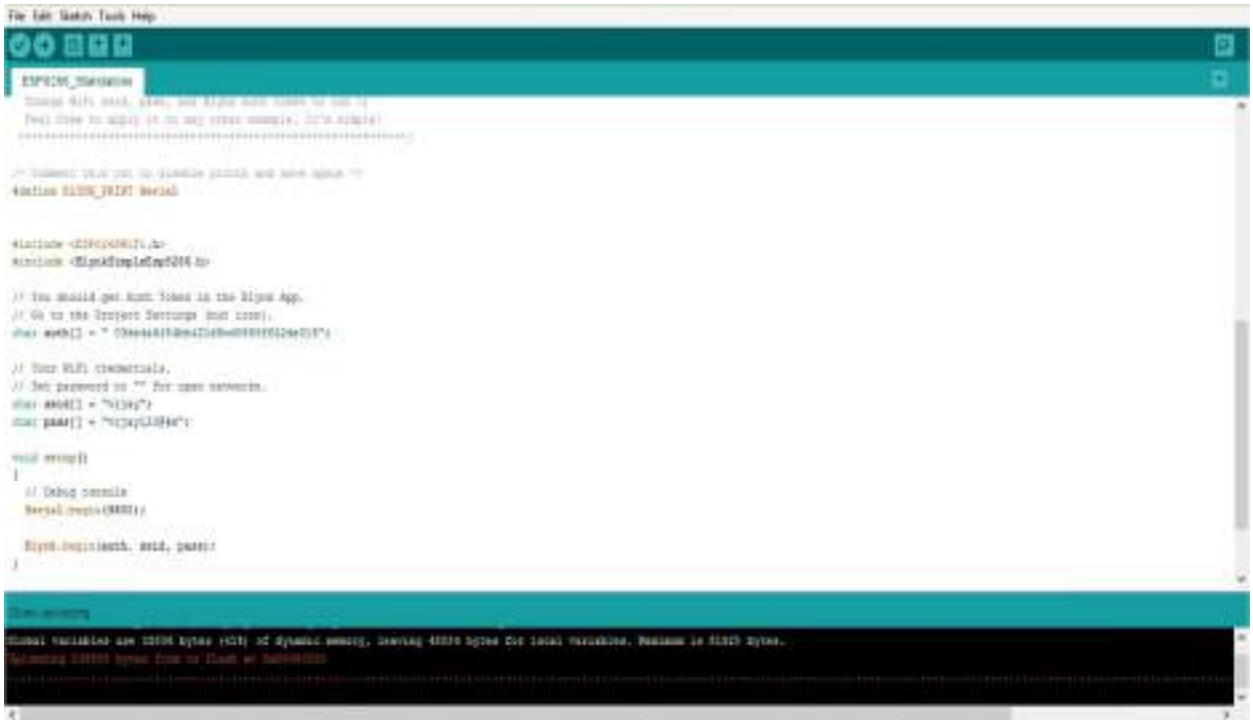


Figure 5: Configuration of Wifi Settings for Automation

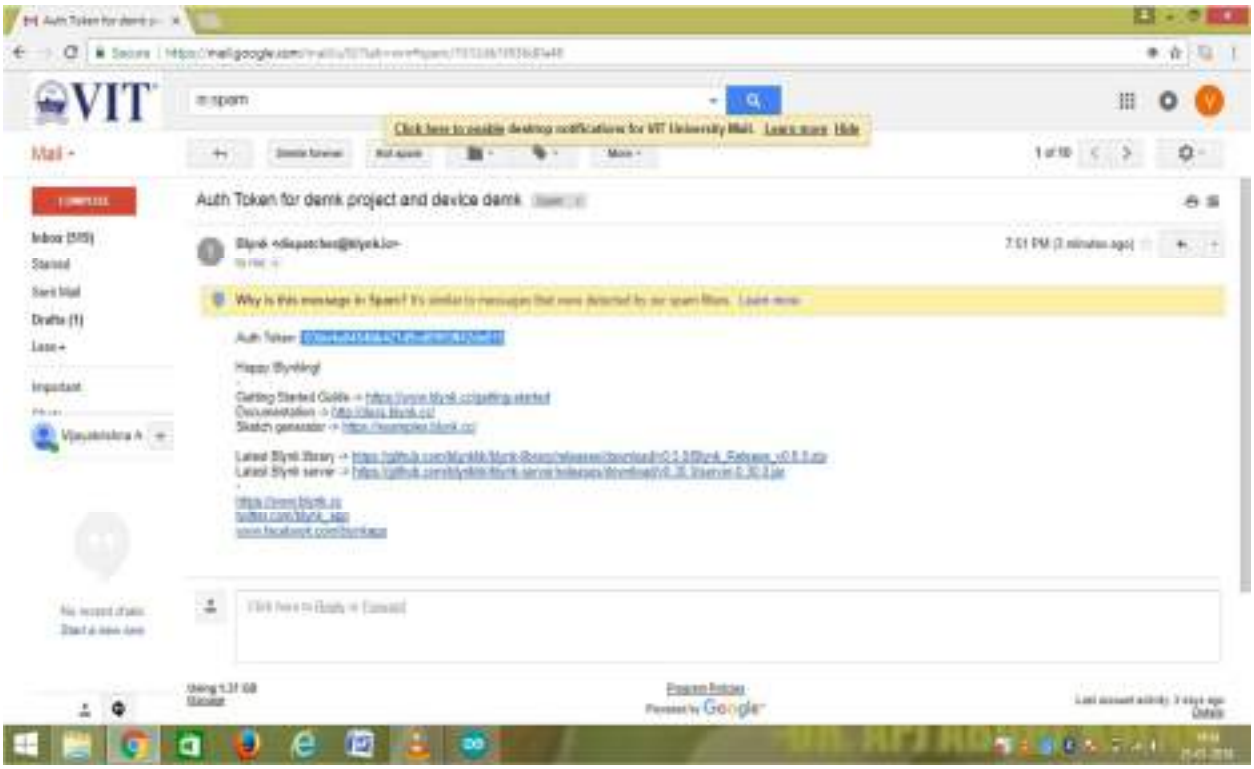
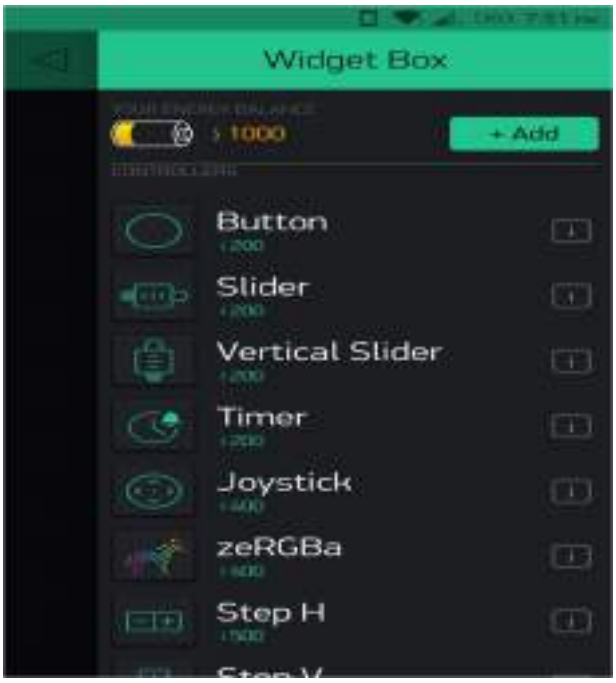


Figure 6: Generation of Authentication and sent to blink login mail id

In the Figure 5 we can configure the wifi settings for home automation system and figure 6 we can generate a authentication token and send it to the mail for verification.



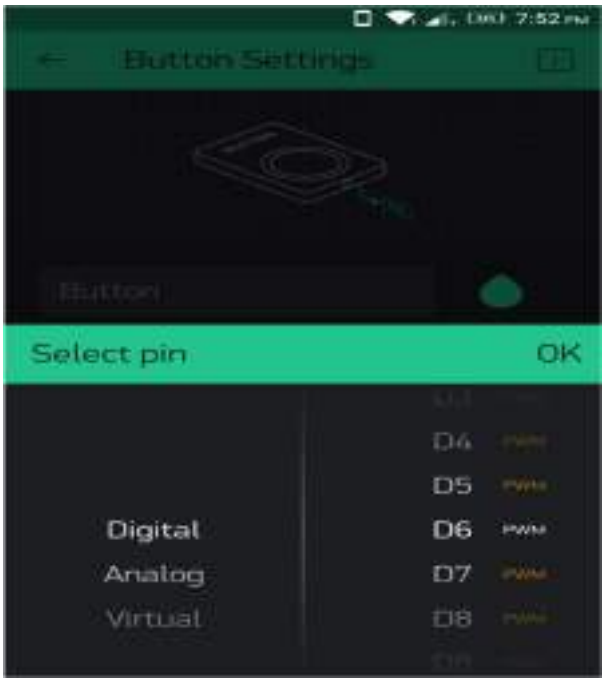


Figure 7: Select the buttons for Blynk app Figure 8: Select the digital pins and pin no here we are selecting D6

In the Figure 7 we can select the button for user interface and Figure 8 we are selecting the digital pin D6 for configuration

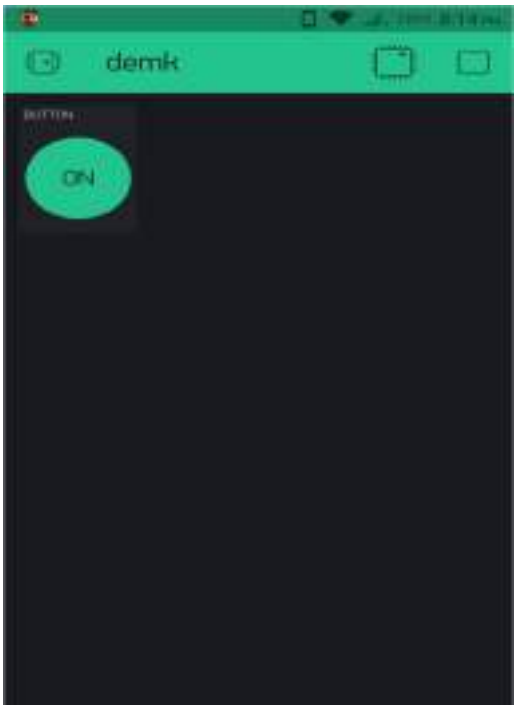


Figure 8: Switch ON button in Blynk App and Light ON

In the Figure 8 we can control the Bulb by pressing the Switch Button in Blynk App and make Light on in Home Automation System

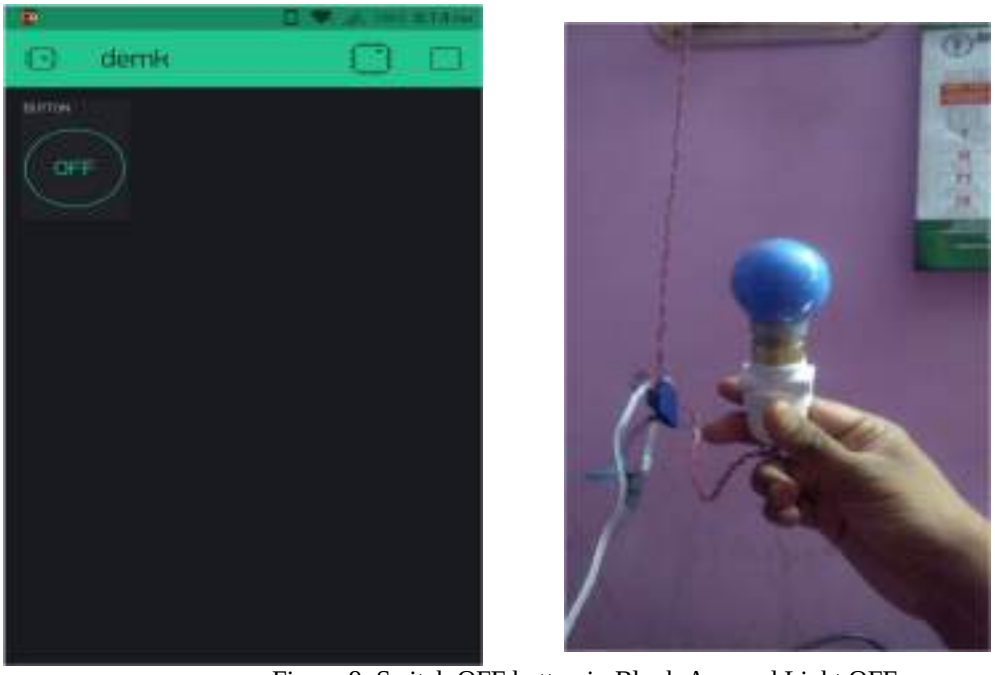


Figure 9: Switch OFF button in Blynk App and Light OFF

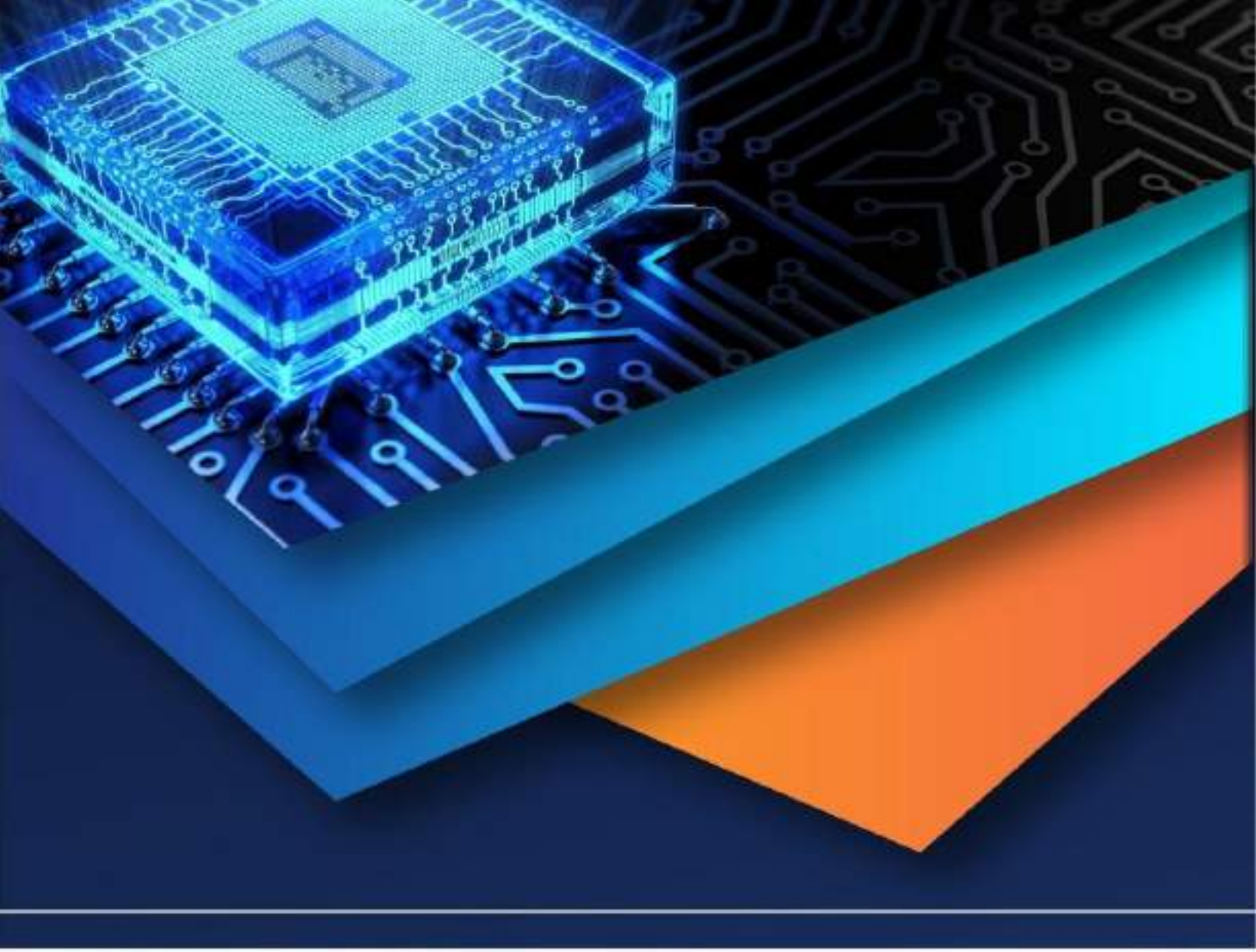
In the Figure 9 we can control the bulb by pressing the Switch Button in Blynk App and make the Light Off in Home Automation System.

V. CONCLUSION

The proposed automation framework is used for both domestic and office environments. The relay is selected predominantly based on the load, as the ESP8266 NodeMCU is a low-cost device with low energy consumption. The automation framework for remote control of home appliances is practical, secure, and cost-effective.

REFERENCES

[1] Sushant Kumar, S.S Solanki, "Voice and Touch Control Home Automation", in 3rd International Conference on Recent Advances in Information Technology(RAIT), 2016
[2] Yash Mittal, Paridhi Toshniwal, Sonal Sharma, Deepika Singhal, Ruchi Gupta and V K Mittal, "A Voice-Controlled Multi-Functional Smart Home Automation System", in IEEE
[3] M.Tharaniya soundhari, Ms.S.Brilly Sangeetha, "Intelligent Interface Based Speech Recognition for Home Automation using Android Application", in 2nd International Conference on Innovations in Information Embedded and Communication Systems(ICIIECS), 2015
[4] Dave Evans, "The Internet of Things, How the Next Evolution of the Internet Is Changing Everything", Cisco Internet Business Solutions Group (IBSG), April 2011.
[5] Kodali, R. K., & Soratkal, S. (2016, December). MQTT based home automation system using ESP8266. In Humanitarian Technology Conference (R10-HTC), 2016 IEEE Region 10(pp. 1-5). IEEE.
[6] Todica, M. Controlling Arduino board with smart phone and Blynkvia internet.
[7] Sesha Bhargavi, V., Spandana, T. (2017). Recommendation Based P2P File Sharing on Disconnected MANET. In: Deiva Sundari, P., Dash, S., Das, S., Panigrahi, B. (eds) Proceedings of 2nd International Conference on Intelligent Computing and Applications. Advances in Intelligent Systems and Computing, vol 467. Springer, Singapore. https://doi.org/10.1007/978-981-10-1645-5_18
[8] D'Ausilio, A. (2012). Arduino: A low-cost multipurpose lab equipment. Behavior research methods, 44(2), 305-313.



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Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54207

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

An Effective Novel Approach for Crop Management System Using Android

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Abstract: ***A smartphone app devoted to agriculture serves the main objective of informing farmers about crops, pesticides, insecticides, the economy, and other topics. It offers advice on which crops are most suited to the farmer's region and which should be grown during each season. Additionally, it provides information on various bank loan rates and ongoing government initiatives to support farmers. Before informing the farmer automatically of the illnesses that are likely to impact that crop, the programme will contain a feature that asks them to pick the crop they have planted. Main objective of our project is to educate the farmer on their work. Farmers are getting loss while doing their old forming techniques; those are not suitable for getting profit according to present weather conditions.***
Keywords: Agriculture, Living, Crop, Farmer.

I. INTRODUCTION

New technologies are transforming the agriculture industry, which is very thrilling because it will assist this essential industry in achieving greater farm productivity and profitability. Precision agriculture, the third phase of the modern agricultural revolution (the first being mechanisation and the second being genetic modification), involves applying inputs (what is required) precisely when and where they are needed. It is currently being improved due to the introduction of farm knowledge systems and the availability of enormous quantities of knowledge. In October 2016, the U.S. Department of Agriculture (USDA) reported that precision agriculture technologies increased net returns and operating earnings. In addition, new technologies are increasingly utilised on farms to ensure the environmental sustainability of agricultural products. Nonetheless, there are risks and costs associated with the implementation of these technologies. Enhanced farmer education and training, data sharing, easy access to financial resources, and rising consumer demand for organic food, according to a market study, may make it easier for farmers to adopt sustainable agriculture technology. Because data is only meaningful when applied to crops as numbers or images, the challenge of data retrieval from crops is to provide something coherent and pertinent. Cost and labour savings, increased output or cost savings with less work, and the ability to produce high-quality food in an ecologically responsible manner are all advantages for farms that adopt a technology-driven strategy.

II. LITERATURE SURVEY

In [1], Himesh et al, they concentrate on Agriculture uses Internet of Things (IoTs), Big Data (BD), the digital revolution, and sensor technologies. The introduction concentrates on current BD research projects in agriculture, fundamental BD characteristics, and the most recent developments in BD analytics tools. The sections that follow discuss the significance of BD applications in the agricultural sector and examples of their success in boosting farm productivity, the current state of BD and digital agriculture, the longer-term prospects of BD, and the barriers to BD's deployment in the agricultural sector.

In [2], San Francisco proposed a With the release of its newest product, ALM Intelligence, ALM is forging a new research path. Pacesetter Research offers impartial evaluations of service providers and informed perspectives on demand patterns to assist consumers in evaluating their options and service providers in identifying business opportunities and challenges. The two-sided professional services market is analysed by Pacesetter Research from a platform perspective.

The research papers provide in-depth analysis of each of the segment leaders, who are selected by the pacesetter advisory council, which is comprised of buy-side experts and industry specialists from across all sectors.
In [2017],Diez C proposed a Understanding of digital technologies and applications of sensors, communication networks, unmanned activation systems (USA), artificial intelligence (AI), and other cutting-edge equipment aided the principles of the web in the agricultural sector and the potential of digital technology in India.

III. PROPOSED SYSTEM

Generally in olden days, the farmer doesn't know the Knowledge of which commodities are ideal for a particular region and when they should be grown.
They are oblivious of the fine print regarding the various bank lending rates and, consequently, the current government programmes that assist farmers. If any disease or virus has attacked to the crop the farmer might not be during a position to seek out what sort of disease has occurred thereto crop.
If he didn't found within the initial stage there could also be an opportunity that the entire crop may get damaged. this is often one among the main issues for crop production. And there are not any people to supply suggestions for the farmers. to beat these problems we choose proposed model.
The proposed system gives information associated with crop, financial sector. Additionally to the present it also provides that Before the app alerts the cultivator to any diseases that can impact the sown crop, the farmer must first choose the crop.

The following problems can be resolved by the suggested system:
1) The farmer is unsure of which crops are most suited for this area to plant during certain seasons.
2) They don't understand the nuances of different bank loan interest rates or contemporary political ideologies.
3) Farmers cannot know what sort of disease attacked for the crop.
4) The crop productivity could also be reduced.

Advantages of the Proposed System:
a) The farmers can easily know Farmers can comprehend the fine print of various loan rates and, consequently, the current government policies.
b) Farmers are able to readily select which crops to plant during which seasons and which crops are best adapted to a particular location.
c) Farmers can easily know what sort of virus attacked for the crop.
d) The crop productivity is increased.

In this proposed system for facilitating the implementation we divide the work into two modules. They are User and Admin.

A. User

Farmer is that the main module during this app because user can perform and there are many useful features during this. Farmers do and fallowing traditional farming methods this process will give loss to the farmer. it's the Knowing of useful information to the farmer from our android app.
Here we are proposing the considerably useful features to the farmer like crop diseases season and land and bank loans to the farmers and every one.

B. Admin

Admin is that the main module during this project this module can describe which crop are often effectively grow supported season and land type here admin can add the required information like crop name field type or land type and season to data base. By using the user or farmer can know the knowledge about the crop and season.

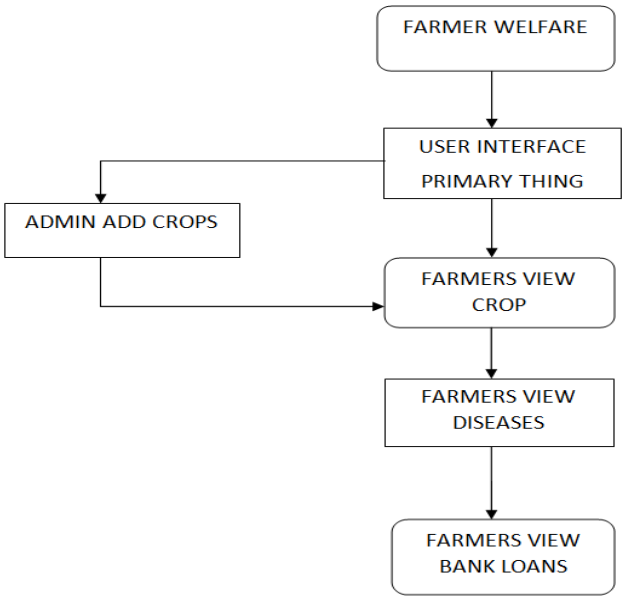


Figure 1: Block diagram of Proposed Work

IV. IMPLEMENTATION

The Android software stack for mobile devices may consist of an operating system, middleware, and essential applications. In 2005, Google Inc. acquired Android Inc., the developer of the software. Android's mobile operating system is supported by its Linux kernel. Google and other members of the Open Handset Alliance worked together to develop and distribute Android.The Android Open Source Project (AOSP) is responsible for the maintenance and development of Android. Android OS is the most widely used operating system in the globe.

The Android SDK contains the necessary resources and APIs for developing Java-based applications for the Android platform. A sizeable Android developer community creates "apps" that extend the capabilities of Android devices. There are currently over 250,000 Android applications.

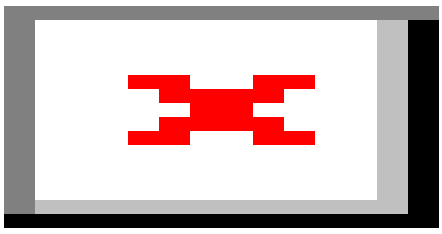


Figure 2: Android Architecture

Linux is supported by the Android operating system, which has a Java programming interface. In addition to its own Java virtual machine (DVM), it offers a tool emulator, debugger, and compiler. The Open Handset Alliance, which is led by Google, develops Android.

Android utilises a unique virtual machine, such as the Dalvik virtual machine. Dalvik utilises unique fragments of code. Therefore, conventional Java bytecode cannot be executed on Android. Android's "dx" utility is capable of converting Java class files into "dex" (Dalvik executable) files. The "aapt" (Android asset packaging tool) programme packages Android applications into.apk files to facilitate development. Google provides Eclipse with Android Development Tools (ADT). After deployment, the ADT automatically converts class files to dex files and generates an apk.

V. RESULTS AND DISCUSSION

With the Help of Android SDK we can develop an app which can be used to farmers for his crops selections based on season, pesticides, bank loans and government schemes.

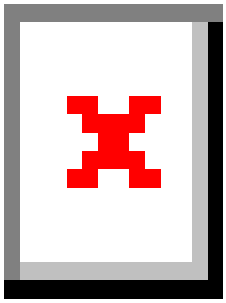


Figure 3:Home Page

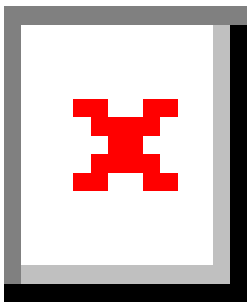


Figure 4: Registration Page

The Farmer can register himself as a user by creating an account with his details like username, password, phone number to access the services.

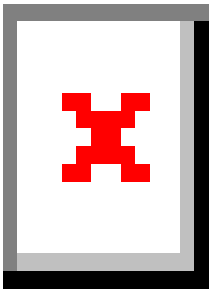


Figure 5: Admin Page

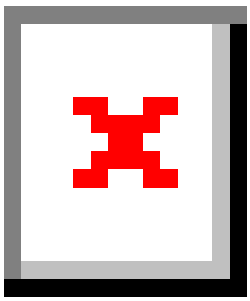
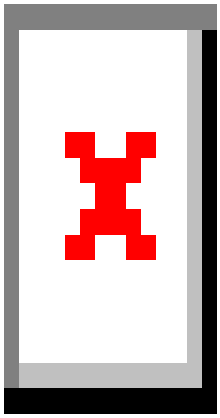


Figure 6: Main Page

In the Figure 5 the Administrator created a page for a adding the crop name, season type and field type.



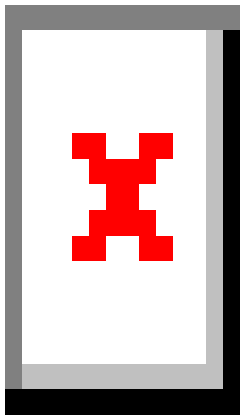
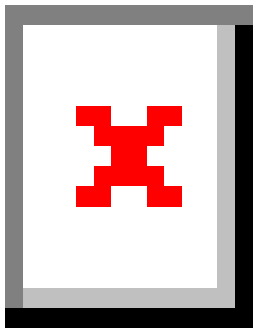


Figure 7: Rice Crop Diseases List Figure 8: Maize Crop Diseases List

In the Figure 7 & 8, we mention the crop disease list of Rice and Maize. This helps for the Farmers and Admin for identifying the crop disease.



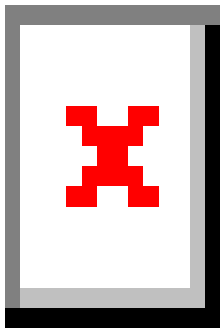


Figure 8: Description of Maize Disease List Figure 9: Farmer Welfare App

In the Figure 7, the total description of the maize disease crop is listed.Along with this we can also display the Farmer Welfare App which gives the information about View crops,bank information etc.

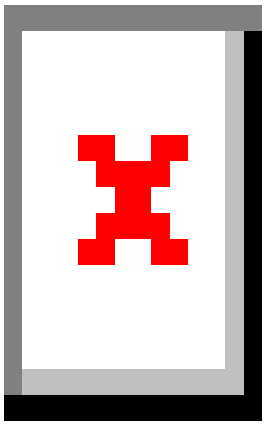


Figure 9: View Crop Details

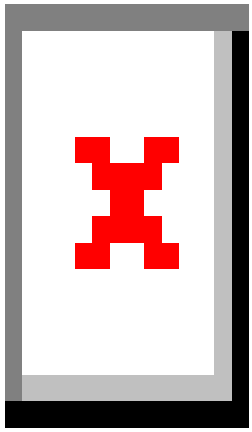


Figure 10: Schemes in Farmer Welfare App

VI. CONCLUSION AND FUTURE ENHANCEMENT

In this project I even have concluded that highlights the need for reliable agricultural data in order to make the best decisions. To handle issues unique to individual farms, an efficient Novel Approach for Crop Management system could coordinate its outputs. This type of cooperative digital support for farmers unites. The time now seems ideal after thirty years of great hopes and failures over the employment of robotics in agriculture. To enhance agricultural income, nevertheless.

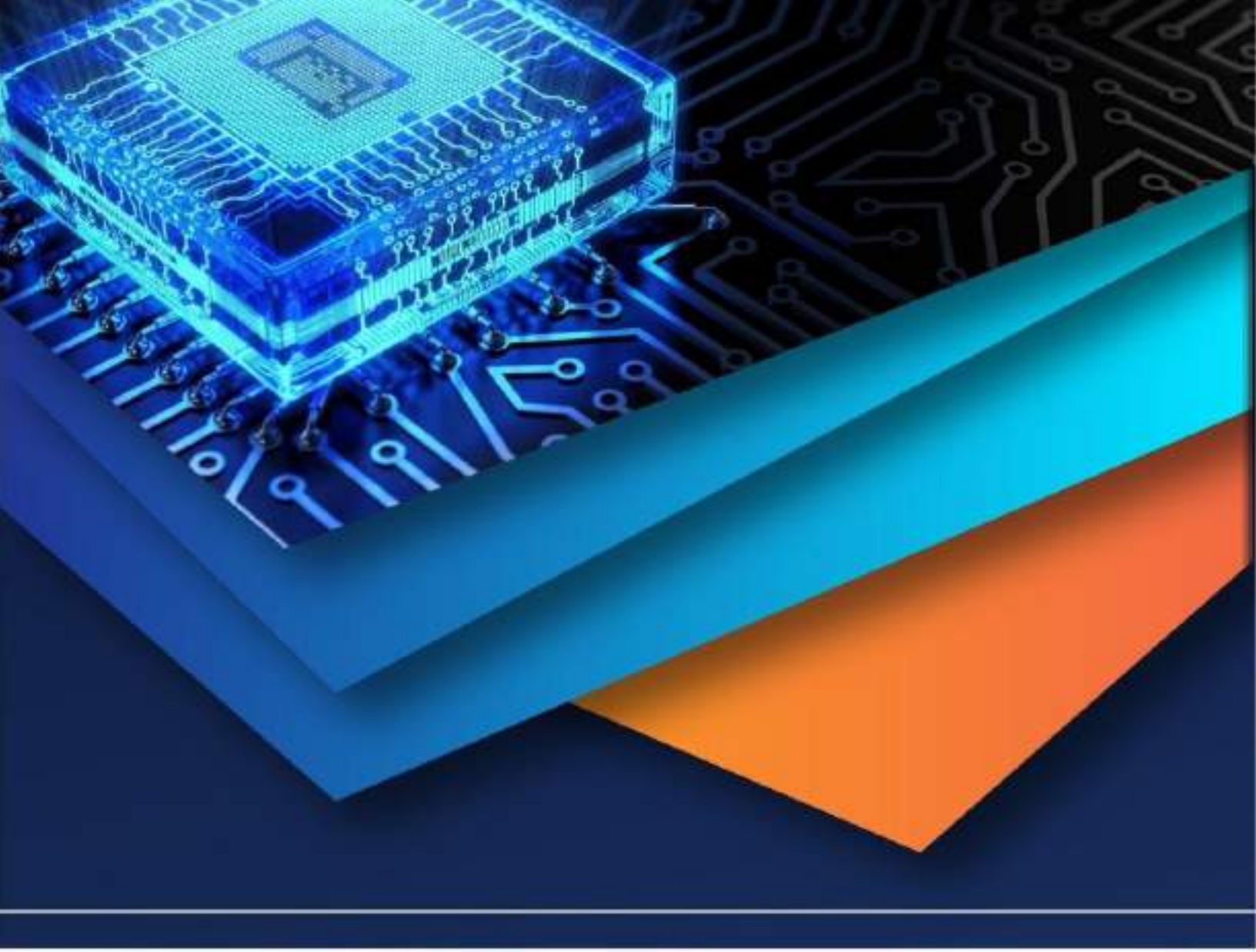
A. Future Enhancement

1) With this project we plan to enable a farmer to step into a replacement reality, where he becomes an actual "node in farming in android".
2) Farming encompasses crops, animals, poultry, fish, and sericulture.
3) A combination of one or more agricultural and cropping enterprises offers higher returns than a single enterprise, especially for small and marginal farmers.
4) The soil and climate of the location
5) The availability of resources such as land, manpower, and capital.

REFERENCES

[1] Himesh, S. Digital revolution and Big Data: A new revolution in agriculture. CAB Rev. 2018, 13, 1-7.
[2] Zhang, Y. The Role of Precision Agriculture. Resource 2019, 19, 9.
[3] Schimmelpfening, D. Farm Profits and Adoption of Precision Agriculture. USDA 2016, 217, 1-46.
[4] Grand View Research, Precision Farming Market Analysis. Estimates and Trend Analysis; Grand View Research Inc.: San Francisco, CA, USA, 2019; pp. 1-58.
[5] Diez, C. HAcia una agriculture intelligent (Towards and intelligent Agriculture). Cuaderno de Campo 2017, 60, 4-11.
[6] Accenture Digital. Digital Agriculture: Improving Profitability.
[7] CEMA. Digital Farming: What Does It Really Mean? Available online: http://www.cem-agri.org/publication/ digital-farming-what-does-it-really-mean (accessed on 17 September 2019).

[8] Nierenberg, D. Agriculture Needs to Attract More Young People. Available online: http://www.gainhelth. Org/Knowledge-center/worlds-farmers-age-new-blood-needed (accessed on 18 September 2019).
[9] European Comission. Generational Renewal in EU Agriculture: Statistical Background; DG Agriculture & Rural Development: Economic analysis of EU agriculture unit: Brussels, Belgium, 2012; pp. 1-10.
[10] Paneva, V. Generational renewal. Available online: https://enrd.ec.europa.eu/enrd-thematic-work/generational-renewal_en (accessed on 28 December 2019).
[11] Alpha Brown. What is IoT in Agriculture? Farmers Aren't Quite Sure Despite $4bn US Opportunity—Report. Available online: https://agfundernews.com/iot-agriculture-farmers-arent-quite-sure-despite-4bn-usopportunity.html (accessed on 28 December 2019).
[12] Gralla, P. Precision Agriculture Yields Higher Profits, Lower Risks. Available online: https://www.hpe. com/us/en/insights/articles/precision-agriculture-yields-higher-profits-lower-risks-1806.html (accessed on 29 December 2019).
[13] Tzounis, A.; Katsoulas, N.; Bartzanas, T.; Kittas, C. Internet of Things in agriculture, recent advances and future challenges. Biosyst. Eng. 2017, 164, 31–48.
[14] Sarni, W.; Mariani, J.; Kaji, J. From Dirt to Data: The Second Green Revolution and IoT. Deloitte insights. Available online: https://www2.deloitte.com/insights/us/en/deloitte-review/issue-18/second-greenrevolution-and-internet-of-things.html#endnote-sup-9 (accessed on 18 September 2019).
[15] Myklevy, M.; Doherty, P.; Makower, J. The New Grand Strategy; St. Martin's Press: New York, NY, USA, 2016; p. 271. Agronomy 2020, 10, 207 18 of 21
[16] Manyica, J.; Chui, M.; Brown, B.; Bughin, J.; Dobbs, R.; Roxburgh, C.; Hung Byers, A. Big Data: The Next Frontier for Innovation, Competition, and Productivity | McKinsey. Available online: https://www.mckinsey. Com/business-functions/mckinsey-digital/our's-insights/big-data-the-next-frontier-for-innovation (accessed on 21 November 2019).
[17] V. S. Bhargavi and S. V. Raju, "Enhancing security in MANETS through trust-aware routing," 2016 International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET), Chennai, India, 2016, pp. 1940-1943, doi: 10.1109/WiSPNET.2016.7566481.
[18] V. S. Bhargavi, M. Seetha and S. Viswanadharaju, "A hybrid secure routing scheme for MANETS," 2016 International Conference on Emerging Trends in Engineering, Technology and Science (ICETETS), Pudukkottai, India, 2016, pp. 1-5, doi: 10.1109/ICETETS.2016.7602991.
[19] Kunisch, M. Big Data in Agriculture—Perspectives for a Service Organization. Landtechnik 2016, 71, 1–3.
[20] Kamilaris, A.; Kartakoullis, A.; Prenafeta-Boldú, F.X. A review on the practice of big data analysis in agriculture. Comput. Electron. Agric. 2017, 143, 23–37.
[21] Proagrica. How Big Data Will Change Agriculture. Available online: https://proagrica.com/news/how-bigdata-will-change-agriculture/ (accessed on 21 November 2019).
[22] Wolfert, S.; Ge, L.; Verdouw, C.; Bogaardt, M.-J. Big Data in Smart Farming—A review. Agric. Syst. 2017, 153, 69–80.



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Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54216

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Legitimate User Review Based on Sentiment Analysis

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Abstract: ***Item surveys assume a significant part in choosing the offer of a specific item on the online business sites or applications like Flipkart, Amazon, Snap deal, and so on. In this, we propose a structure to identify counterfeit item surveys or spam audits by utilizing Opinion Mining. The Opinion mining is otherwise called Sentiment Analysis. In assumption investigation, we attempt to sort out the assessment of a client through a piece of text. We first take the audit and check if the survey is identified with the item with the assistance of Decision tree.***
Keywords: Spam Audit Discovery; Assessment Mining, Choice Tree, Text Mining

I. INTRODUCTION

Audits from purchasers are vital data in E-business frameworks. Several online shops offer survey frameworks to let clients submit their feedback. A growing number of individuals are sharing their sentiments, suppositions, and ideas about their purchased items through interpersonal organization applications and e-trade frameworks with friends and even strangers as long-range informal communication media continue to expand. In various situations, such as client inclination mining and custom proposal creation, these surveys can be exceptionally helpful for individuals' dynamic. The application of survey mining is becoming more and more popular for simplifying our decision-making process. A huge change has been made in the standards of conduct among individuals through these applications, especially in the world of E-trade. The concept of trust challenges customary comprehensions of the client. A client cannot work directly with a sales representative or directly engage with the store in an e-business environment. The web, which is a two-dimensional graphic presentation, plays a role in their experience on one hand. It is common for them to feel lost and need someone to give them advice. A buyer's survey, however, is better than a seller's advancement or marketing message, since it comes from someone who has direct experience with the thing. In information mining, examples and patterns are discovered by an entire analysis of the enormous stockpiles of information. By utilizing advanced numerical calculations, information mining can decode information and estimate the probability of an event occurring in the future. People can discover more about a specific product using criticism mining, which is a type of regular language preparation. An assessment mining assignment involves determining the validity of a report based on whether it is certain, negative, or impartial. Online media has a colossal impact on all aspects of society. In the wake of the development of online media information, it has become increasingly possible to analyze market patterns and systems from easygoing remarks on long range social communication sites. The insights of others are crucial to most of us in dynamic interactions. Item surveys allow clients to rate the satisfaction level they have with a particular item expressed through web-based media. These audits are useful to people and organizations. These audit frameworks may provoke a few groups to enter their phony surveys to elevate certain items or to minimize some others. The principle justification this activity is to acquire from composing deceitful surveys and bogus appraisals. Counterfeit surveys are discovered using location procedures. Preprocessors, phony survey identifiers, and classifiers are used in the development of the framework. To collect information from a website, a web scrubber is utilized. As part of the preprocessor, harmful audits are filtered and legitimate surveys are converted. Copy Review Detector distinguishes counterfeit surveys utilizing wistful figuring, audit deviation and substance similitude techniques and along these lines' surveys are recognized as phony and valid. At last, the characterization takes the named and unlabeled examples as information and names the unlabeled examples.

II. LITERATURE SURVEY

Programming improvement measures include writing reviews. Defining the time factor, economy, and organization strength is important prior to fostering the device. These things being complied with, ten more steps are needed to determine the working framework and language to be utilized to increase the instrument's efficiency.

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

It is necessary for the software engineers to get some external assistance when they start assembling the instrument. A senior developer, a book, or a website can provide this kind of assistance. As part of the process of building the framework, the above considerations are taken into an account [1][2].

A. Audit Graph based Online Store Review Spammer Detection

Online surveys give significant data about items and administrations to shoppers. Nonetheless, spammers are joining the local area attempting to misdirect per users by composing counterfeit surveys. Past endeavors for spammer identification utilized analysts' practices, text likeness, semantics highlights and rating designs. Those investigations can recognize specific kinds of spammers, e.g., the individuals who post numerous comparative audits around one objective substance. Nonetheless, truly, there are different sorts of spammers who can control their practices to act like veritable analysts, and in this way cannot be recognized by the accessible strategies. In this paper, we propose a novel idea of a heterogeneous audit chart to catch the connections among commentators, surveys, and stores that the analysts have checked on. We investigate how connections between hubs in this diagram can uncover the reason for spam and propose an iterative model to recognize dubious commentators. This is the first run through such multifaceted connections have been distinguished for audit spam recognition. We likewise foster a compelling calculation technique to measure the trustiness of commentators, the genuineness of surveys, and the unwavering quality of stores. Unique in relation to existing methodologies, we do not utilize audit text data. Our model is accordingly corresponding to existing methodologies and ready to discover more troublesome and unobtrusive spamming exercises, which are settled upon by human appointed authorities after they assess our outcomes [4][5].

B. Examining and Detecting Review Spam

Mining of assessments from item surveys, discussion posts and sites is a significant examination point with numerous applications. Notwithstanding, existing examination has been centered around extraction, order, and outline of conclusions from these sources. A significant issue that has not been concentrated so far is the assessment spam or the reliability of online sentiments. In this paper, we study this issue with regards to item surveys. As far as anyone is concerned, there is still no distributed examination on this theme, although Web page spam and email spam have been explored broadly. We will see that survey spam is very not the same as Web page spam and email spam, and subsequently requires diverse location strategies. Considering the examination of 5.8 million surveys and 2.14 million analysts from amazon.com, we show that audit spam is far and wide. In this paper, we first present an arrangement of spam surveys and afterward propose a few procedures to recognize them [6][7].

C. Existing System

A vast number of textual audits are generated by online business websites, which record a comprehensive review of a particular topic. As a result of so many data points, customers are unable to discern which audits are trustworthy. The viewpoints and angles of different customers can vary when surveying things. A client's perspectives, interests, inclinations, etc., likewise vary considerably based on the item or service that they are looking for. Many clients rate items positively because they appreciate certain features, while others rate items negatively because they dislike those features. Therefore, a buyer cannot determine which surveys are suitable and which clients can be relied upon in this manner. In order to prevent delusion to the client, the buyers need to establish trust between clients. They should receive audits he can rely on, measure references, and safeguard the untrusted remarks [3].

D. Disadvantages

In E-business situation, clients get no opportunity to have an up close and personal connection with a sales rep or a direct actual involvement in the store and the items they need to purchase. As a two-dimensional graphical showcase, the web intervenes in their experience by using the web. They typically feel to some degree lost and need somebody to give them advices. Then again, audits from shoppers who buy a thing have direct actual encounters with it, are appear to be more solid than seller's advancements or publicizing words.

III. PROPOSED SYSTEM

The human element of trust makes it difficult for it to be consistently described or even accurately described. It was found in many existing studies that client-organization trust was developed and maintained as time progressed and after repeated experiences were discussed. A relatively small amount of energy is exerted to build trust among shoppers and potential customers in E-commerce frameworks.

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

There is no doubt that individuals are more concerned about the credibility of audits and the trust of clients in the E-trade surveys field. Using quantitative techniques, we will study audits and assessments about different items, administrations, organizations, and other subjects related to trust between clients in E-trade frameworks. We center our estimations on supposition comparisons between clients to build up trust that can assist with trust-related proposals administration for further execution.

A. System Architecture

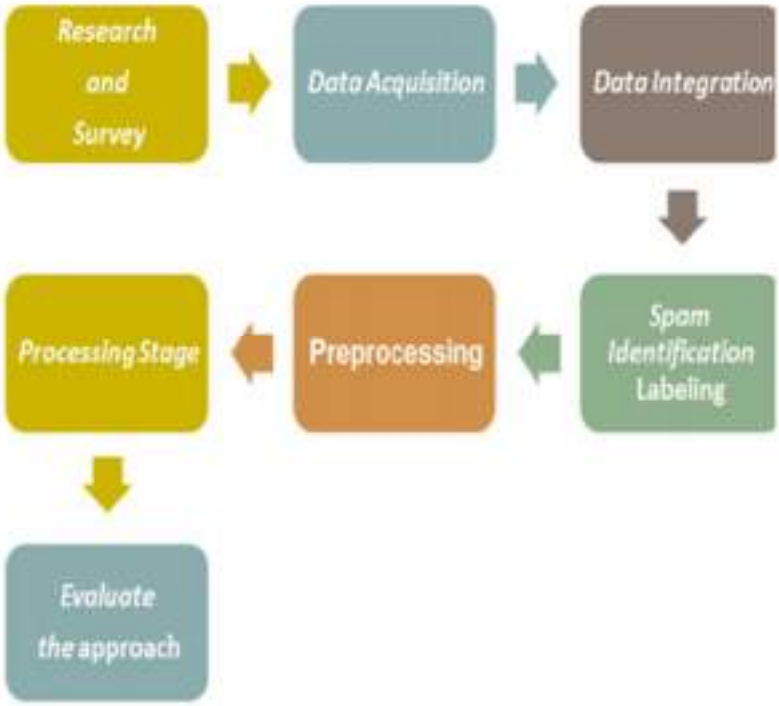


Fig. 1: System Architecture

B. Modules

1) Admin Module

Administrator Module Provides

a) Login (Admin login with valid username, and password)
b) View and Authorize Users (Admin can view the all users list)
c) Add Products
d) View all reviews of customers
e) Analyze reviews using sentiment analysis
f) Detect fake reviews and delete user
g) Logout

2) User Module

User ModuleProvides

a) Registration (Users initially register with their details)
b) Login (Login with registered email and password)
c) View all products
d) Order the products
e) Add comments to the products
f) Add reviews to the products
g) View all the reviews
h) Logout

C. Implementation

1) Data Collection

It is necessary to have Twitter information on the use of specific catchphrases or question terms for performing nostalgic examinations. Twitter public API is available for all users free of charge and we used it for gathering information and tweets. An example of Data Collection would be this.

2) Data Pre-Processing

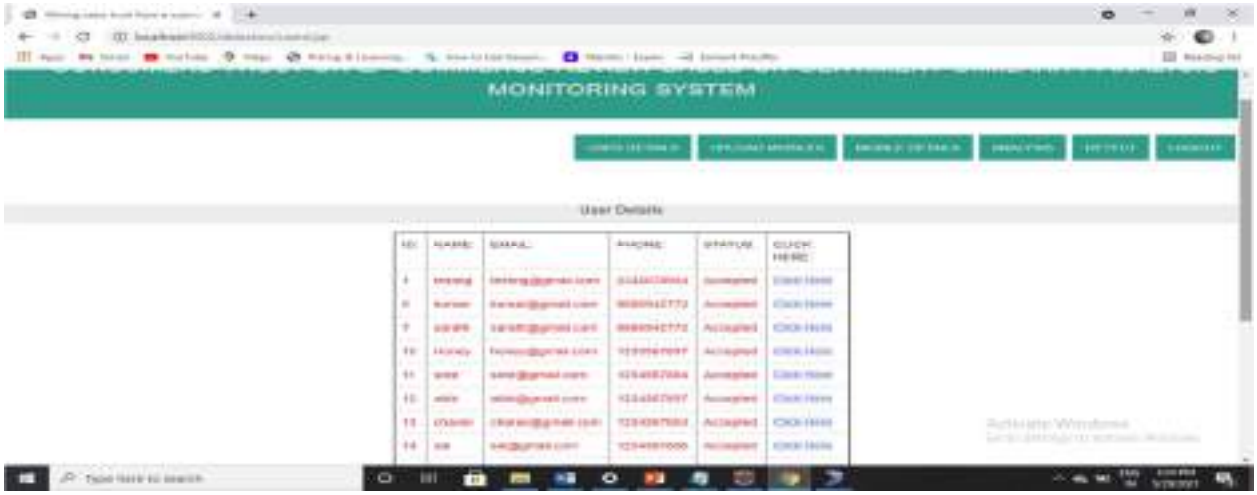
It is an interaction to eliminate the undesirable words from tweets that doesn't add up to any conclusions.

a) Emotional Icons- A total of 170 emoticons have been identified, which have been removed.
b) URLs- Replaced with a word |URL| because it does not imply any sentiment
c) Stop words- words like "a", "is", "the"; does not have any meaning in sentiment analysis.
d) Usernames and Hash Tags- @ before the username and # for theme; both supplanted with AT_USER.
e) Repeated Letters- "sleepiiing", "sleeeeeeeping", "sleeeeeeeeeeeeping" into the token "sleeping".
f) Slag Words- Dynamically created words Data by people.

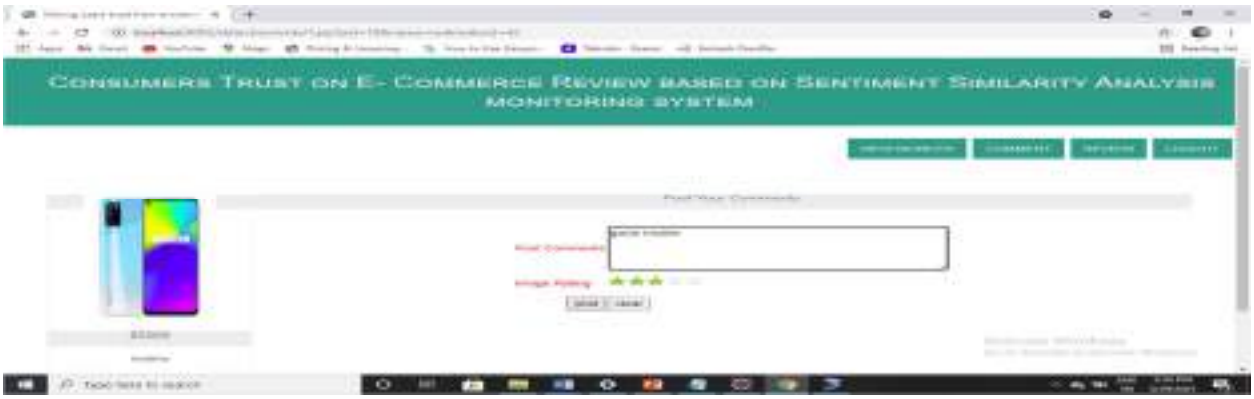
3) Different Ways of Classifications

1) Binary Classification: It is a two-way categorization i.e. positive or negative.
2) 3-tier: Positive, Negative, and Neutral tweets are classified in this category.
3) Tweets are categorized into 5 classes based on their sentiment: Very Positive, Positive, Neutral, Negative and Very Neutral.

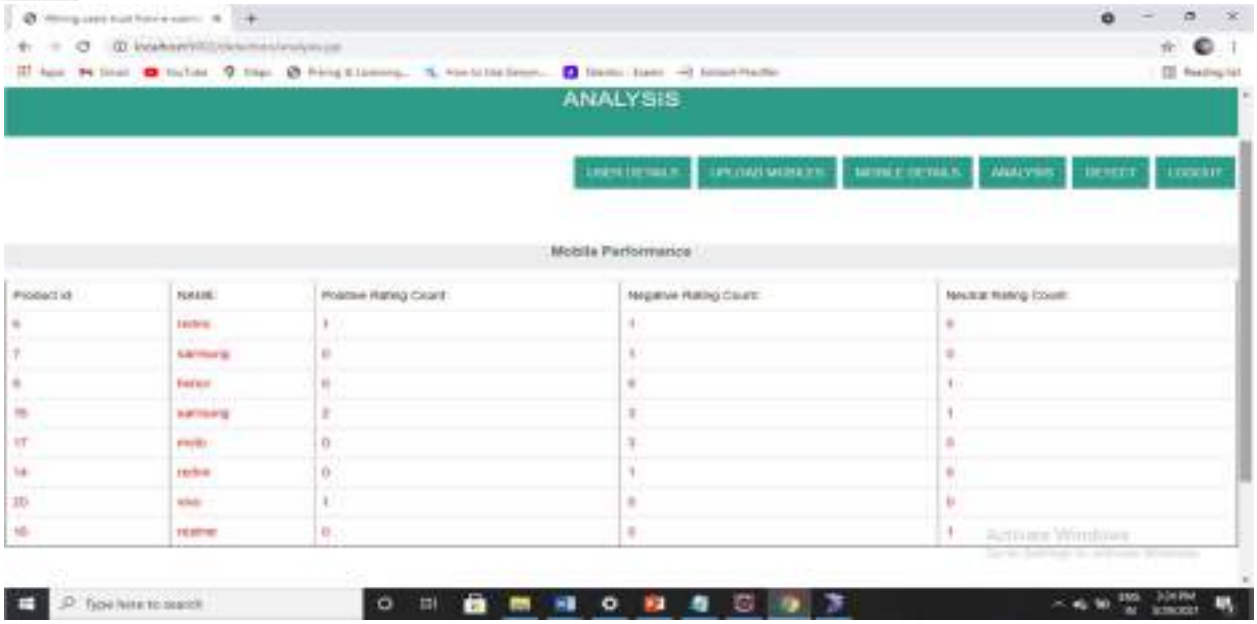
IV. RESULTS



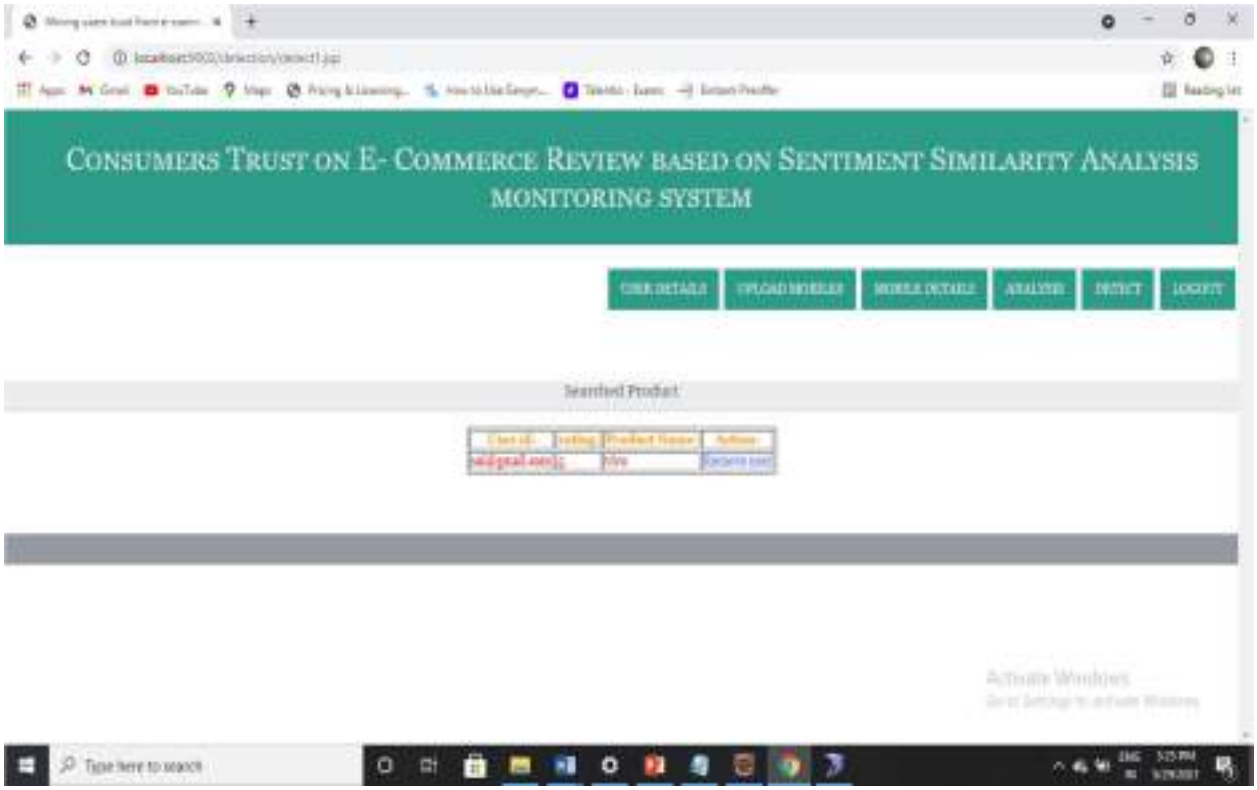
Screen 1: User Details Page



Screen 2: Post Comments and Rating On Ordered Products



Screen 3: Analysis of products reviews



Screen 4: Admin detect fake reviews

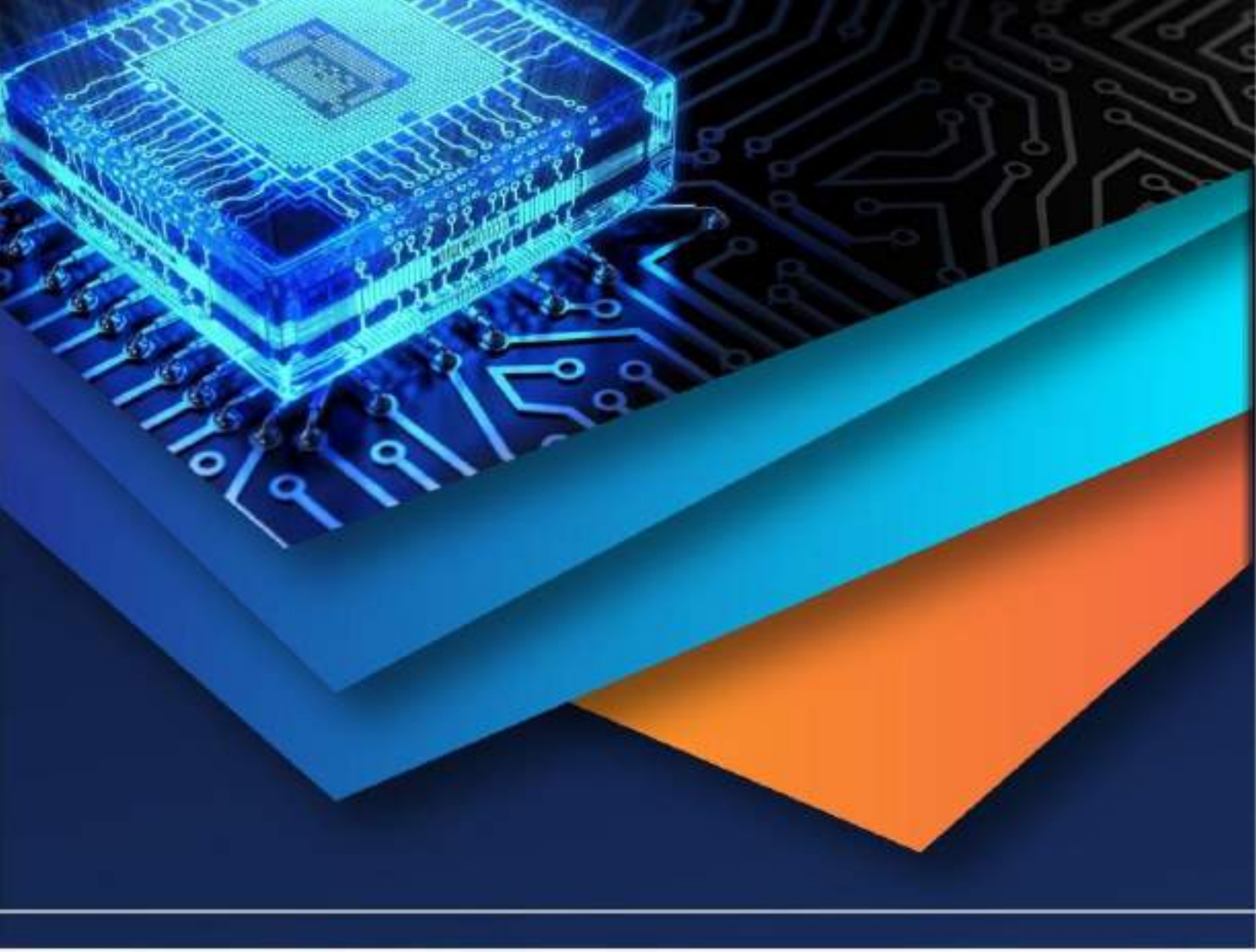
V. CONCLUSION AND FUTURE SCOPE

Among the issues we address in our work is the issue of building clients' trust in e-business frameworks. We move from investigating trust between clients to estimating the supposition of more closeness between their audits by characterizing two kinds of trust relationships, namely direct trust, and engendering trust. Using substance speculation word sets mining, we are able to analyze the slant closeness of audits and obtain direct trust relationships through slant similarity investigations, which includes feelings and appraisals.

It may be possible to eliminate prerequisites for item names and specifically item audits, but it is likely to be an exceptionally challenging task. Administrators need to identify the spammer account's IP address and physically block it. Programming impediments can also be implemented later in the framework's lifecycle.

REFERENCES

[1] Shaozhong Zhang, Haidong Zhong. "Mining Users Trust From E-Commerce Reviews Based on Sentiment Similarity Analysis" , IEEE Access, 2019.
[2] Donpiti Chulerttiyawong, Abbas Jamalipour. "A Blockchain Assisted Vehicular Pseudonym Issuance and Management System for Conditional Privacy Enhancement" , IEEE Access, 2021
[3] P. De Meo, E. Ferrara, D. Rosaci, and G. M. L. Sarné, ‘‘Trust and compactness in social network groups,’’ IEEE Trans. Cybern., vol. 45, no. 2, pp. 205–216, Feb. 2015.
[4] Guan Wang. "Review Graph Based Online Store Review Spammer Detection" , 2011 IEEE 11th International Conference on Data Mining, 12/2011
[5] Gera, Tanya, Deepak Thakur, and Jaiteg Singh. "BILD Testing for Spotting Out Suspicious Reviews, Suspicious Reviewers and Group Spammers" , 2015 Fifth International Conference on Communication Systems and Network Technologies, 2015.
[6] Bing Liu. "Analyzing and Detecting Review Spam", Seventh IEEE International Conference on Data Mining (ICDM 2007), 10/2007.
[7] Alok Katiyar, Rishi Kumar, Shri Kant, Y. D. S. Arya. "Pervasive Online Spam Review Detection based on Ontology using Naive Bayesian" , 2018 International Conference on Advances in Computing, Communication Control and Networking (ICACCCN), 2018.
[8] V. S. Bhargavi, M. Seetha and S. Viswanadharaju, "A hybrid secure routing scheme for MANETS," 2016 International Conference on Emerging Trends in Engineering, Technology and Science (ICETETS), Pudukkottai, India, 2016, pp. 1-5, doi: 10.1109/ICETETS.2016.7602991.
[9] V. S. Bhargavi, M. Seetha and S. Viswanadharaju, "A trust based secure routing scheme for MANETS," 2016 6th International Conference - Cloud System and Big Data Engineering (Confluence), Noida, India, 2016, pp. 565-570, doi: 10.1109/CONFLUENCE.2016.7508183.



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INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54217

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Machine Learning Algorithm for Toxic Comments Analysis

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Abstract: Online comments that are toxic tend to drive other users away from a discussion because they are nasty, abusive, or irrational. The risk of online bullying and harassment limits people from expressing opposing views, which has an impact on the free exchange of ideas. Sites fail to properly promote discussions, which forces many communities to restrict or disable user comments. In order to analyze the toxicity as accurately as possible, this paper will carefully evaluate the prevalence of online harassment. In order to solve the text classification problem and determine the optimal machine learning algorithm based on our assessment metrics for the categorization of harmful comments, we will employ six machine learning algorithms and apply them to our data. We will work to accurately assess the toxicity to reduce its negative consequences, which will encourage organizations to take the necessary action.

Keywords: Machine Learning, Toxic comments, Least Square Support Vector Machine, Singular Value Decomposition,

I. INTRODUCTION

With the use of just a smart phone and the internet, one person may now interact with another person anywhere in the world, which is one of the greatest advancements of the "Internet" of the century thanks to the growth of computer science technology. In the past, email was the only form of communication between people, and it was replete with spam. Classifying the emails as spam or not was a difficult task. As time went on, communication and data flow through the internet underwent a significant change, particularly following the advent of social media websites. With the development of social media, it is crucial to categorize the content into positive and negative words in order to stop any type of harm to society and to regulate people's antisocial behavior.

II. PROBLEM DEFINITION

A Web of Hate: Tackling Hateful Speech in Online Social Spaces proposes a way to distinguish scornful discourse that utilizes content created without help from anyone else recognizing disdainful networks as preparing information. This methodology sidesteps the costly explanation measure often needed to prepare catchphrase frameworks and performs well across a few set up stages, making improvements over present status of the craftsmanship. Provocation is a "highlight" of life online for some Americans, but it can bargain clients' protection, drive them to pick when and where to partake on the web, or even represent a danger to their actual wellbeing. This paper presents the Internet Argument Corpus (IAC), a collection of 390,704 posts in 11,800 conversations removed from 4forums.com. It examines the connection between talk marker pragmatics, understanding, emotionality, and mockery in the IAC corpus.

It finds that introverted conduct is more regrettable than other clients over the long run, and is exacerbated when local area input is excessively cruel. It also uncovers particular gatherings of clients with various degrees of reserved conduct that can change over the long haul.

This paper examines introverted conduct in three online conversation networks by dissecting clients who were prohibited from these networks. It is found that these clients move their endeavors in few strings, are bound to post incidentally, and are more fruitful at gathering reactions from different clients. Additionally, it is found that standoffish conduct is exacerbated when local area input is excessively brutal. Finally, an AI based strategy is used to identify disdain discourse on online client remarks from two spaces and a corpus of client remarks commented on for oppressive language.

III. TEXT CLASSIFICATION USING MACHINE LEARNING

The recent emergence of offensive language in user-generated online content has taken on increasing importance. The majority of current business techniques include boycotts and regular speech, however these tactics fall short when compared to more subdued, less clumsily delivered examples of contemptuous talk. In this study, we develop an AI-based method that outperforms a cutting-edge deep learning methodology for identifying hate speech in online client comments from two spaces.

We also maintain a corpus of customer comments that have been reviewed for abusive language, the first of its kind. Finally, in order to deepen our understanding of this behavior, we use our discovery tool to look at harmful language across time and in different contexts.

A. Classification of Text Documents Using the Least Square Support Vector Machines with Singular Value Decomposition

Text order has emerged as one of the most important strategies for handling and coordinating content information as a result of the rapid proliferation of online data. Making up scientific categories for reports is one way to facilitate finding relevant archives, content sorting, and point tracking. The classifier used in this study to efficiently arrange text archives is LS-SVM. Text data is typically a high-dimensional trademark, thus using SVM to reduce the high-dimensionality is also possible. In this study, Least Square Support Vector Machines and Singular Value Decomposition are used to increase grouping accuracy and reduce the dimensionality of a large book's material.

Machine type: Personal details enlarged

Numerous stages try to investigate the mystery because of the harm that individual attacks on web communication create. However, it is still surprisingly difficult to comprehend the prevalence and impact of individual attacks on internet stages at scale. The goal of this work is to develop and define a method for analyzing individual assaults at scale by combining public support with AI. We demonstrate an evaluation method for a classifier that can estimate the total number of group workers. Applying our method to English Wikipedia, we get a corpus of over 100,000 excellent human-marked comments and 63,000,000 machine-named ones from a classifier that is roughly as good as the sum of three group laborers, as measured by the space under the the Spearman link and the ROC bend. Our method enables us to look at some of the unanswered questions surrounding the concept of online individual assaults using this corpus of machine-named scores. This reveals that the majority of individual attacks on Wikipedia are not the result of a small number of evil users, nor are they primarily the result of allowing enigmatic commitments from unregistered users.

IV. SYSTEM ANALYSIS

A sensible interaction is examination. Making a precise decision about how to handle the situation is the aim of this step. In order to create a consistent model of framework, tools like Class Diagram, Sequence Diagram, information stream outlines, and information word reference are used.

A. Analyzing The Domain

A computer programmer learns foundational information through space exploration, which helps them comprehend the problem. The word space used to describe the circumstance alludes to the broad area of commerce or innovation in which the client expects to use the goods. For this project, the coworkers' individual programming experiences with competing programming were considered as helping them understand the area.

B. Existing system

Online media objections are used to gradually disseminate a significant amount of material. Sadly, due to the existence of destructiveness on the internet, this vast amount of data is adversely influencing people's presences as well as the idea of human life in general.

Because harsh comments prevent people from expressing their thoughts and having refuting presumptions, there is a lack of robust dialogue via online media objections as a result of this cynicism. Determining and limiting the thoughtful direct over online discussion social events is therefore essential. Despite this, there have been attempts in the past to build internet security by page control and openly supporting.

C. Disadvantages

We have a Multi-Label Classification challenge to tackle in our data set because our data value can belong to 0 categories, 1, or more.

In order to address the issue of text categorization, this work uses six machine learning techniques: logistic regression, random forest, SVM classifier, naive bayes, decision tree, and KNN classification.

Here, we will apply six machine learning algorithms to our data in order to solve the text classification problem and choose the top algorithm based on our assessment metrics for classifying harmful remarks.

D. Proposed system

We must categorize the information in this project into six categories, such as danger, affront, hazardous, extremely poisonous, indecent, or personality contempt. We can also place one information esteem into each category.In this assignment, we must classify the information into six categories, such as danger, affront, harmful, extremely poisonous, indecent, or personality scorn. We can classify material according to its value into none of these categories, or at least more than one. Our initial assignment will be to determine whether our arrangement is multiclass or multi-mark in nature before we start any preparation on our information. A particular sketch of a nursery may contain a tree, landmark, strolling path, or a combination of these, and in this way the sketch can have a spot with nothing, at least one than one classes. This is known as multi-mark grouping.

E. Advantages

To protect teenagers, a parser and lexical feature has been combined. This allowed for the detection of harmful language in YouTube comments.

The data must then be cleaned in order to extract key features, which is the following step in our technique.

Following a thorough cleaning process, we will do an exploratory visualization to identify key features.

V. MODEL BUILDING

Describe the overall framework programming and association in this paper. Include a list of programming modules (this could include functions, subroutines, or classes), codings, and programming PC enabled programming devices (with a clear depiction of everything's capacity). Use object-arranged graphs or organised association charts to display the various division levels from highest to lowest. The graphs' highlights should all include names and references. Include a narrative that advances and improves the reader's understanding of the practical breakdown. Use subsections to address each module if appropriate.

Architecture of internal communications

Describe the system's overall communications in this area, including LANs, buses, etc. Include any implemented communication architectures, such as X.25, Token Ring, etc. Use subsections, as necessary, to discuss each architecture in use.

A. Database and File Design

During setup, collaborate with the DBA (database administrator). The section should reveal the final layout of all data base administration framework (DBMS) records and non-DBMS documents associated with the framework as a work in progress. For the particular project, further information may be added.

Give a comprehensive information word reference that includes the name, kind, length, source, approval guidelines, support (CRUD capacity—make, read, update, erase), information storage, yields, assumed names, and portrayal of each information component. is applicable as an index.

B. Files For Database Management Systems

An accurate representation of the DBMS diagrams, substructures, records, sets, tables, accumulating page sizes, etc.

Access methods (such as arranged pointer exhibit, filed, by means of set, successive, arbitrary access, and so on)

Measure the DBMS record size or the amount of information contained in the document, as well as the information pages, taking into account any overhead caused by access methods and available space.

Calculate the number of exchanges if the data set is an online exchange based framework on-Database Management System Files by determining the meaning of the update recurrence of the information base tables, views, documents, regions, records, sets, and information pages. Include a narrative description of each file's usage in this section, along with information about its usage (such as whether it is used for input, output, or both), whether it is a temporary file, which modules read and write to it, and its file structure (refer to the data dictionary). The information about the file structure should:

Recognise the record structures, record keys or indexes, and the references to the records' data elements.

Record length (fixed or maximum variable length) and blocking variables should be defined.

Define the file access mechanism, such as random access, virtual sequential access, index sequential access, etc.

Calculate the size of the file or the amount of data it contains, taking file access method overhead into account.

Calculate the size of the file or the amount of data it contains, taking file access method overhead into account.

Provide the projected number of transactions per unit of time, along with the statistical mean, mode, and distribution of those transactions, if the file is a component of an online transaction-based system, and define the update frequency of the file.

C. Environmental Interface

Regardless of whether other frameworks are supervised by the State or another office, outer frameworks are any frameworks that are beyond the scope of the framework being worked on. Show the electronic interfaces between this framework and each and every other framework as well as any subsystems in this section, putting emphasis on the viewpoint of the framework that is being developed.

Architecture for Interfaces

Show the interfaces between the framework being used in this segment.Describe the interface(s) between the framework being developed and other frameworks in this section, such as group motions, inquiries, and so on. Include any interface architectures that are currently being used, such as wide region organizations, passageways, and so on. Provide a diagram that shows the relationship between this framework and each of the other frameworks, showing how it relates to the setting outlines. Use subsections to address each active interface, if that is appropriate.

Details of the interface design

There must be rules governing the interface for any framework that provides data exchange with the framework under development. This section should include enough specific information about the requirements of the interface to correctly arrange, convey, and also obtain information via the interface.

Keep in mind the following information for the specific strategy for each interface (where appropriate):

The requirements for information design are: Instruments and methods for the reformat interaction should be described if it is necessary to reformat information before it is conveyed or after it has been acquired.

Details for hand-shaking protocols between the two frameworks, including the nature and format of the information to be recalled for the hand-shake messages, the context for exchanging these messages, and the actions to be done when errors are identified

Format(s) for error reports exchanged across frameworks should take into account the aura of error reports; for example, they could be kept in a record or printed out and sent to the administrator.

A visual representation of the availability between frameworks that displays the direction of the information stream depictions of questions and responses

The information can be copied from an official Interface Control Document (ICD) for a specific interface, or the ICD can be mentioned in this section. regulating system integrity

Touchy frameworks use information whose misuse, exploitation, modification, or unauthorised access may affect the direction of State programmes or the level of protection to which individuals are legally entitled.

Developers of sensitive State systems must create requirements for at least levels of controls the following Internal security to restrict access to only those entrance types required by clients and to basic information items

Examine methods for ensuring that operational and board reports satisfy the requirements for control, detailed, and maintenance periods. strong application review trails to examine recovery admission to given fundamental information Tables that must be used or specified in order for information fields to be approved Ability to identify all review data by client ID, network terminal recognisable proof, date, time, and information got to or altered. Confirmation measures for increases, cancellations, or changes of basic data.

VI. MODULES

The best progression of the "Web" of the 21st century may have been made possible by the exceptional advancement of software engineering and innovation, which allows one person to impart to another globally with the help of a computer. Exponential growth: The amazing advancement of software engineering and innovation has given rise to the "Web" of the twenty-first century, which allows one person to transmit to another globally with the use of a basic PDA and the internet. People used to communicate with one another in the early days of the internet, namely through Email, which was flooded with spam. Ordering the messages back then as positive or negative, such as spam or not-spam, was a significant task. Since the advent of online media outlets, correspondence and the flow of information through the internet have undergone significant change.With the development of online media, it has become increasingly important to categorize the content into positive and negative categories in order to prevent social harm and regulate people's reserved behavior.

A. Machine learning

On the Kaggle.com data set, various machine learning methods will be employed to categorize harmful comments. This work uses machine learning methods, such as logistic regression and naive bayes, to address the text categorization issue.

So, using the provided data set, we will apply each machine learning technique, calculate and compare each algorithm's accuracy, log loss, and hamming loss. Since binary data is what computers use, data in the actual world can take on many different forms, such as text or graphics. As a result, in order for the data from the actual world to be properly processed by the computer, it must be converted into binary form. In this research, we will classify online comments using this converted data and machine learning approaches.

By applying the data to a function that will assign a value to each data value of the data set, text classification may be applied to a given data set and set of labels with ease.

B. Convolution neural network

Different AI calculations will be used to order the harmful comments on the Kaggle.com data set. In order to address the problem of text characterization, this study includes six AI techniques, such as strategic relapse, arbitrary timberland, SVM classifier, credulous bayes, decision tree, and KNN grouping. In order to analyse the accuracy, log misfortune, and hamming misfortune of all six AI calculations, we will apply them to the informational index and figure provided. In the real world, we have information in many structures, such as pictures or text, as computers work on parallel information. As a result, we must convert the data from the current reality into a parallel structure for proper PC preparation. In this research, we will make use of this updated data and use machine learning techniques to classify online comments. By applying the information to a capacity that will designate a worth to every piece of information in the informational collection, text order may be conveniently applied to a particular informational collection and set of names.

C. Finishing Up Evaluation Metrics: Evaluation

The nature of AI calculations is verified through assessment measurements. Therefore, in order to determine and evaluate all of the strategies, we need to choose the appropriate assessment metrics for our informational index before applying any AI computations to the handled data. There are two important categories of measures for multi-name arrangements. Metrics Based on Models: Here, we'll calculate the incentive for each informational value before averaging the results across the informational index. Accuracy, model hamming loss, and other factors Name-Based Metric: In this case, we will calculate the incentive for each name in our order and then average out all of the attributes without accounting for any correlation between marks. Model typical accuracy, a single error, and so forth.

VII. FUTURE ENHANCEMENTS

For improved results, subsequent research can use different AI models to calculate exactness, hamming misfortune, and log misfortune. We may also look into some complex learning algorithms as the GRU, multi-facet perceptron, and LSTM (long transient memory repetitive neural organisation). This allows us to research a wide range of techniques that will help us improve the outcome.

VIII. CONCLUSION

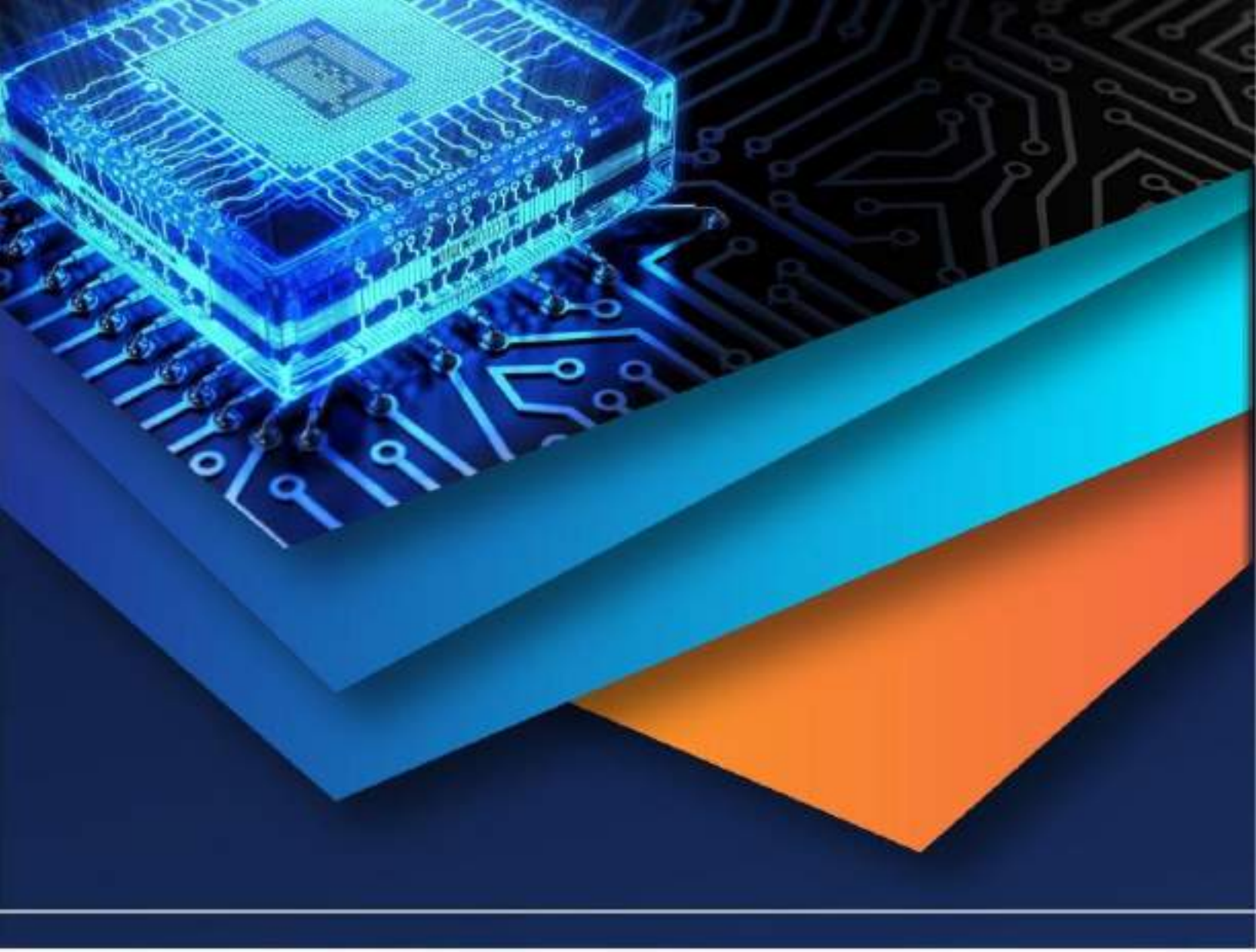
In this study, we compare the hamming loss, accuracy, and log loss of three machine learning techniques: logistic regression, Naive Bayes, and multi-label classifier. After thorough analysis, we can now state that logistic regression performs best in terms of hamming loss because our hamming loss is lowest in that case, while logistic regression performs best in terms of accuracy because accuracy in that model is best compared to others, and random forest performs best in terms of log loss because it has the lowest possible log loss in that model. So, hamming loss and accuracy will be combined to determine the final model we choose. Since we obtained the highest accuracy (96.46%) and the lowest hamming loss (2.43%) in the instance of the logistic regression. Since the logistic regression model performs the best for our data, we will choose it as our final machine learning method.

IX. ACKNOWLEDGMENTS

I would like to express my special thanks and gratitude to my college(G Narayanamma institute of technology and science) and my department, for encouraging me to research on this project, which also helped me in gaining a lot of practical knowledge and I came to know about so many new things theoretically, and also helped in mastering certain useful topics, I am really thankful to them. Secondly, I would also like to thank my parents and friends who helped me a lot in finalizing this paper within the limited time frame.

REFERENCES

[1] K Ramya Sri and Ch Ramesh “Credit Risk Valuation Using Machine Learning Algorithm” Springer Learning and Analytics in Intelligent Systems series, vol. 4, chapter 74, June 2019 https://link.springer.com/chapter/10.1007%2F978-3-030-24318-0_74
[2] Ch Ramesh and K Ramya Sri, "Evaluation of Machine Learning Models for Credit Scoring[J]", Test Engineering and management, vol 82, Page number 2798-2805. ISSN 0193-4120, https://zenodo.org/record/7920846
[3] M. A. Walker, P. Anand, J. E. F. Tree, R. Abbott, and J. Lord, "A corpus for research on pondering and discussion," Proc. eighth Int. Conf. Lang. Resour. Eval. Lr. 2012, pp. 812 – 817, 2012.
[4] J. Cheng, C. Danescu-Niculescu-Mizil, and J. Leskovec, "Withdrawn conduct in online conversation networks," Proc. ninth Int. Conf. Web Soc. Media, ICWSM 2015, pp. 61–70, 2015.
[5] B. Mathew et al., "Thou shalt not disdain: Countering on the web disdain discourse," Proc. thirteenth Int. Conf. Web Soc. Media, ICWSM 2019, no. August, pp. 369–380, 2019.
[6] C. Nobata, J. Tetreault, A. Thomas, Y. Mehdad, and Y. Chang, "Harmful language discovery in online client content," 25th Int. Internet Conf. WWW 2016, pp. 145 – 153, 2016, doi: 10.1145/2872427.2883062.
[7] E. K. Ikonomakis, S. Kotsiantis, and V. Tampakas, "Text Classification Using Machine Learning Techniques," no. August 2005.
[8] M. R. Murty, J. V... Murthy, and P. Reddy P.V.G.D, "Text Document Classification basedon Least Square Support Vector Machines with Singular Value Decomposition," Int. J. Comput. Appl., vol. 27, no. 7, pp. 21–26, 2011, doi: 10.5120/3312-4540.
[9] E. Wulczyn, N. Thain, and L. Dixon, "Ex machina: Personal assaults seen at scale," 26th Int. Internet Conf. WWW 2017, pp. 1391–1399, 2017, doi: 10.1145/3038912.3052591.
[10] H. Hosseini, S. Kannan, B. Zhang, and R. Poovendran, "Misleading Google's Perspective API Built for Detecting Toxic Comments," 2017, [Online]. Accessible: http://arxiv.org/abs/1702.08138.
[11] Y. Kim, "Convolutional neural organizations for sentence arrangement," EMNLP 2014 - 2014 Conf. Empir. Strategies Nat. Lang. Interaction. Proc. Conf., pp. 1746–1751, 2014, doi: 10.3115/v1/d14 - 1181.
[12] R. Johnson and T. Zhang, "Successful utilization of word request for text order with convolutional neural organizations," NAACL HLT 2015
[13] Y. Chen and S. Zhu, "Recognizing Offensive Language in Social Media to Protect Adolescents," [Online].Available: http://www.cse.psu.edu/~sxz16/papers/SocialCom2012.pdf.
[14] A. L. Sulke and A. S. Varude, "Order of Online Pernicious Comments utilizing Machine Learning," no. October 2019
[15] I.Ravi Prakash Reddy, “Location Sharing System with Enhanced Privacy in Mobile Online Social Network”, Journal of Emerging Technologies and Innovative Research, ISSN-2349-5162, Vol-6, Issue-6, June-2019
[16] N. Chakrabarty, "A Machine Learning Approach to Comment Toxicity Classification," Adv. Intell. Syst. Comput., vol. 999, pp. 183 – 193, 202
[17] Spiros V. Georgakopoulos, Sotiris K. Tasoulis, Aristidis G. Vrahatis and Vassilis P. Plagianakos:” Convolutional Neural Networks for Toxic Comment Classification”
[18] Kevin Khieu and Neha Narwal:” Detecting and Classifying Toxic Comments”, https://web.stanford.edu/class/cs224n/report s/6837517.pdf
[19] Vaddi, S., Mohanty, H. (2014). Web Service Composition Using Service Maps. In: Murty, M.N., He, X., Chillarige, R.R., Weng, P. (eds) Multi-disciplinary Trends in Artificial Intelligence. MIWAI 2014. Lecture Notes in Computer Science(), vol 8875. Springer, Cham. https://doi.org/10.1007/978-3-319-13365-2_18
[20] Theodora Chu, Kylie Jue and Max Wang:” Comment Abuse Classification with Deep Learning”, https://web.stanford.edu/class/cs224n/reports/2762092.pdf
[21] Sesha Bhargavi, V., Spandana, T. (2017). Recommendation Based P2P File Sharing on Disconnected MANET. In: Deiva Sundari, P., Dash, S., Das, S., Panigrahi, B. (eds) Proceedings of 2nd International Conference on Intelligent Computing and Applications. Advances in Intelligent Systems and Computing, vol 467. Springer, Singapore. https://doi.org/10.1007/978-981-10-1645-5_18
[22] Velagaleti, Sesha Bhargavi, M. Seetha, and S. Viswanadha Raju. "A Simulation and Analysis Of Secured AODV Protocol in Mobile Ad Hoc Networks." IJRET International Journal of Research in Engineering and Technology (2013).
[23] https://www.kaggle.com/c/jigsaw-toxic-comment-classification-challenge/data
[24] Coversation AI Team, https://conversationai.github.io/



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INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54219

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Real Time Barcode Scanning without Eye Contact on Smartphones

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Abstract: ***This research is designed to make life easier for visually impaired people. It is a camera-based system that scans the barcode on the back of the image and uses the ID stored in the barcode to display the model of the product. This will help visually impaired people see the contents of the market so they can buy packaged products. This is because blind people have a hard time distinguishing between grocery stores. To use this technology, users simply have to capture the image of the product on their phone and then identify the barcode; that means it scans the image to find the ID to hide. So this app is really helpful for blind and visually impaired people to do their job of identifying things easily It is very easy to use and inexpensive as it requires a scanner to scan the barcode and a phone camera to capture the image containing the image of the barcode. This is now very easy to do as most modern phones have a solution to scan the barcode to identify the ID stored inside and read the description of the goods. This program is usually available in all shops, department stores, bookstores, pharmacies, etc.***
Keywords: Smartphone app, Barcode reader, Android, Eclipse, AWT, AVD, White Box Testing, Black Box Testing.

I. INTRODUCTION

The ability to identify items such as food and other items is very useful for the blind and visually impaired who do not yet have access to these cookies. As a result, they were attracted to barcode readers that could read product barcodes, many of which uniquely identify products. A smartphone can be a useful tool for reading products barcodes, as most of us carry a smartphone and don't want to carry an avid barcode reader (though a high-end reader would be more convenient than a smartphone reader). There are many smartphone applications for barcode reading, such as the RedLaser and ZXing projects (for iPhone and Android, respectively), and many studies have been published on the subject (Kongqiao; Wachenfeld). However, since most of these systems are designed for visual users, they must center the barcode in the image.

II. LITERATURE REVIEW

1) Use A Real-Time Blindless Barcode Scanner In Video Mode On A Smartphone

A smartphone can be a useful tool for reading product barcodes because most of us carry a smartphone and don't want to carry around an avid barcode reader (even an avid reader will find it easier than a smartphone reader). There are many smartphone applications for barcode reading, such as the RedLaser and ZXing projects (for iPhone and Android, respectively), and many studies have been published on the subject (Kongqiao; Wachenfeld). However, since most of these systems are designed for visual users, they must center the barcode in the image.

In addition to the authors' previous work ("Algorithms to support visually impaired users..."; "Use of mobile phones..."), we can see that the same work published in relation to BLaDE belongs to Kulyukin and collaborators, A. smartphone for visually impaired users. who also developed the video-based barcode scanner (Kutiyanawala; Kulyukin). However, this reader requires the user to frame the camera with a barcode so that the barcode appears horizontally or vertically in the camera frame. In turn, BLaDE removes this limitation (see next section), thereby reducing the user's limitations and simplifying the hassle of finding and reading barcodes.

2) An Algorithm That Allows Visually Impaired People To See And Navigate Barcodes

Most camera-based systems for finding and reading barcodes are designed for the user to see (such as the Red Laser iPhone app) and assume that the user carefully inserts the barcode in the image before reading it.

Visually impaired people can use these systems to see foodstuffs (for example, cans in grocery stores), but unfortunately these systems cannot access their current form as they rely on feedback from users. To solve this problem, we propose a computer vision system that processes video at a few frames per second to identify barcodes within a few inches; algorithm guides the hand holder User does not see the webcam or other portable camera to find and locate the barcode.

3) Blind Barcode Scanner On Smartphone Using Niblack's Binary Decoding And Support Vector Technology

provides a vision-independent barcode search algorithm for blind and visually impaired users. The algorithm uses Niblack's binaryization filter and support vector machine (SVM) to detect the presence of a barcode in the image area. The algorithm is based on and used by Google Nexus One smartphone with Android 2.3.3. The algorithm was tested in software tests on real product images and in another test by three blind people using smartphones to capture UPC barcodes on real food products. Our approach supplements existing R&D efforts in blind barcode scanning by suggesting a location for VI smartphone users to generate barcode scans in some cases where sophisticated vision techniques may not be required.

III. EXISTING SYSTEM

The blind, the visually impaired and the elderly often rely on others to meet their needs. The busy schedule doesn't allow people to always help them. Therefore, there is a need for a fast, efficient and inexpensive way to scan multiple barcodes and read information about the same product.

Process analysis is a qualitative analysis of project data from various programs, processes, workgroups, and organizations, including computerized data analysis, the project's content language, algorithmic information, and other internal and external information about the work. Systems analysis is a collection of analyzes used to make certain decisions necessary for operational planning. The design process does not require special work in mechanical engineering to meet specific needs. Many publications related to the project work were analyzed in system analysis and the design was created using various tools such as diagrams, charts, data flows and data dictionary to create a conceptual model of the system.

IV. PROPOSED SYSTEM

We provide camera-based product identification in applications for the blind and visually impaired. Every business today will be a small pin on a large product, a business card using a barcode or QR code on its website. That's why we use these technological innovations to help visually impaired people use barcode scanners and speech recognition products. The user opens the application, then opens the camera and prepares to scan the barcode, the product's name, description, price, expiration date, etc. He sees that he has read all the details.

V. ARCHITECTURE

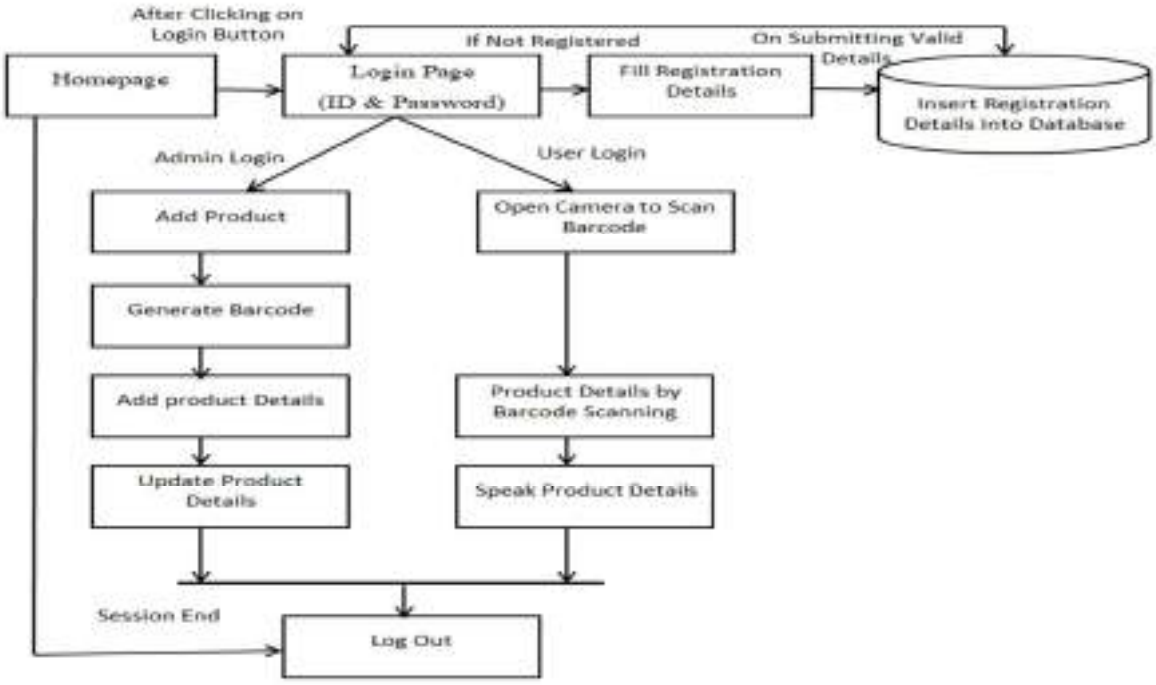

Fig1. Proposed System Architecture

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
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VI. RESULTS AND DISCUSSION

1) Welcome Screen

Fig 2. Welcome Screen

2) Login user

Fig3. User Login

3) Uploading the Details by generating QR Code

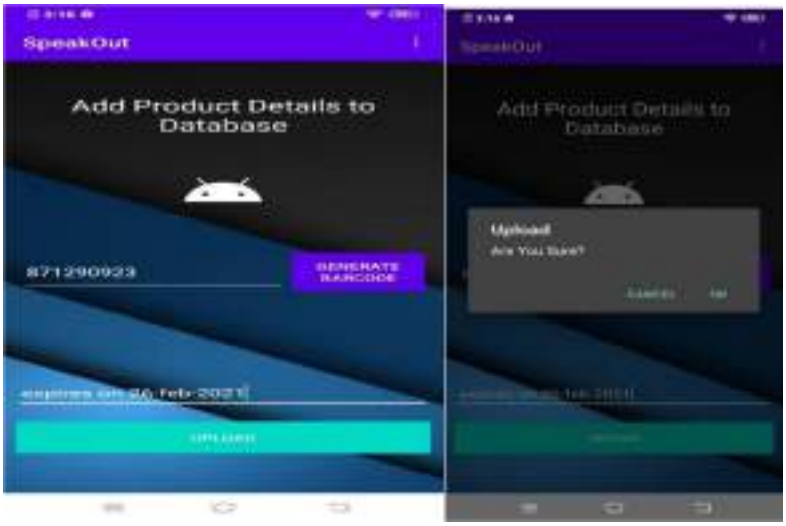


Fig4. Generating QR Code

4) Storing Details and Scanning barcode in app

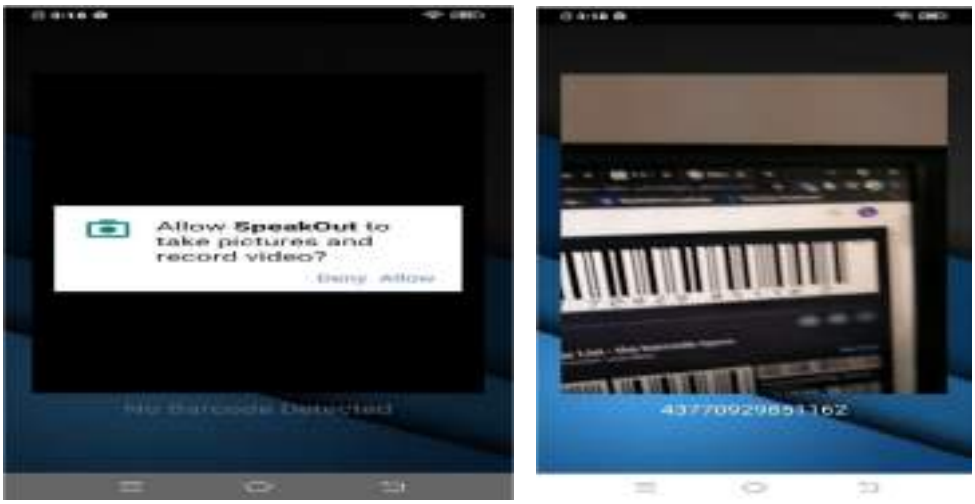


Fig 5. Storing details and Scanning barcode in app

There are 2 main modules and sub-modules in the system as follows:
Admin Login ID:
Login ID:
The administrator must log in to the modules given below with the correct credentials.
Items Added:
All items and their information will be sent by the administrator.
Product Update:
The system will allow administrators to modify and edit the product's content.
User login:
Voice Search:
Using Google Voice Commands, users can search for programs to be launched by Google.
Product details of Barcode scanning:
Visually impaired user will use vision to see product identification application downloaded on mobile phone, Scan button to touch through user is blind, and voice assistant will tell you which button to press. The scan button will open the barcode scanner.

VII. CONCLUSION

Our app ultimately includes collaboration with organizations interested in publishing consumer smartphone apps containing barcode content. Administrators can add additional functionality here according to their needs. In this way, we aim to contribute to the development of good barcode printers that can be used by visually impaired and visually impaired people. We can also add functionality such as allowing the user to check for deleted files in the application folder.

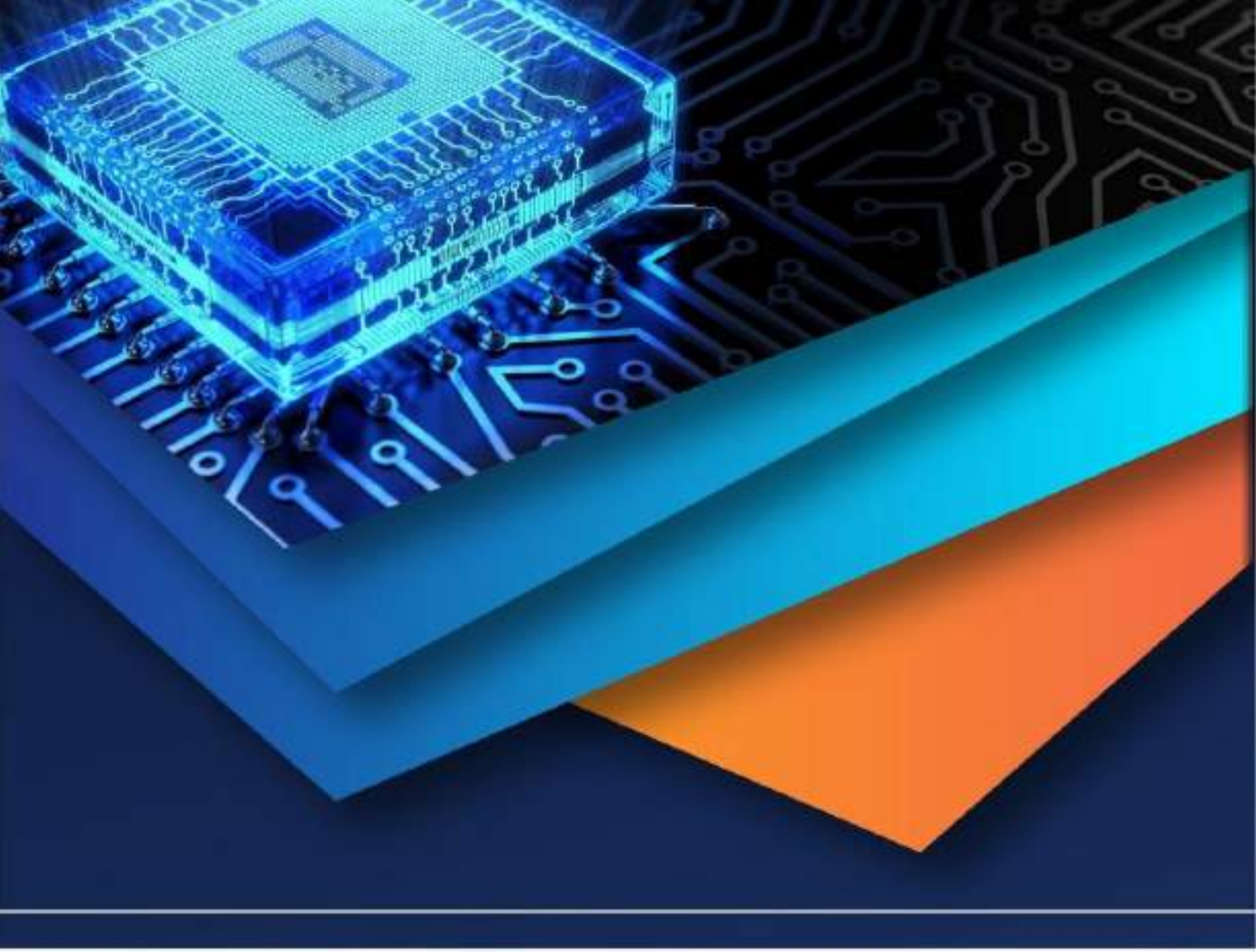
REFERENCES

[1] Vladimir Kulyukin, Kutiyanawala Aliasgar, Zaman Tanwir. Eyes-Free Barcode Detection on Smartphones with Niblack's Binarization and Support Vector Machines. In: Arabnia HR, editor. 16th International Conference on Image Processing, Computer Vision, and Pattern Recognition; July 16-19, 2012; Las Vegas, Nevada. pp. 284–290. [Google Scholar]
[2] Aliasgar Kutiyanawala, Kulyukin Vladimir, Nicholson John. Toward Real Time Eyes-Free Barcode Scanning on Smartphones in Video Mode. In: Bailey N, editor. 2011 Rehabilitation Engineering and Assistive Technology Society of North America Conference (Resna 2011); June 5-8, 2011; Toronto, Canada. [Google Scholar]
[3] Supriya Vaddi, Hrushikesha Mohanty, and R. K. Shyamasundar. 2012. Service maps in XML. In Proceedings of the CUBE International Information Technology Conference (CUBE '12). Association for Computing Machinery, New York, NY, USA, 635–640. https://doi.org/10.1145/2381716.2381838
[4] Ender Tekin, Coughlan James. A Mobile Phone Application Enabling Visually Impaired Users to Find and Read Product Barcodes. In: Miesenberger K, Klaus J, Zagler W, Karshmer A, editors. 12th International Conference on Computers Helping People with Special Needs (ICCHP '10); July 14-16, 2010; Vienna, Austria. pp. 290–295. [PMC free article] [PubMed] [GoogleScholar]

[5] Velagaleti, Sesha & Seetha, M. & SOmalaraju, Viswanadha raju. (2013). A Simulation and analysis of DSR Protocol in Mobile ad hoc Networks. INTERNATIONAL JOURNAL OF MANAGEMENT & INFORMATION TECHNOLOGY. 8. 1279-1286. 10.24297/ijmit.v8i1.692.

[6] Velagaleti, Sesha Bhargavi, M. Seetha, and S. Viswanadha Raju. "A Privacy based Web Services Application for Secure Routing in Mobile Ad Hoc Networks." International Journal of Information Technology Convergence and Services 2.2 (2012): 55.

[7] I.Ravi Prakash Reddy, "Intrusion Detection System using SMIFS and Multi class Multi layer Perceptron", International Journal of Innovative Technology and Exploring Engineering, ISSN:2278-3075, Vol-8, Issue-9, July-2019



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IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54221

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Smart Dustbin Management Using IoT

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Abstract: ***Managing waste is one of the many prominent issues surrounding metropolitan cities and countries at large. One of the problems with the garbage cleaning process is the cycle of replacing filled cans with new ones. Due to overcrowding of places like public parks, gardens, and general gathering of people for special occasions in the calendar, the responsibility of going to the garbage can and discarding the waste is somewhat lost in the hustling nature of the city. To address this issue, we have come up with a possible solution-The Smart Dustbin with proximity sensors which will detect any trash thrown outside the perimeter of the can and alert the surrounding people with auditory or sensory cues. This feature will help citizens discard trash responsibly and take ownership of improper disposal of trash in the surrounding area. The Smart Dustbin will also be improved in terms of implementation cost and complexity in building it. To implement Smart Dustbin, we use the NodeMCU board that helps us connect to Wi-Fi and notify the administrators to empty the bin through cloud services. The ultrasonic sensor is used to estimate the filling ratio of the bin and proximity sensors give an alert if any waste is thrown around the bin.***
Keywords: cloud, database, waste management, Internet of Things, nearest unfilled dustbin,.

I. INTRODUCTION

Internet of Things has become very famous in the 21st century because of its extensive use in all areas of our daily life such as smart home, smart irrigation, baby monitoring, smart cities, embedded systems and exchange of information. In this highly connected world, due to the huge data bandwidth available to normal people and no restrictions on the type of data to be sent and received or the size of the data or format led to transmitting and receiving vast sizes of data. This led to the "Internet" of "Things", where a myriad of devices is connected together to operate in an integrated manner. IoT has been dormant for a long while due to the lack of awareness about embedded systems and cloud technologies. It's now a major part of many people's lives due to the extensive manufacturing of IoT sensors and devices. IoT works in a combined manner with other technologies such as cloud computing, machine learning, big data analytics and conversational artificial intelligence. It is also more practical because of the features such as low-cost sensors, affordable connections, high speed data transfer etc.

II. LITERATURE REVIEW

The field of IoT has enabled various researchers to work in different aspects and add functionalities to improve the issues with traditional systems. The traditional waste collection system seen today is neither optimized nor efficient i.e., regular overflowing of bins, poor management of waste materials, unhygienic garbage conditions etc. Such issues of waste management in the cities were improved by IoT to a certain extent. The basic functionality of notifying the authorities when the dustbin is filled is implemented using an Ultrasonic sensor and Blynk Application, also an LED screen was used to display a message when the bin is full [1]. The inclusion of deep learning and machine learning algorithms in managing effective waste collection were implemented and the Tensor Flow python library was imported for detecting the type of waste being dumped [2]. The bin is divided into different compartments for accumulating different types of waste when the IR sensor detects an object outside the bin and opens the lid using servo motor [3]. Machine learning and graph theory techniques are used to detect the shortest path while collecting the waste [4][5]. An alert is sent to authorities when the bin is filled 75%[6]. To monitor daily garbage an IoT based system developed using WeMos and Ultrasonic sensors[7].

The drawbacks in the existing system are as follows-

The issue of waste being accumulated around the dustbin is not addressed in the existing systems.

In some of the papers, an alert is sent only when the bin is full, but no prior notifications are given when the bin is going to be filled in some time.

The usage of the LED screen is limited to only displaying that the bin is filled.

The lid of the bin opens only an object is detected, but this can be proved to be time-taking.

In some of the systems, lid is always open, which can lead to overflowing of the bin and other problems in case of rain.

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III. PROBLEM DEFINITION

Managing waste is one of the prominent issues surrounding metropolitan cities and countries at large. One of the problems with the garbage cleaning process is the cycle of replacing filled cans with new ones. Due to overcrowding of places like public parks, gardens, and general gathering of people for special occasions in the calendar, the responsibility of going to the garbage can and discarding the waste is somewhat lost in the hustling nature of the city. To address this issue, we have come up with a possible solution for implementing Smart Dustbin using IOT.

IV. MOTIVATION

Noting from the previous section, the traditional systems are prone to issues like overflow of waste from the bins, improper waste disposal and lack of alert systems on monitoring waste collection. To address them, we have decided to make a monitoring system which is heavily based on IoT domain. Using IoT brings in the automation factor which in turn brings efficient data collection and hence better monitoring.

IoT uses a network of sensors to communicate with each other and manage the system altogether. The term IoT is mainly used for devices that wouldn't usually be generally expected to have an internet connection, and that can communicate with the network independently of human action.

Smart Dustbin Management is an IOT based project mainly focusing on the waste management in closed communities such as universities, gated communities, parks, malls and resorts.

V. EVALUATION ENVIRONMENT

The proposed system includes dustbins all over the area which unique identification numbers, the dustbins are each equipped with an ultrasonic sensor, IR sensor, LED screen, Rain sensor, NodeMCU and beep generator.

The real-time filling ratio of the dustbin, calculated using ultrasonic sensor is sent to the authorities via the Wi-Fi module. A notification is sent when the dustbin is filled partially and a final warning is issued when the bin is completely filled. If the bin is filled completely, the status is displayed on the screen along with the information regarding the nearest unfilled dustbin. The IR sensor prevents waste from being accumulated around the bin. Rain sensor is used to detect any rain in the chosen location where the bin is placed. It gives an insight to the waste management people in terms of collecting the waste.

A. Experimental Setup

1) Arduino Board

It acts as a microcontroller which is the heart of an IoT project, that is responsible for triggering all the other sensors. It has an inbuilt memory to store the code and has various GPIO pins to connect different sensors.

2) Ultrasonic Sensor

It measures distance from the lid of the bin to the waste inside it using the SONAR principle, where a radio wave is sent by the transmitter and the reflected wave when an obstacle is found is received by the receiver.

3) IR Sensor

It measures the waste around the bin by transmitting a light wave and sensing if it is reflected back due to any obstacle, in this the waste thrown outside the bin.

4) ESP 8266 WiFi Module

It is used to send and receive data to and from the cloud respectively.

5) Led Screen

It displays the data with respect to the bin, i.e., the status of the bin, filling ratio, direction of the nearest unfilled dustbin, and the status regarding the waste thrown outside the bin.

6) Rain Sensor

It is used to detect any rain in the chosen location where the bin is placed. It gives an insight to the waste management people in terms of collecting the waste.

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7) Beep Generator

Beeps are generated when waste is thrown outside the bin and also when the bin is completely filled.

B. Discussion

1) System Overview

The system architecture of smart dustbin, as shown in Fig 1, consists of a NodeMCU controller which is responsible for operating all the sensors connected to it. The software control of this model is through ThingSpeak application which will get real time updates on the data fed through the sensors.

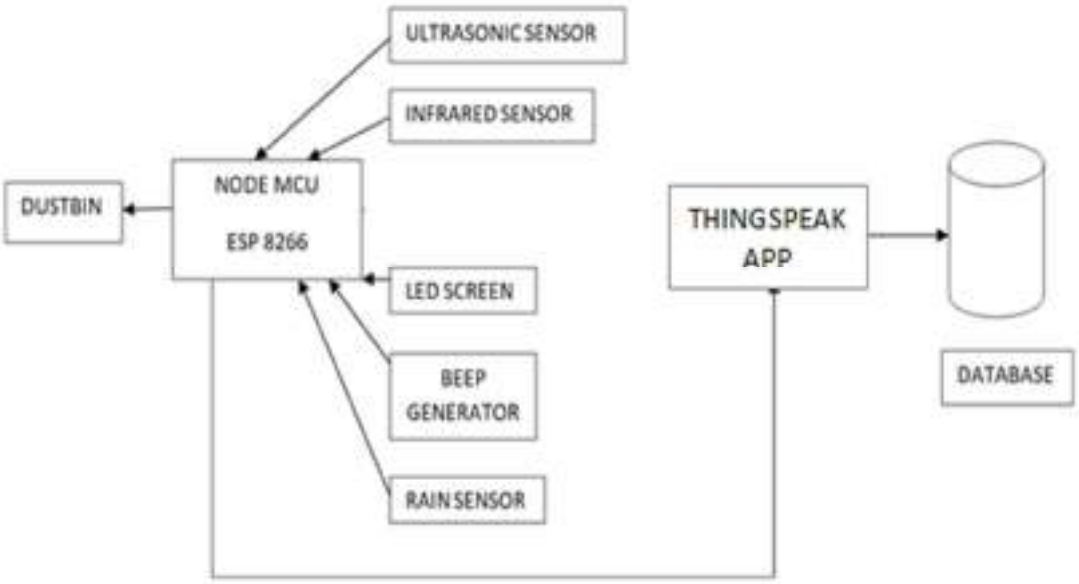

Fig 1. System Architecture

2) Methodology

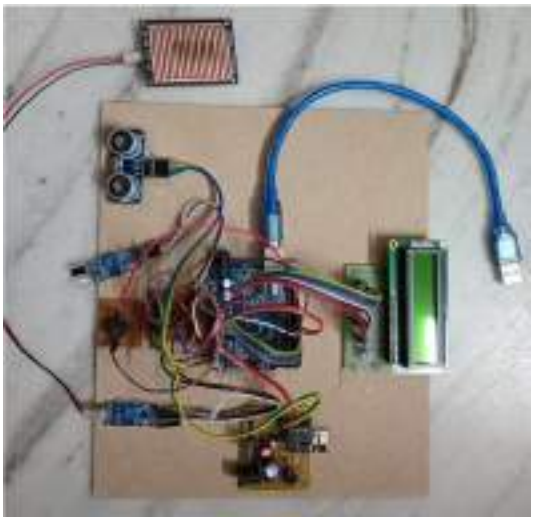

Fig 2. Working Model

The above shown in Fig 2 is mounted on top of a dustbin and every bin is assigned with a unique bin id.

Here in the present scenario, the dustbins in a closed environment, are placed as shown if Fig 3. They are marked as coordinates on a plane of four quadrants.

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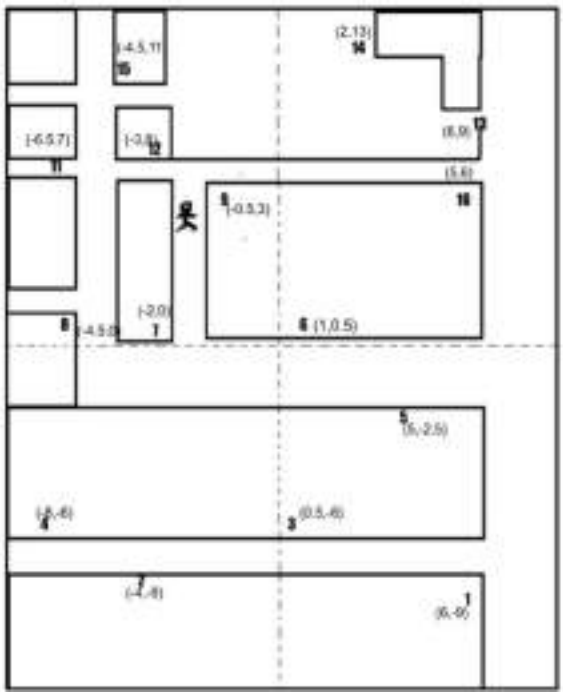


Fig 3. Bin positions in a college

The data about all these 15 bins is stored in a relational database which is shown in the following Fig 4.

```
MariaDB [smartbiniot]> select * from smartbin;
+----+-------+-------+------+------------+
| id | loc_x | loc_y | size | fill_ratio |
+----+-------+-------+------+------------+
|  1 |     6 |    -9 |  100 |         30 |
| 10 |     5 |     6 |  100 |        100 |
| 11 |  -6.5 |     7 |  100 |         30 |
| 12 |    -3 |     8 |  100 |        100 |
| 13 |     6 |     9 |  100 |         90 |
| 14 |     2 |    13 |  100 |         40 |
| 15 |  -4.5 |    11 |  100 |         60 |
|  2 |    -4 |    -9 |  100 |        100 |
|  3 |   0.5 |    -6 |  100 |         70 |
|  4 |    -8 |    -6 |  100 |         50 |
|  5 |     5 |  -2.5 |  100 |         80 |
|  6 |     1 |   0.5 |  100 |         20 |
|  7 |    -2 |     0 |  100 |         20 |
|  8 |  -4.5 |     0 |  100 |         90 |
|  9 |  -0.5 |     5 |  100 |        100 |
+----+-------+-------+------+------------+
15 rows in set (0.000 sec)
```

Fig 4. Database of bin info

Arduino board calls a PHP page which in turn connects to the database and performs the request by getting the data from the database, calculates the nearest unfilled dustbin direction by using the two-dimensional Euclidean distance formula and at last sends the reply to Arduino microcontroller which is then displayed on the LED screen.

All the data sent to the cloud can be viewed on a mobile on the ThingView Application available on Google Play Store and App Store just by adding the API created on the ThingSpeak cloud. This way the garbage collectors are notified of the real time filling ratio of all the bins in the locality.

Fig 5 is the picture of the dustbin under experiment with id as '9', whose size is around 16 centimeters due to the system being a prototype. The actual working model consists dustbins of size exactly 100 cm.

VI. RESULTS

Fig 6 and Fig 7 are the resultant levels in the app as executed by the bin with id 9 and the bin is shown below.

Fig 5. Arrangement of bin with id=9.

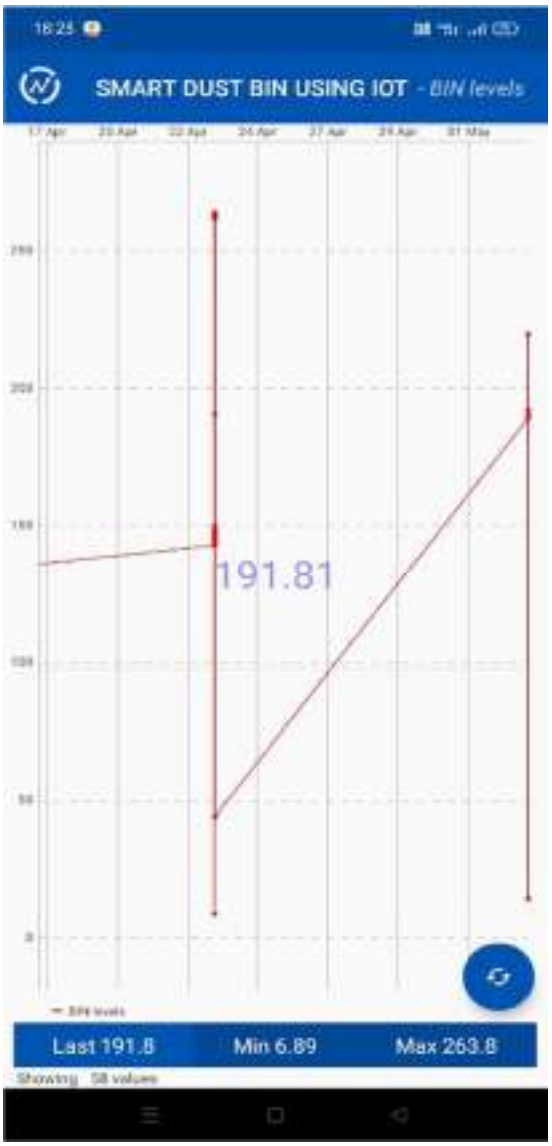


Fig 6. Bin levels displayed on the App

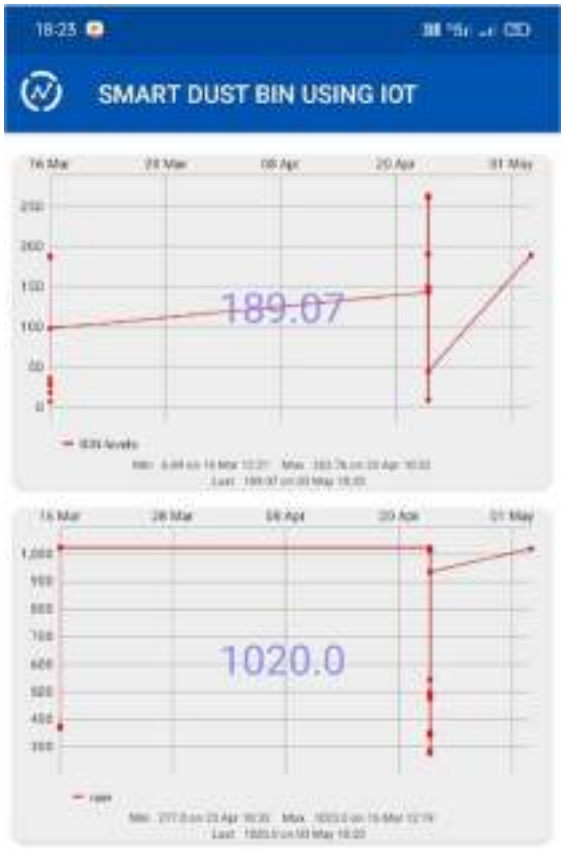


Fig 6. Bin and Rain levels

Fig 8 shows the updated level of the bin for every 30 seconds.
The outputs of the LED screen are shown in the next figures where the first one, i.e., Fig 9 is the result of bin being filled completely and the next one, i.e., Fig 10 is the result throwing waste in the surroundings of the dustbin.

Fig 8. Level of bin with id=9

Fig 9. LED when bin with id=9 is filled

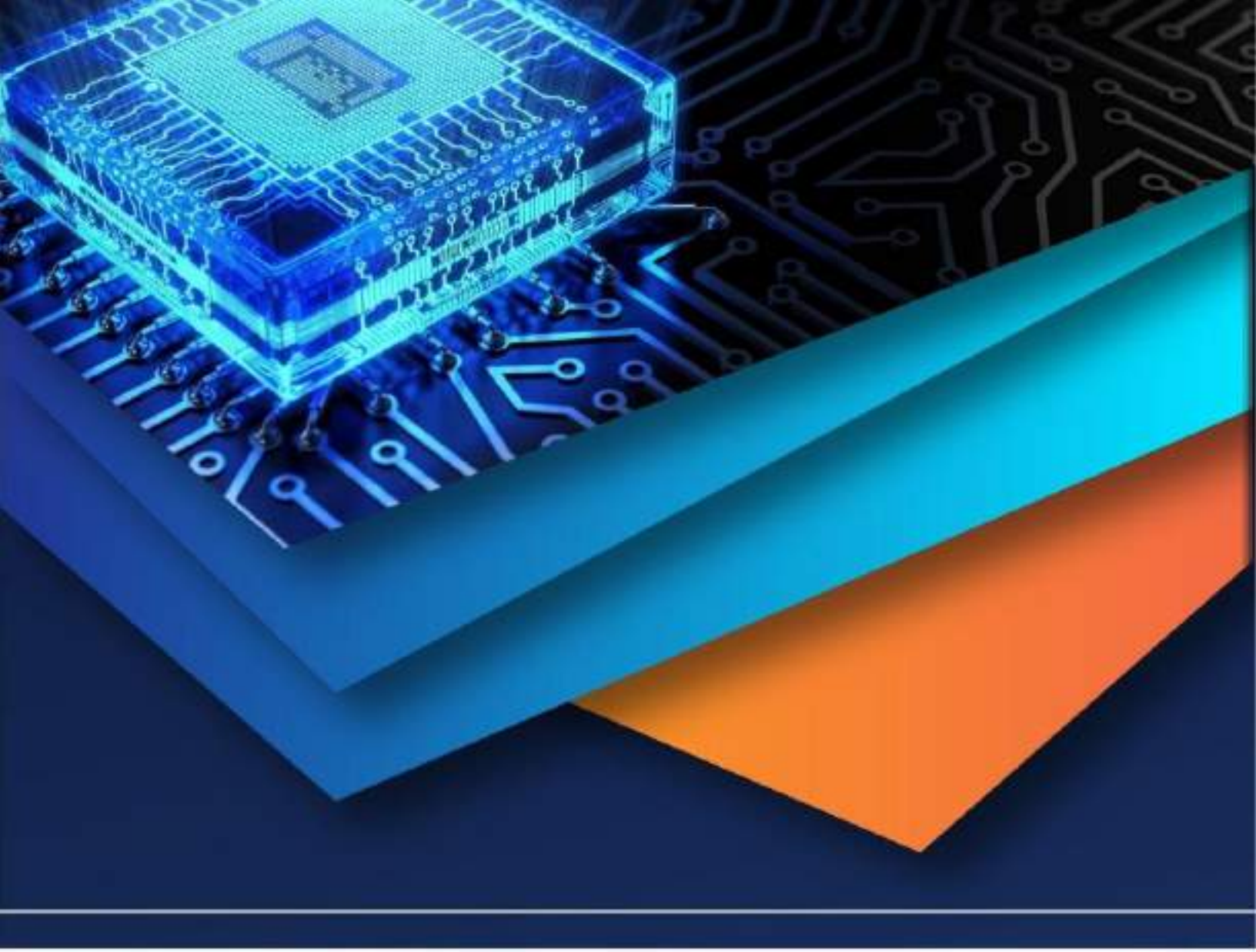
Fig 10. LED when waste is thrown outside

VII. CONCLUSION

As the proposed system is the low cost and small-scale implementation, there is a huge scope of commercializing the project and reaping good profits which facilitates utmost hygiene and systematic waste management in the closed communities. The functionality of closing and opening of the lid under external conditions like rain and overflow detection can be implemented with necessary additional components. Therefore, the Smart Dustbin Management system has an enormous future scope that can be implemented for other highly populated regions with a good strategy.

REFERENCES

[1] Padmakshi Venkateswara Rao, Pathan Mahammed Abdul Azeez, Sai Sasank Peri, Vaishnavi Kumar, R. Santhiya Devi, Amirtharajan Rengarajan, K. Thenmozhi, and Padmapriya Praveenkumar, IoT based Waste Management for Smart Cities, IEEE, 2020.
[2] Toeh Ji Sheng, Mohammad Shahidul Islam, Norbahihah Misran, Mohd. Hafiz Baharuddin, Haslina Arshad, Md. Rashedul Islam, Muhammad E. H. Chowdhury, Hatem Rmili & Muhammad Tariqul Islam, An Internet of Things Based Smart Waste Management System Using LoRa And TensorFlow Deep Learning Model, IEEE, 2020.
[3] S. Vishnu, S. R. Jino Ramson, Samson Senith, Theodoros Anagnostopoulos, Adnan M. Abu-Mahfouz, Xiaozhe Fan, S. Srinivasan and A. Alfred Kirubaraj, IoT-Enabled Solid Waste Management in Smart Cities, MDPI, 2021.
[4] Tran Anh Khoa, Cao Hoang Phuc, Pham Duc Lam, Le Mai Bao Nhu, Nguyen Minh Trong, Nguyen Thi Hoang Phuong, Nguyen Van Dung, Nguyen Tan-Y, Hoang Nam Nguyen, and Dang Ngoc Minh Duc, Waste Management System Using IoT-Based Machine Learning in University, Hindawi, 2020.
[5] Khandaker Foysal Haque, Rifat Zabin, Kumar Yelamarthi , Prasanth Yanambaka , Ahmed Abdelgawad, College of Science and Engineering, Central Michigan University, Mount Pleasant, MI, USA Chittagong University of Engineering and Technology, Dhaka, Bangladesh, An IoT Based Efficient Waste Collection System with Smart Bins, 2020 IEEE 6th World Forum on Internet of Things (WF-IoT), IEEE, 2020.
[6] Shubham Rai, Nupur Goyal, Waste Management Through Smart Bin –IJERT, 2020.
[7] V. S. Bhargavi, M. Seetha and S. Viswanadharaju, "A trust based secure routing scheme for MANETS," 2016 6th International Conference - Cloud System and Big Data Engineering (Confluence), Noida, India, 2016, pp. 565-570, doi: 10.1109/CONFLUENCE.2016.7508183.
[8] Velagaleti, Sesha Bhargavi, M. Seetha, and S. Viswanadha Raju. "A Simulation and Analysis Of Secured AODV Protocol in Mobile Ad Hoc Networks." IJRET International Journal of Research in Engineering and Technology (2013).
[9] I.Ravi Prakash Reddy, “Node Pattern State and Trust Rate base Route Selection for Reliable Data Transmission in Mobile Adhoc Networks”, International Journal of Computers and Applications, ISSN:1206-212X, 1925-7074 (Online), 26 Aug 2019.
[10] I.Ravi Prakash Reddy, “Intrusion Detection System using SMIFS and Multi class Multi layer Perceptron”, International Journal of Innovative Technology and Exploring Engineering, ISSN:2278-3075, Vol-8, Issue-9, July-2019
[11] Saadia Kulsoom Memon, Faisal Karim Shaikh, Naeem Ahmed Mahoto, Abdul Aziz Memon, Mehran University of Engineering and Technology, Jamshoro, Pakistan 4 Department of Electrical Engineering, Sukkur IBA University, Sukkur, Pakistan, IoT based smart garbage monitoring & collection system using WeMos & Ultrasonic sensors, 2019 International Conference on Computing, Mathematics and Engineering Technologies – iCoMET 2019 ©2019 IEEE.



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IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54222

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Survey: Implementing Artificial Neural Networks for Stock Market Prediction

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***Abstract:** One of the most important tasks in developing investment portfolios is forecasting a financial time series, such as stock market patterns. This stage is tough due to its complexity and the presence of several factors that could alter the value of certain securities. We demonstrated in this article that the Nigerian stock market is ineffective by employing contradiction. Two years' worth of representative stock prices from multiple banks' stocks were examined using a feed forward neural network with back-propagation. The simulation results and price forecast suggest that it is possible to consistently earn good returns on investing in the Nigerian stock market by leveraging private information (PI) from the artificial neural network indicator.*
***Keywords:** Neural Networks, stock market, efficiency theory, forecasting, genetic algorithms (GA)*

I. INTRODUCTION

There are various complex financial indicators as well as a severe securities exchange. However, technological advancements provide the chance to earn regularly from the financial market and can also assist specialists in identifying the most instructive indications to boost expectation. The market value prediction is critical for maximizing profit while avoiding risk from an investment opportunity. The article's system section will follow; in which we will thoroughly discuss each cycle. Following that, we will have graphic representations of the inquiry and will explain the outcomes. Finally, we will describe the project's scope. We'll go over stretching.

II. LITERATURE SURVEY

1) "Predicting the Nigerian Stock Market Using Artificial Neural Network"

Individuals and major financial supporters can earn from stock investments. In the financial exchange (or capital market), organization stocks, securities, and other types of protection are swapped at agreed-upon values. Each time there is a market exchange, the price of each stock is frequently quoted. Because market conditions influence how much a stock costs, an unexpected drop in its price could result in a big loss of capital and damage a possible financial backer. As a result, having a reasonable expectation of the cost of the securities exchange is critical to successful trading. Out of a few strategies that have been explored to anticipate the market value, the fake neural organization (ANN) strategy gave a more effective forecast since it permits further examination of huge arrangement of information particularly those that tend to vacillate inside a brief timeframe. The Principal Bank of Nigeria PLC shares dataset is utilized as contextual analysis in this work. In fostering the neural organization framework, the examination receives the Multi-facet Feed Forward (MLFF) neural organization model. The organization is prepared using backpropagation computing. The analysis uses the opening and closing prices, number of stock transactions, volume of shares traded, and trading day across a seven-day period in the history of First Bank of Nigeria PLC shares as inputs for the neural network. The expected cost is the yield of the organization model.

2) "Design and Implementation of NN5 for Hong Stock Price Forecasting"

Securities exchange conjectures are attempts to estimate the future value of firm capital or other financial commodities burned through in the financial exchange. If the future stock value number is correct, you will benefit greatly. The active market displays all accessible stock value information, proving that price movements are not the source of extraneous data. Others argue that persons who have these notions use a number of strategies and approaches to help them obtain future information.

3) "Forecasting Stock Performance using Intelligent Hybrid Systems"

Unusual: For distant organizations to thrive, continuous development is essential. This is accomplished through the comparison of conventional wisdom and the development of expert convention.

Through recreation on NS2s, this study thoroughly examined the comparison between IEEE 802.15.4 (x-honey bee), 802.11 (wifi), and 802.16 (wimax) based on throughput, PDR, deferral, and energy. Based on the observed data, this study highlighted the Effective Guidelines between xbee wifi and wimax.

4) "Neural Network With Genetic Algorithms For Stocks Prediction"

Free space optics provides a solution to the increased need for transfer speed in online applications. It gives a better solution for network bottleneck issues while solving a significant issue caused by climate elements such as smog, rain, snow, and rainfall. The work presented here focuses on developing a system for FSO connectivity that can enable efficient data transmission up to 3 kilometers while accounting for the impact of mist while transmitting with a higher quality factor and a lower Digit error Rate. It also analyzes two FSO framework plans with a single source and a cluster of lasers at 850 nm working frequency using frequency division multiplexing with both RZ and RZ.

5) "Toward Global Optimization of Neural Network A Comparison of the Genetic Algorithm and Back propagation"

For a long time, information has been gathering on a massive scale in all aspects of our lives. Sensor technologies, the Web, informal organizations, remote correspondence, and small memory have all contributed to an explosion of "Large Information." The networked world of today, as well as the emergence of digital physical or systems of systems (SoS), are key sources of information aggregation, whether mathematical, visual, textual, or surface-related, etc. SoS is essentially described as the coordination of autonomously running, heterogeneous frameworks over a certain time period in order to reach a higher standard than the sum of the parts. Recent research has developed a promising methodology called "Information Examination" that employs measurable and computational insight (CI) tools such as head part analysis (PCA), bunching, fluffy reasoning, neuro-registering, transformative calculation, Bayesian organizations, information mining, design recognition, profound learning, and others to reduce the size of "Enormous Information" to a reasonable estimate and apply these tools to (a)r This section attempts to give an extension between SoS and Information Investigation in order to foster robust models for such frameworks. We'll look at four big data applications, including information derived from the sun, wind, money, and plants.

III. PROPOSED SYSTEM

For future stock forecasting, the proposed framework employs a skilled regulated learning technique. The advancement of innovation gives the opportunity to acquire regular fortune from financial exchange and can furthermore help specialists in identifying the most instructive markers to improve expectation. Administrators collect past stock exchange records and store them in an information database. Forecasting market value is critical for increasing the benefit of investment opportunity purchases while keeping risk low. By employing excellent regressor procedures, proposed achieved projected anticipated features.

Regressor approaches that account for expectations from previous financial transactions. Using the required regressor methods and the average of historical stock attributes. The client can confidently forecast future qualities by using our program.

A. Proposed System Architecture

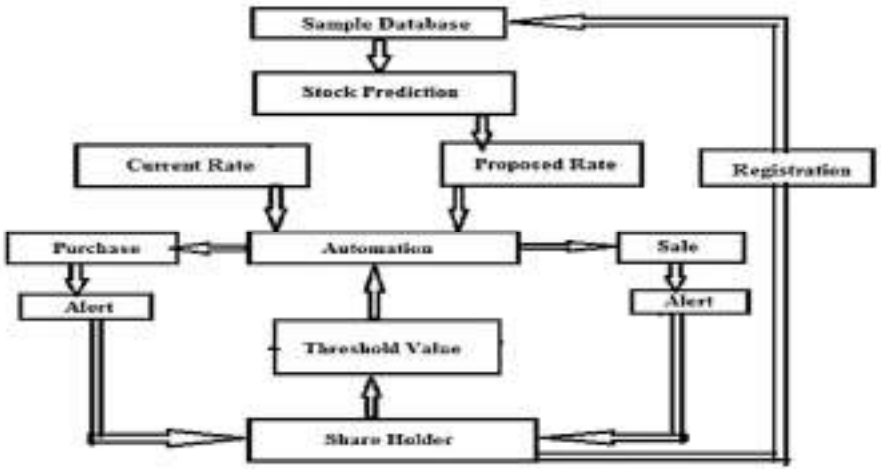

Fig: Block Diagram of Proposed System

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
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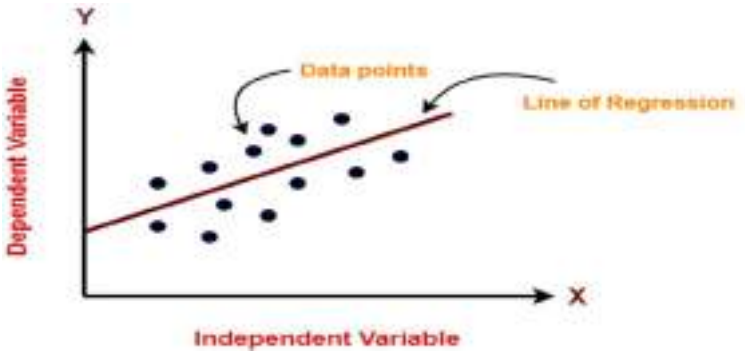
IV. ALGORITHMS

A. Random Forest

The administered learning calculation is arbitrarily timberland. It assembles "woods" from attractive trees, which are frequently prepared using the "sacking" technique. The essential premise of the stowing technique is that integrating many learning models broadens the final outcome.

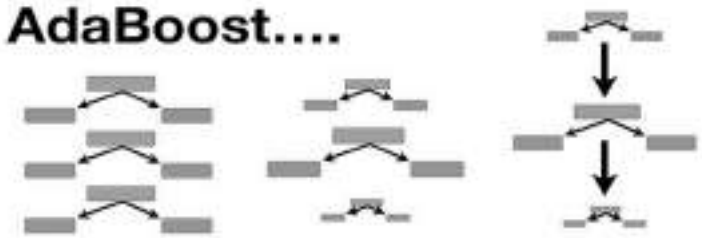
B. Linear Regression

Straight Relapse is a managed AI computation with a consistent and continuously increasing predicted yield. Instead of attempting to categorize them (such as feline or canine), it is used to predict values within a constant range (such as deals and cost).



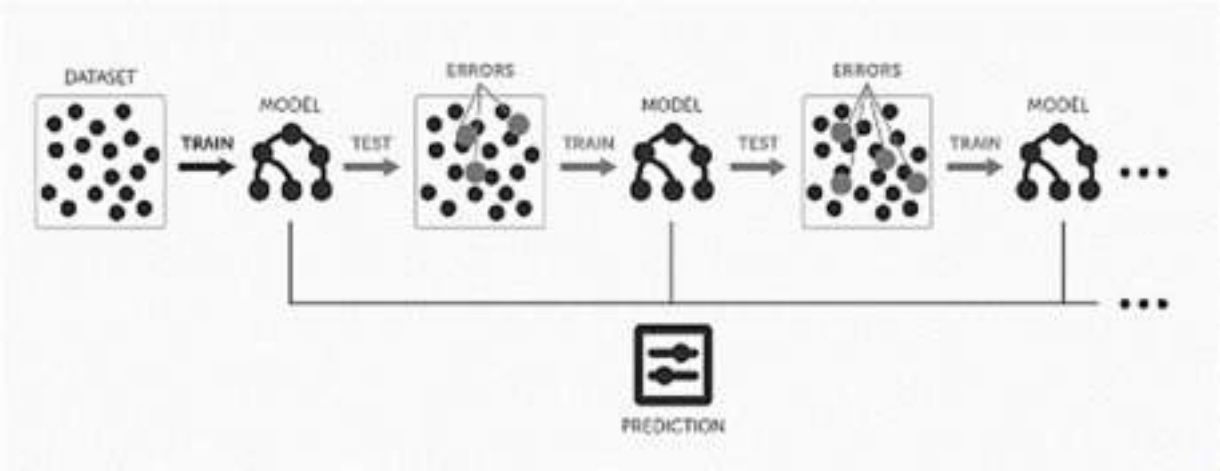
C. Adaboost

Boosting is a group demonstration strategy that attempts to create a reliable classifier from a collection of weak ones. The model's building employing flimsy models in arrangement is finished. First, a model is built with the preparation data. At that point, the succeeding model is built in an attempt to correct the faults in the previous model. This process is repeated, and models are added, until either the maximum number of models is added, or the complete preliminary information collecting is adequately projected. AdaBoost was the first totally successful boosting calculation with a double order objective. Versatile Boosting, also known as AdaBoost, is a well-known boosting strategy that merges several "frail classifiers" into a single "solid classifier."



D. Gradient Boosting

This is yet another popular boosting computation that works quite similarly to AdaBoost. Angle Boosting works by adding preceding indicators that fell short of expectations to the set in a progressive manner, guaranteeing that any previous errors are remedied. What distinguishes it is how it handles the ill-suited upsides of its archetype. Despite AdaBoost, which changes the case loads at each association, this strategy attempts to match the new indicator to the lingering errors created by the prior indicator.



E. Bagging Regressor

A trashing regressor is a meta-assessor that fits basic regressors to unique irregular subsets of the initial dataset and then adds up each forecast (through voting or average) to generate the final expectation.

V. IMPLEMENTATION

Administrator The first executive compiles a history of previous financial transactions and maintains it in a specialized database. All information is said to be of actual worth.

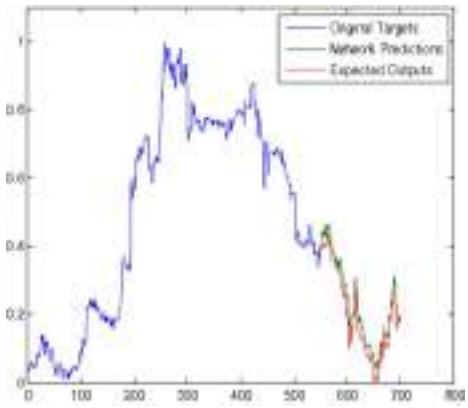
A. Pre-Processing And Cleaning

cleansing and pretreatment Select the most recent informational index and divide the real value by the number of years or months. Select some unsavory genuine qualities from the knowledge base. Finally, undesirable genuine characteristics are being removed. Any remaining qualities are then sent out by the analyzer and indicator.Administrator The original executive compiles previous financial transaction history and stores it in a specific database. Every piece of information is assumed to be true.

B. Analyzer And Indicator

The outcomes of the analyzer and indicator's pre-processing and cleaning are gathered, and the typical rate over a real worth is calculated. To evaluate the number of informative indices and the irregular backwoods regressor, a diagram generator is employed. In the deconstructed modules, various regressors (such as the packing regressor, the adaboost regressor, the kneighbors regressor, and the inclination boosting regressor) are employed. A last-minute value was added and displayed alongside the current diagram. Clients can undoubtedly anticipate future exchange costs at this time.

VI. RESULTS

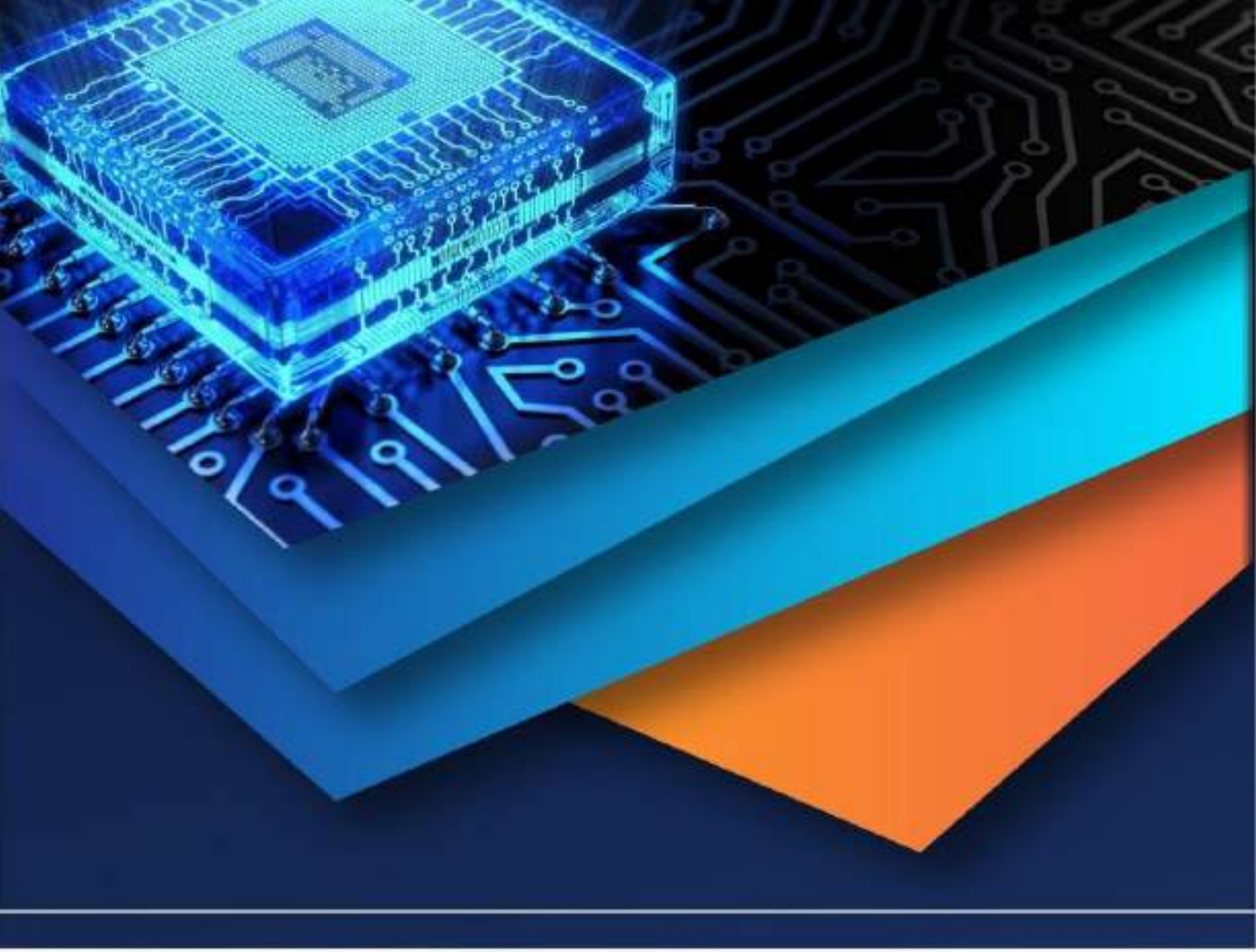


VII. CONCLUSION&FUTURE ENHANCEMENT

The typical rate over a real worth is calculated after gathering the outcomes of the analyzer's and the indicator's pre-processing and cleaning. A diagram generator is used to evaluate the irregular backwoods regressor and the number of relevant indices. The packing regressor, adaboost regressor, kneighbors regressor, and inclination boosting regressor are among the regressors used in the deconstructed modules. At the last minute, value was added and appears with the current diagram. Clients now can absolutely forecast future exchange rates. The results indicate that additional hidden layer(s) influence the models' score. The addition of randomized element selection distinguishes Arbitrary Forest from sacking.

BIBLIOGRAPHY

[1] https://en.wikipedia.org/wiki/F-test
[2] http://goo.gl/4OI84b
[3] http://scikit-learn.org/stable/
[4] http://deeplearning.net/software/theano/
[5] http://colah.github.io/posts/2015-08-Understanding-LSTMs/
[6] M.T. Philip, K. Poul, S.O. Choy, K. Reggie, S.c. Ng, 1. Mark, T.Jonathan, K. Kai, and W. Tak-Lam, "Design and Implementation of NN5 for Hong Stock Price Forecasting", Journal of E ngineering Application of Artificial I ntelligence, vol. 20,2007, pp.453-461.
[7] X. Wu, M. Fund and A. Flitman, "Forecasting Stock Performance using Intelligent Hybrid Systems", Springerlink, 2001, pp. 4 4 7-4 56.
[8] T. Kimoto, K. Asawaka, M. Y oda, and M. Takeoka, "Stock Market Prediction System with Modular Neural Network " , Processing of I nternational Joint Conference on Neural Networks, 1990, pp. 1-6.
[9] K. Sridevi and M. A. Saifulla, "Control Plane Efficiency by Load Adjustment in SDN" in Smart Trends in Computing and Communications ser. Lecture Notes in Networks and Systems, Singapore: Springer, pp. 515-524, 2022.
[10] Vaddi, S., Mohanty, H. (2013). Querying a Service from Repository of SMaps. In: Hota, C., Srimani, P.K. (eds) Distributed Computing and Internet Technology. ICDCIT 2013. Lecture Notes in Computer Science, vol 7753. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-36071-8_43
[11] H. Mizono, M. Kosaka, H. Yajma, and N. Komoda, "Application of Neural Network to Technical Anaysis of Stock Market Prediction ", Studies in I nformatics and Control, 1998, Vol.7, No.3, pp.1l1-120. [10] S. R. Sexton, R. E . Dorsey and 1. D. Johnson, "Toward Global Optimization of Neural Network A Comparison of the Genetic Algorithm and Backpropagation", 1998, Decision Support Systems voL22, pp.I17-185.
[12] V. S. Bhargavi and S. V. Raju, "Enhancing security in MANETS through trust-aware routing," 2016 International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET), Chennai, India, 2016, pp. 1940-1943, doi: 10.1109/WiSPNET.2016.7566481.
[13] V. S. Bhargavi, M. Seetha and S. Viswanadharaju, "A hybrid secure routing scheme for MANETS," 2016 International Conference on Emerging Trends in Engineering, Technology and Science (ICETETS), Pudukkottai, India, 2016, pp. 1-5, doi: 10.1109/ICETETS.2016.7602991.
[14] Robyn Ball and Philippe Tissot, "Demonstration of Artificial 1Neural Network in Matlab", Division of Nearhsore Research, Texas A&M University, 2006
[15] I.Ravi Prakash Reddy, “Node Pattern State and Trust Rate base Route Selection for Reliable Data Transmission in Mobile Adhoc Networks”, Journal of Applied Science and Computations, ISSN:1076-5131, Vol-5, Issue-XII, December 2018
[16] S. Neenwi, P. O. Asagba, L. G. Kabari. "Predicting the Nigerian Stock Market Using Artificial Neural Network", European Journal of Computer Science and Information,VoLI , No.1, pp.30-39,J une 2013.



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Volume: 11 **Issue:** VI **Month of publication:** June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54212

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Health Care Data Privacy Using the Slicing Technique

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Abstract: ***Data security is essential because it protects an organization's information from fraud, hackers, and even identity theft. To safeguard the security of its information, any business that aspires to run efficiently must have a data protection plan. Data security becomes increasingly crucial as the amount of data created or stored grows. Data leaks and cyberattacks can have disastrous repercussions. Organizations must actively protect their data and regularly upgrade their security policies. A number of solutions, including generalization and bucketization, are proposed to cope with privacy preservation. To preserve privacy when publishing microdata, numerous strategies, including generalization and bucketization, have been devised. According to various studies, generalization leads in some information loss, particularly for high-dimensional data. As a result, it is ineffective when dealing with high-dimensional data. Bucketing is also worthless in this circumstance because there is no discernible separation between sensitive and quasi-identifying aspects in the data, and thus does not prevent attribute membership disclosure. Because of the dimensionality of huge dimensional data, generalization fails, resulting in information loss due to uniform distribution. Membership disclosure, on the other hand, is not conceivable with bucketization. The fundamental purpose of this project is to protect the privacy of users. According to various studies, generalization leads in some information loss, particularly for high-dimensional data. As a result, it cannot be used for high-dimensional data. Bucketing is useless in this circumstance for preventing the publishing of attribute membership data, and it is also useless for data that does not distinguish between sensitive and quasi-identifying traits. Generalization fails for large dimensional data due to the dimensionality and information loss of the uniform distribution. Bucketing, on the other hand, bans membership disclosure. The primary goal of this initiative is to protect users' privacy. Using data slicing also prevents attribute disclosure and creates an efficient method for computing the sliced data that meets the l-diversity criteria. Data slicing, according to experimental results, is more successful than bucketization for sensitive aspects and protects data utility better than generalization. Experiment results show how effective this method is. HTML, CSS, JSP, and MySQL were all used in this project.***
Keywords: Data privacy, Attributes, Generalization, Bucketization, Slicing

I. INTRODUCTION

Publishing microdata while protecting privacy has received a lot of attention lately. Today, the majority of organizations must publish microdata. Microdata is made up of records, each of which provides details about a distinct entity, such as a person. Although many microdata anonymization strategies have been developed, generalization with k-anonymity and bucketization with l-diversity are the most often used. Both techniques divide qualities into three groups; some of them are identifiers that may be used to identify anything specifically, such a name or a security number, while others are quasi-identifiers. Birth date, sex, and zip code are examples of quasi-identifiers, while diseases and salaries are examples of sensitive attributes that are kept secret from competitors. The quasi-identifiers are a group of attributes that, when combined with outside data, can be used to reidentify a person. In both methods, identifiers are first eliminated from the data before the tuples are divided into buckets. The quasi-identifying values in each bucket are changed by generalization into less precise and semantically constant values, making it impossible to distinguish between tuples that are in the same bucket based on their QI values. By randomly permuting the SA values in the bucket, bucketization separates the SA values from the QI values. A collection of buckets with permuted sensitive attribute values make up the anonymized data. When patient data is exchanged, patient identities must be safeguarded. In the past, we employed methods based on kanonymity and l-diversity. While patient data includes numerous sensitive features, including diagnosis and treatment, existing studies mostly focus on datasets with a single sensitive variable. Therefore, neither method is very effective in maintaining patient data. So, by dividing the data both horizontally and vertically, we are offering a novel method for maintaining patient data and publishing. Data slicing is effective for high dimensional data and maintains improved data utility. It can also be used to prevent membership disclosure.

This study introduces the unique technique known as "slicing." To make the data more useful, slicing divides it into horizontal and vertical portions.By placing the attributes in a column that are highly connected, vertical partitioning is accomplished.The process of horizontal partitioning involves bucketing the tuples.

II. RELATED WORK

Sliced data is more useful than generalization and bucketing for improved patient data sharing and data usefulness preservation. Generalization has been demonstrated to result in significant information loss, especially when dealing with high-dimensional data. The data analyst must make the uniform distribution assumption when doing data analysis or data mining operations on the generalization table. This assumption states that any value in a generalized set is equally possible. A different distribution assumption is not possible. As a result, the data value of generalized data is severely diminished. Because each property is generalized separately, the linkages between the attributes in the generalized table are lost. This is a natural limitation of generalization. Although bucketization does not prohibit membership disclosure, it does provide more valuable data than generalization. Second, by employing bucketization, which broadcasts the QI values in their original forms, an opponent can quickly determine whether a certain person has a record in the leaked data. This implies that the bucketization table can be used to ascertain the majority of people's membership information. Furthermore, bucketization needs a clear distinction between QI and SI values.Bucketing breaks down the attribute link between QIs and SAs by segregating sensitive characteristics from quasi-identifying features. In many data sets, it is not always evident which attributes are QIs and which are SAs. As a result, bucketization is ineffective for distributing and storing microdata.

III. LITERATURE SURVEY

1) Ninghui Li, Senior Member, IEEE, Jian Zhang, Member, IEEE, and Ian Molloy have illuminated certain strategies like generalization and bucketization in the study of Tiancheng Li. It is difficult to do generalization on highly dimensional data, and membership disclosure is a problem with bucketization, thus how to safeguard the data is also illustrated. The tuples in the table are divided into buckets using bucketization, and the sensitive attribute and non-sensitive attribute are then separated by randomly permuting the sensitive attribute values within each bucket. The bucket with the permuted sensitive values is now present in the sanitized data. When compared to generalization, data usage in bucketization is high. Bucketization did not prohibit membership disclosure, but that is one of the limits. Since the QI values are provided in their original formats, a hacker can quickly determine whether a particular person's record is present in the public data. A distinct division between QI and Sensitive Attribute (SA) is necessary for bucketization. Many datasets make it difficult to distinguish between the QI and SA. Finally, bucketization violates the attribute correlations between the QI and the SA by segregating the sensitive characteristics from the QI attributes.

2) Dr. T. Christopher noted in the work by V. Shyamala Susan that the generalization loses some information, especially for high dimensional data. As a result, it is ineffective for high-dimensional data. Generalization is the process of substituting a value for one that is less precise yet semantically compatible. This approach is applied at the cell level, where some original values are retained but with greater ambiguity. This makes it more difficult for the attacker to deduce sensitive information. Because there is no visible separation between sensitive attributes and quasi-identifiers in bucketized data, attribute membership disclosure is not avoided. At the cell level, where there is additional uncertainty added to the initial values, this method is applied. The attacker will find it more challenging to determine sensitive information as a result. Data that has undergone bucketization does not clearly distinguish between sensitive characteristics and quasi-identifiers, therefore attribute membership disclosure is not stopped.

IV. PROPOSED SYSTEM

The proposed technology, known as "slicing," retains more data utility while maintaining user data privacy and functioning effectively with high-dimensional data. The unique privacy-preserving approach known as "slicing" offers significant advantages over generalization and bucketization. The software solution aims to use the "slicing" technique to focus on protecting sensitive data in individual medical records. This method separates the data horizontally as well as vertically. Vertical partitioning is accomplished by categorizing qualities into columns based on how they relate to one another. Each column contains a portion of the traits that are highly connected. During the horizontal partitioning operation, the tuples are bucketed.

Finally, the data in each bucket are sorted at random to undermine the relationship between the various columns. The fundamental idea of data slicing is to break linkages between cross-columns while maintaining associations within individual columns.

In comparison to bucketization and generalization, this decreases the dimensionality of the data while maintaining improved data utility. Every tuple has several matching buckets thanks to the slicing procedure. Slicing first divides the qualities into columns. A subset of attributes are present in each column. The tuples are also partitioned into buckets by slicing. A subset of tuples make up each bucket. The table is divided horizontally as a result. The linkage between various columns is broken by randomly permuting the values in each column. The slicing process ensures that every tuple has several matching buckets. The attributes are initially divided into columns by slicing. There is a subset of attributes in each column. Additionally, the tuples are cut into buckets. Each bucket consists of a subset of tuples. As a result, the table is split horizontally. By randomly rearranging the values in each column, the connections between various columns are severed. There have been many privacy-preserving methods put forth, such as generalization and bucketization, but they all result in attribute exposure. The proposed solution, called slicing, consists of three phases: attribute partitioning, column generalization, and tuple partitioning.

A. Slicing Algorithm

1) *Step 1:* We consider a queue of buckets Q and a set of sliced buckets SB in this step. SB is empty, and Q initially has only one bucket, which holds all of the tuples. As a result, Q=T; SB=.
2) *Step 2:* After each iteration, the algorithm divides each bucket into two buckets and eliminates a bucket from Q. For the l-diversity check, Q=Q-B (T,Q,B1,B2,SB,l);The tuple splitting method's primary purpose is to determine whether a sliced table meets the l- diversity criteria.
3) *Step 3:* Using the diversity check process, the statistics for each tuple are recorded. L[t] contains statistics for a single matched bucket B.D(t,B) is the expected sensitivity value distribution and the likelihood of matching.
4) *Step 4:* Using the equation Q=QB1,B2, two buckets are shifted to the end of the Q.
5) *Step 5:* If SB=SBB, the bucket is shifted to SB because there is no further splitting that can be done at this stage.
6) *Step 6:* After computing the sliced table, we return SB if Q is empty. The term "collection of separated buckets" is abbreviated as SB.Finally, return SB.

B. Advantages

1) Slicing is an effective strategy for dealing with high-dimensional data.
2) Slicing can be used to effectively restrict attribute disclosure based on the l-diversity privacy requirement. The basic notion behind l-diversity is that each group must have an acceptable representation of the values associated with the sensitive qualities.
3) Developing a fast approach for computing the sliced table while preserving l variety. The proposed method partitions attributes into columns, employs column generalization, and buckets tuples. The characteristics with the highest association are listed in the same column.

V. SYSTEM ARCHITECTURE

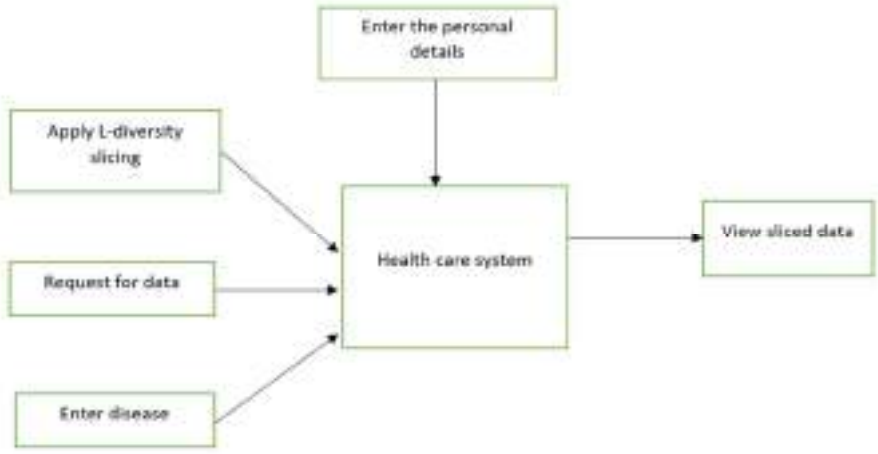


Figure 1: System Architecture

In this system, there are three active actors: administration, a doctor, an employee, and a patient. There is also one system that works together. The staff enters all patient data. He can also look up a patient's details by ID or name. The doctor can examine the new patient and diagnose the ailment based on the symptoms provided by the patient. He can also look up a patient's details by ID or name. The administrator attempts to change the patient's sensitive information by using l-diversity slicing on the data. Slicing is the process of dividing data into both vertical and horizontal partitions and randomly organizing the tuples so that, if a doctor were to try to retrieve patient information, he or she would only receive the information necessary to study the patient's health and would not see the other personal information. The patient has access to his or her own data, or personal profile, and can find out what condition the doctor has identified based on the reported symptoms.

VI. IMPLEMENTATION

Here, we may observe how patients register by providing information based on semi-identifying and sensitive features. The original information is sent to the physician so that he may recognize the patient using the patient ID and identify the ailment based on the symptoms the patient has described. To protect privacy, the data is published in a sliced format.

Figure 2: Patient Registration Form

The original data is displayed without any of the patient's personal information, such as name, phone number, and so on.The doctor can also use their patient ID to find a patient. Data is separated into two columns, one for zip code, age, and disease, and the other for location and gender, and then presented.Any user other than the organization's user can view the sliced data.

Patient-ID	Postal Code	Place	Age	Gender	Disease
1062	54368	bangalore	12	Female	covid
1887	500104	Mumbai	20	Female	cold
2565	565432	pune	9	Male	dry cough
3582	504003	delhi	17	Female	high bp
3992	500008	Hyderabad	20	Female	Fever
4219	54543	pune	16	Male	high fever
8525	54541	vizag	10	Male	Viral fever

Figure 3: Original Data

Sno	Place,Gender	Zipcode,Age,Disease
1	(bangalore,Female)	(500008,20,Fever)
2	(Hyderabad,Female)	(54541,10,Viral fever)
3	(delhi,Female)	(54368,12,covid)
4	(pune,Male)	(504003,17,high bp)
5	(vizag,Male)	(54543,16,high fever)

Figure 4: Sliced Data

VII. CONCLUSION & FUTURE SCOPE

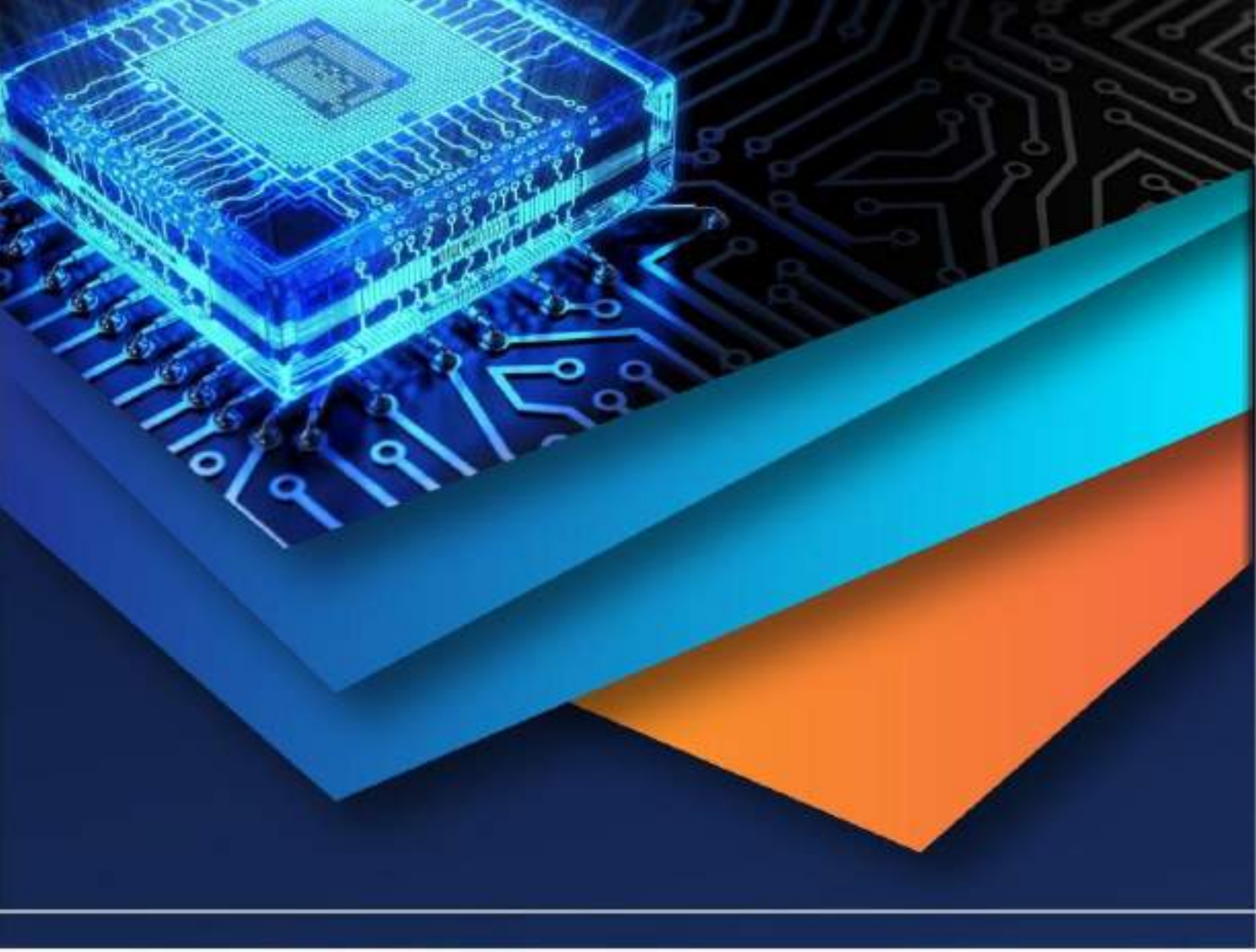
Data slicing, a cutting-edge anonymization technique for data distribution and privacy protection, is presented in this paper. Data slicing maintains improved utility and protects individual privacy while avoiding the drawbacks of generalization and bucketization. We provide an example of how attribute disclosures might be avoided using slicing. The fundamental premise is that when we fully comprehend the data, we can easily create better anonymization methods. Data slicing currently performs better than generalization and bucketization, as we have demonstrated. Data slicing is one potential approach to handling high dimensional data. By categorizing attributes into columns, privacy is maintained. This work's overall technique suggests that one should evaluate the data attributes before anonymizing the data and then make use of these characteristics when doing so. This is based on the idea that enhanced data understanding would enable the development of more effective data anonymization techniques.We provide examples of how attribute correlations can be used to violate privacy. This study has served as an inspiration for many other studies. We first take into account slicing in this work, where each characteristic is in exactly one column. It is a development of the idea of overlapping slicing, which copies an attribute across several columns. More attribute connections are consequently made accessible. For instance, the first column can also have the Disease property. To be more precise, there are two columns: "Place; Gender; Disease" and "Zipcode; Age; Disease." Better data utility might result, but the privacy consequences need further research and understanding. We also want to analyze membership disclosure protection in further detail. According to our research, random grouping is not extremely effective. More effective tuple grouping methods are what we're aiming for.

Third, slicing is one possible approach to handling massive amounts of data. We protect privacy by removing the correlation between uncorrelated variables, while data utility is maintained by keeping the correlation between highly linked features. Second, we want to examine membership disclosure protection in more detail. According to our research, random grouping is not extremely effective. More effective tuple grouping methods are what we're aiming for.

Third, slicing is one possible approach to handling massive amounts of data. We protect privacy by removing the correlation between uncorrelated variables, while data utility is maintained by keeping the correlation between highly linked features.

REFERENCES

[1] Tiancheng Li, Ninghui Li, Senior Member, IEEE, Jian Zhang, Member, IEEE, and Ian Molloy, "Slicing: A New Approach for Privacy Preserving Data Publishing", IEEE Transactions on Knowledge and Data Engineering, vol. 24, NO. 3, March 2012.
[2] V. Shyamala Susan1, Dr. T. Christopher, "A Survey on Privacy Preservation in Data Publishing", IJCSMC, Vol. 3, Issue. 3, pp.188 – 193,March 2014.
[3] Gokila, S, and P. Venkateswari, "A Survey on Privacy Preserving Data Publishing," International Journal on Cybernetics and Informatics (IJCI) Vol. 3, No. 1, February 2014.
[4] Manjusha S. Mirashe, Kapil N. Hande , "Survey on Efficient Technique for Annonymized Microdata Preservation using slicing," International Journal of Emerging Trends in Engineering and Development Issue 5, Vol.2 (Feb.-Mar. 2015) .
[5] SabaYaseen, Syed M. Ali Abbas, Adeel Anjum, Tanzila Saba, Abid Khan, Saif U. R. Malik, Naveed Ahmad, Basit Shahzad, Ali Kashif Bashir, "Improved Generalization for Secure Data Publishing", IEEE 2018.
[6] Sesha Bhargavi, V., Spandana, T. (2017). Recommendation Based P2P File Sharing on Disconnected MANET. In: Deiva Sundari, P., Dash, S., Das, S., Panigrahi, B. (eds) Proceedings of 2nd International Conference on Intelligent Computing and Applications. Advances in Intelligent Systems and Computing, vol 467. Springer, Singapore. https://doi.org/10.1007/978-981-10-1645-5_18
[7] Velagaleti, Sesha & Seetha, M. & SOmalaraju, Viswanadha raju. (2013). A Simulation and analysis of DSR Protocol in Mobile ad hoc Networks. INTERNATIONAL JOURNAL OF MANAGEMENT & INFORMATION TECHNOLOGY. 8. 1279-1286. 10.24297/ijmit.v8i1.692.
[8] Suntherasvaran Murthy, Asmidar Abu Bakar, Fiza Abdul Rahim, Ramona Ramli, "A Comparative Study of Data Anonymization Techniques", IEEE 5th Intl Conference 2019.
[9] I.Ravi Prakash Reddy, "Privacy Preserving Intrusion Detection System for Low power Internet of Things", International Conference on Computational Intelligence & Data Analytics (ICCIDA-2022), 8-9 Jan-2022.



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IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** VI **Month of publication:** June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54213

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Improving Performance of Clinical and Operational Workflows in Health Tech Domain using Artificial Intelligence

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Abstract: ***Artificial Intelligence (AI) is rapidly transforming the healthcare industry, with the potential to improve patient outcomes, reduce costs, and enhance the overall quality of care. This paper explores the emerging trends in AI in health tech, including machine learning, natural language processing, robotics, and computer vision. It also examines the challenges and opportunities associated with these emerging technologies, as well as their impact on healthcare delivery, research, and patient engagement. The availability of an enormous amount of data supported by limitless cloud storage is a significant benefit that aids in the development of many AI applications. The learning algorithms are trained using this data to improve their accuracy. The algorithms interact with the practise data to provide fresh perspectives on diagnosis and therapy. As a result, it enhances patients' results. A case study on Diagnosis and Treatment of Skin Cancer was discussed and a suitable architecture is proposed.***

I. INTRODUCTION

Artificial Intelligence has been the buzzword in healthcare for the past few years, and its applications in the industry are growing rapidly. AI is being used to improve patient outcomes, reduce costs, and enhance the overall quality of care. The use of AI in health tech is driven by the need to improve efficiency, reduce errors, and provide better care to patients. The purpose of this paper is to explore the emerging trends in AI in health tech, including machine learning, natural language processing, robotics, and computer vision. We will also examine the challenges and opportunities associated with these emerging technologies, as well as their impact on healthcare delivery, research, and patient engagement.

Machine Learning: Machine learning is one of the most significant emerging trends in AI in health tech. Machine learning algorithms can be used to analyze vast amounts of data, including patient data, to identify patterns and make predictions. This can help clinicians to make more informed decisions, and also enable personalized medicine. Machine learning can also be used to automate tasks such as image analysis and diagnosis, reducing the burden on healthcare professionals.

Natural Language Processing: Natural Language Processing (NLP) is another emerging trend in AI in health tech. NLP enables computers to understand and interpret human language, which can be used to improve patient engagement and communication. NLP can be used to analyse patient feedback, reviews, and comments to identify trends and improve the overall quality of care.

Robotics: Robotics is also emerging as an important trend in AI in health tech. Robots can be used to perform tasks such as surgery, patient monitoring, and medication dispensing. Robotics can also be used to assist healthcare professionals in tasks such as lifting and moving patients, reducing the risk of injury.

Computer Vision: Computer vision is another emerging trend in AI in health tech. Computer vision algorithms can be used to analyze medical images such as X-rays and CT scans, enabling automated diagnosis and improving accuracy. Computer vision can also be used to monitor patient movement and activity, helping to prevent falls and other accidents.

Challenges and Opportunities: The use of AI in health tech presents both challenges and opportunities. One of the main challenges is ensuring the privacy and security of patient data.

Another challenge is ensuring that the technology is used ethically and does not perpetuate biases. However, the opportunities presented by AI in health tech are enormous. AI has the potential to improve patient outcomes, reduce costs, and enhance the overall quality of care. AI can also enable personalized medicine, improve patient engagement and communication, and assist healthcare professionals in performing their duties.

II. RELATED WORK

1) "Artificial Intelligence in Healthcare: Past, Present and Future" by Paul Sonnier and Theodora Bloom. This paper provides an overview of the evolution of AI in healthcare and discusses the current state of the field, as well as future trends and challenges.
2) "Artificial Intelligence in Healthcare: A Comprehensive Review" by Shihab Jimaa and M. Shamim Hossain. This review article explores the various applications of AI in healthcare, including diagnosis, treatment, and healthcare management. The authors also discuss the challenges and opportunities associated with AI in healthcare.
3) "Applications of Artificial Intelligence in Healthcare Delivery" by David B. Hoyt and Shamsi Daneshvari. This article focuses on the applications of AI in healthcare delivery, including machine learning, natural language processing, and robotics. The authors discuss the potential impact of AI on healthcare delivery and the challenges associated with implementing these technologies.
4) "Artificial Intelligence in Medicine: Current Trends and Future Possibilities" by E. Schreiber and S. Mengelkamp. This paper provides an overview of the current trends and future possibilities of AI in medicine. The authors discuss the potential applications of AI in areas such as diagnosis, treatment, and drug development.
5) "Artificial Intelligence in Healthcare: Opportunities and Challenges" by Yasar Khan and Samina Riaz. This review article explores the opportunities and challenges associated with AI in healthcare. The authors discuss the potential impact of AI on healthcare delivery and patient outcomes, as well as the ethical and legal implications of using AI in healthcare.
6) "Artificial Intelligence in Healthcare: A Systematic Review" by Rina Alawadhi and Nidhi Gupta. This systematic review provides an overview of the various applications of AI in healthcare, including diagnosis, treatment, and healthcare management. The authors also discuss the challenges and opportunities associated with AI in healthcare and highlight the need for further research in this field.
7) "Artificial Intelligence in Healthcare: Challenges and Opportunities for Patient-Centered Care" by Anna V. Doudchenko and Julia S. Polak. This article discusses the challenges and opportunities associated with AI in patient-centered care. The authors explore the potential impact of AI on patient outcomes and highlight the importance of ethical and responsible use of these technologies.
8) "Artificial Intelligence in Healthcare: A Review of Current Applications and Ethical Implications" by Elinor B. Sullivan and Pilar Ossorio. This review article explores the current applications of AI in healthcare and discusses the ethical implications of using these technologies. The authors highlight the need for transparency and accountability in the development and implementation of AI in healthcare.

III. A CASE STUDY ON AI-POWERED DIAGNOSIS AND TREATMENT OF SKIN CANCER

Skin cancer is the most common form of cancer in the world, with over 5 million cases diagnosed each year. Early detection is critical for successful treatment, but diagnosing skin cancer can be challenging even for experienced dermatologists. However, emerging trends in artificial intelligence in health tech have the potential to improve diagnosis and treatment of skin cancer.

One company that is leveraging AI for skin cancer diagnosis and treatment is SkinVision. SkinVision uses a smartphone app to capture images of moles and lesions, which are then analyzed using a machine learning algorithm to identify potential signs of skin cancer. The app is designed to help users detect changes in their skin over time, which can be an early indicator of skin cancer.

SkinVision's algorithm is based on a large dataset of skin images, which have been labeled by dermatologists to train the algorithm to recognize patterns and identify potential signs of skin cancer. The algorithm can detect over 90% of skin cancer cases, with a false-positive rate of only 12%.

Once a user's skin images have been analyzed, SkinVision provides a risk assessment and recommends next steps, such as scheduling a visit to a dermatologist for further evaluation. The app also provides educational resources on skin cancer prevention and self-examination.

SkinVision's AI-powered approach has the potential to improve skin cancer detection and treatment outcomes by enabling earlier diagnosis and treatment. The app is currently available in several countries and has been used by over 1 million people.

However, there are also concerns related to the accuracy and reliability of AI-powered skin cancer diagnosis. Critics have pointed out that the algorithm may be less accurate for certain skin types and may miss some cases of skin cancer. Additionally, there are concerns related to privacy and data security, as users' skin images are stored on SkinVision's servers.

Overall, the SkinVision case study highlights the potential of AI in healthcare for improving diagnosis and treatment outcomes. However, it also underscores the need for continued research and development to ensure that AI-powered technologies are safe, effective, and ethical.

IV. PROPOSED ARCHITECTURE FOR AI-POWERED DIAGNOSIS AND TREATMENT OF SKIN CANCER

The architecture for an AI-powered diagnosis and treatment system for skin cancer could include the following components:

1) *Data Ingestion:* The system would ingest various types of data such as patient demographics, medical history, images of skin lesions, and other diagnostic test results.
2) *Image Preprocessing:* Preprocessing the image data would involve techniques like normalization, color balance, noise reduction, image segmentation, and feature extraction.
3) *Feature Extraction:* The system would use computer vision techniques such as convolutional neural networks (CNNs) to extract features from the preprocessed images.
4) *Machine Learning Models:* The system would use machine learning algorithms like support vector machines (SVMs), decision *trees, or deep neural networks to analyze the extracted features and generate predictions about the likelihood of skin cancer.*
5) *Diagnosis and Treatment Recommendation:* Based on the analysis of the data and the generated predictions, the system would recommend a diagnosis, and treatment options based on the severity of the skin cancer
6) *Integration with Clinical Decision Support Systems:* The system would be integrated with clinical decision support systems that can provide clinicians with additional diagnostic or therapeutic recommendations
7) *User Interface:* The system would have a user interface that allows healthcare providers to visualize patient data, receive alerts, and interact with the system
8) *Data Storage and Management:* The system would store and manage patient data and predictions, allowing for ongoing monitoring and analysis
9) *Performance Monitoring and Evaluation:* The system would be monitored and evaluated to ensure that it is performing accurately, and that any issues or errors are identified and addressed.

Overall, the proposed architecture would allow for the accurate diagnosis and treatment of skin cancer using machine learning algorithms and computer vision techniques. The integration with clinical decision support systems would help ensure that the system is providing safe and effective care. Ongoing monitoring and evaluation would also help improve the system's accuracy and effectiveness over time.

There are several potential future implications of emerging trends in artificial intelligence in health tech, some of which are:

a) *Improved Patient Outcomes:* With the use of AI in healthcare, there is the potential to improve patient outcomes by providing more accurate and personalized diagnoses, predicting diseases at an earlier stage, and developing more effective treatments.
b) *Increased Efficiency:* AI can help healthcare providers optimize workflows, reduce wait times, and make better use of their time, leading to more efficient delivery of care.
c) *Greater Accessibility:* By leveraging AI-powered telemedicine and remote monitoring, healthcare providers can increase access to care for patients in underserved or remote areas, as well as those with mobility or transportation issues.
d) Ethical Considerations: As AI becomes more widespread in healthcare, it will be important to consider the ethical implications of its use, including issues related to privacy, data security, and bias.
e) *Need for Skilled Workforce:* As healthcare providers increasingly rely on AI, there will be a growing need for skilled workers who can develop and maintain these technologies, as well as those who can interpret and act on the data they generate.
f) *Regulatory Challenges:* As AI continues to advance in healthcare, there will be a need for regulations to ensure that these technologies are safe, effective, and ethical. This will require collaboration between healthcare providers, regulators, and technology developers.

Overall, the future implications of emerging trends in AI in health tech are promising, but will require careful consideration of ethical, regulatory, and workforce challenges in order to fully realize their potential.

V. CONCLUSION

AI is transforming the healthcare industry, and the emerging trends in AI in health tech are poised to have a significant impact on healthcare delivery, research, and patient engagement. Machine learning, natural language processing, robotics, and computer vision are some of the most significant emerging trends in AI in health tech. While there are challenges associated with the use of AI in health tech, the opportunities presented by these emerging technologies are enormous. As the healthcare industry continues to adopt AI, it will be important to ensure that the technology is used ethically and responsibly, to ensure that it benefits patients and healthcare professionals alike.

In conclusion, emerging trends in artificial intelligence in health tech have the potential to revolutionize the healthcare industry. AI-powered technologies can help healthcare providers deliver more accurate diagnoses, develop more effective treatments, optimize workflows, and increase accessibility to care. However, there are also challenges that need to be addressed, including ethical considerations, regulatory challenges, and the need for a skilled workforce.

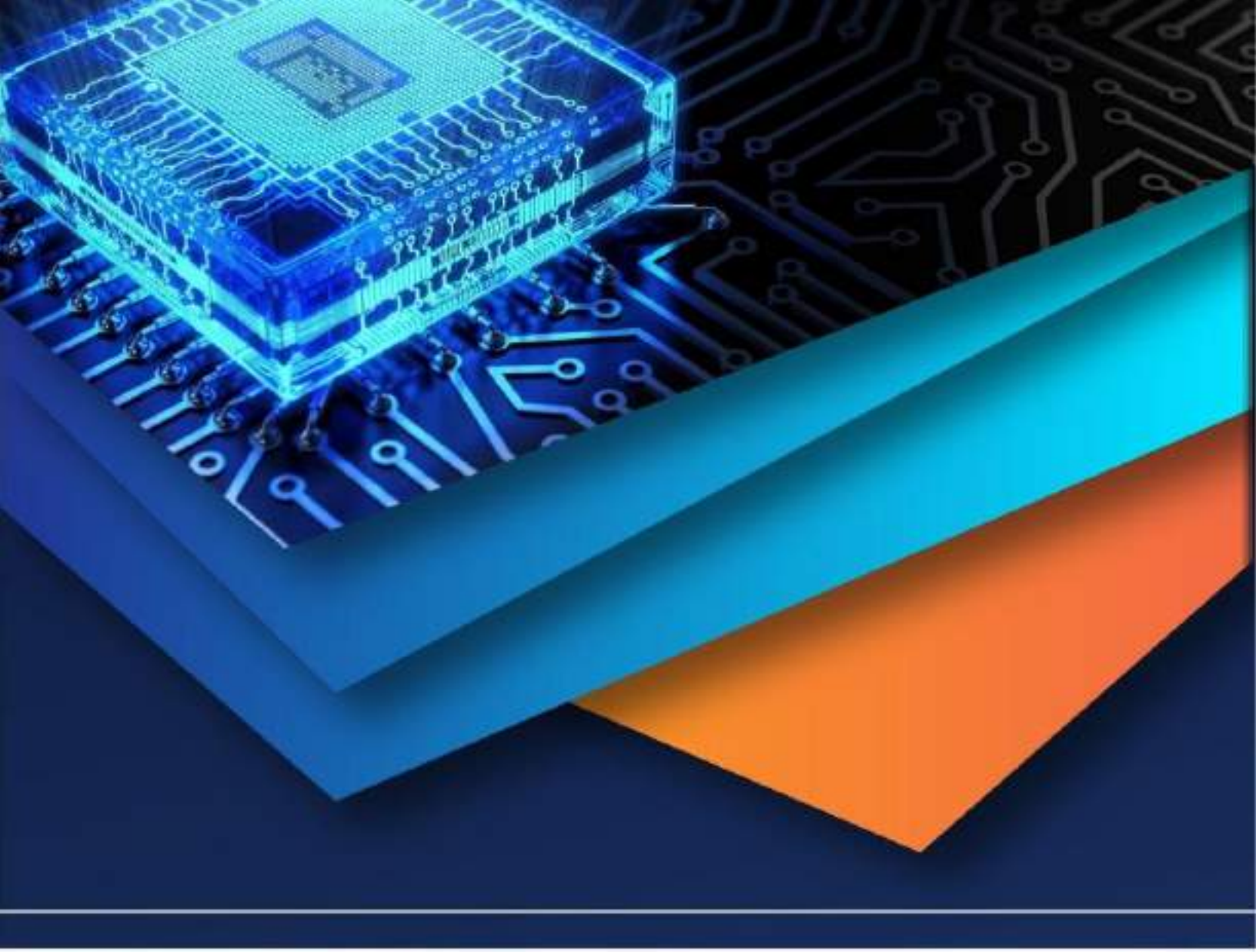
Moving forward, the future scope of AI in healthcare is vast. There are several areas in which AI can be applied, including drug discovery, disease diagnosis and prediction, personalized medicine, and remote monitoring. As these technologies continue to evolve, it will be important for healthcare providers, regulators, and technology developers to work together to ensure that they are safe, effective, and ethical.

One key area for future research is the development of explainable AI, which can help address concerns related to the lack of transparency and interpretability of some AI-powered technologies. Additionally, further research is needed to explore the potential of AI in addressing health disparities and improving healthcare access for underserved populations.

Overall, the potential benefits of AI in healthcare are substantial, and with careful consideration of the challenges and opportunities, the future of AI in health tech is bright.

REFERENCES

[1] "Artificial Intelligence in Healthcare: Past, Present and Future" by Paul Sonnier and Theodora Bloom.
[2] "Artificial Intelligence in Healthcare: A Comprehensive Review" by Shihab Jimaa and M. Shamim Hossain.
[3] "Applications of Artificial Intelligence in Healthcare Delivery" by David B. Hoyt and Shamsi Daneshvari.
[4] "Artificial Intelligence in Medicine: Current Trends and Future Possibilities" by E. Schreiber and S. Mengelkamp.
[5] "Artificial Intelligence in Healthcare: Opportunities and Challenges" by Yasar Khan and Samina Riaz.
[6] "Artificial Intelligence in Healthcare: A Systematic Review" by Rina Alawadhi and Nidhi Gupta.
[7] "Artificial Intelligence in Healthcare: Challenges and Opportunities for Patient-Centered Care" by Anna V. Doudchenko and Julia S. Polak.
[8] "Artificial Intelligence in Healthcare: A Review of Current Applications and Ethical Implications" by Elinor B. Sullivan and Pilar Ossorio.
[9] "Predictive Analytics for Early Detection of Sepsis: A Literature Survey" by Yashika Arora, Pratibha Goyal, and Rajesh Kumar.
[10] "Predictive Analytics for Early Detection of Sepsis: A Systematic Literature Review" by Hicham Hajj, Mohamed Reda Bouadjenek, and Othmane Bouhali.
[11] "Early Detection of Sepsis Using Machine Learning Techniques: A Literature Survey" by Shweta Garg and Vivek Kumar Singh.
[12] "Predictive Analytics for Sepsis: A Review of Current Approaches and Future Directions" by Sharmila Devi Ramalingam, Harini Suresh, and Vidya Sagar.
[13] Sesha Bhargavi, V., Spandana, T. (2017). Recommendation Based P2P File Sharing on Disconnected MANET. In: Deiva Sundari, P., Dash, S., Das, S., Panigrahi, B. (eds) Proceedings of 2nd International Conference on Intelligent Computing and Applications. Advances in Intelligent Systems and Computing, vol 467. Springer, Singapore. https://doi.org/10.1007/978-981-10-1645-5_18
[14] Velagaleti, Sesha Bhargavi, M. Seetha, and S. Viswanadha Raju. "A Simulation and Analysis Of Secured AODV Protocol in Mobile Ad Hoc Networks." IJRET International Journal of Research in Engineering and Technology (2013).
[15] Davenport T, Kalakota R. The potential for artificial intelligence in healthcare. Future Healthc J. 2019 Jun;6(2):94-98. doi: 10.7861/futurehosp.6-2-94. PMID: 31363513; PMCID: PMC6616181.
[16] Bohr A, Memarzadeh K. The rise of artificial intelligence in healthcare applications. Artificial Intelligence in Healthcare. 2020:25–60. doi: 10.1016/B978-0-12-818438-7.00002-2. Epub 2020 Jun 26. PMCID: PMC7325854.
[17] Impact of Artificial Intelligence in the field of Health Care,V Ragavi et al 2021 J. Phys.: Conf. Ser. 1831 012006
[18] Guoguang Rong, Arnaldo Mendez, Elie Bou Assi, Bo Zhao, Mohamad Sawan, Artificial Intelligence in Healthcare: Review and Prediction Case Studies,
[19] Engineering, Volume 6, Issue 3, 2020, Pages 291-301, ISSN 2095-8099.
[20] Zubin Mishra, Birendra Mishra and Oldooz Aloosh, 2020. Impact of Artificial Intelligence on the Healthcare Industry. Trends in Applied Sciences Research, 15: 59-65.
[21] I.Ravi Prakash Reddy, “Intrusion Detection System using SMIFS and Multi class Multi layer Perceptron”, Journal of Computational and Theoretical Nano science, Vol:15, Special Issue:12, ISSN: 1546-1963, Dec-2018
[22] Lee, D.; Yoon, S.N. Application of Artificial Intelligence-Based Technologies in the Healthcare Industry: Opportunities and Challenges. Int. J. Environ. Res. Public Health 2021, 18, 271.



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INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VII Month of publication: July 2023

DOI: https://doi.org/10.22214/ijraset.2023.54659

www.ijraset.com

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VII Jul 2023- Available at www.ijraset.com

Impact of Advances in Artificial Intelligence on Health Tech Industry

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Abstract: ***The healthcare sector is being rapidly transformed by artificial intelligence (AI), which has the potential to enhance care quality, lower costs, and improve patient outcomes. This study examines the newest developments in artificial intelligence (AI) in the fields of robotics, computer vision, and natural language processing. It also looks at the potential and problems brought on by these new technologies, as well as how they affect patient participation, research, and healthcare delivery. A significant benefit that aids in the development of many AI applications is the availability of a huge volume of data supported by limitless cloud storage. The learning algorithms are improved through training with this data. New knowledge in diagnosis and therapy is made possible by the algorithms' interactions with the training data. Hence, it enhances the outcomes for patients. A case study on Predictive Analytics for Early Detection of Sepsis was discussed and a suitable architecture is proposed.***

I. INTRODUCTION

The use of artificial intelligence in healthcare has recently become popular, and its applications are expanding quickly. AI is being used to raise overall care quality, save costs, and improve patient outcomes. The need to increase productivity, decrease errors, and improve patient care is what motivates the application of AI in health technology. The goal of this essay is to examine the newest developments in artificial intelligence (AI) in the fields of robotics, computer vision, and natural language processing. This study looks at the potential and problems brought on by these new technologies, as well as how they affect patient participation, research, and healthcare delivery.

1) *Machine Learning:* One of the most important new developments in AI for health technology is machine learning. To find trends and make predictions, machine learning algorithms can analyse enormous volumes of data, including patient data. This can facilitate individualised medicine and assist clinicians in making better decisions. In addition to automating processes like image analysis and diagnosis, machine learning can also be used to lighten the workload of healthcare workers.
2) *Natural Language Processing:* Another new development in AI for health technology is natural language processing (NLP). NLP makes it possible for computers to comprehend and translate human language, which can enhance patient engagement and communication. NLP can be used to analyse reviews, comments, and feedback from patients to spot trends and raise the standard of care overall.
3) *Robotics:* Another significant trend in AI for health technology is robotics. Operations, patient monitoring, and drug delivery can all be done by robots. The danger of damage can be decreased by using robotics to help medical staff with duties like lifting and transferring patients.
4) *Computer Vision:* Another developing trend in AI for health technology is computer vision. Medical pictures like X-rays and CT scans can be analysed using computer vision algorithms to enable automated diagnosis and increase accuracy. In order to monitor patient activity and movement and reduce the risk of falls and other mishaps, computer vision can also be used.
5) *Challenges and Opportunities:* The application of AI in health technology both advantages and disadvantages. Keeping patient data private and secure is one of the biggest challenges. Making sure that technology is used ethically and does not reinforce biases is another difficulty. Yet, AI offers a plethora of options in the field of health technology. AI has the ability to raise overall care quality, lower costs, and improve patient outcomes. Additionally, AI can help healthcare workers carry out their tasks more effectively, provide individualised medication, and enhance patient engagement and communication.

II. RELATED WORK

1) "Predictive Analytics for Early Detection of Sepsis: A Literature Survey" by Yashika Arora, Pratibha Goyal, and Rajesh Kumar.

This paper provides an overview of the different predictive analytics techniques that have been used for sepsis detection, including machine learning algorithms, rule-based approaches, and statistical models. It also discusses the challenges associated with sepsis detection and highlights the need for further research in this area.

2) "Predictive Analytics for Early Detection of Sepsis: A Systematic Literature Review" by Hicham Hajj, Mohamed Reda Bouadjenek, and Othmane Bouhali. This paper presents a systematic review of the literature on predictive analytics for sepsis detection. It identifies the different approaches used in the literature, including machine learning, data mining, and statistical models, and provides a critical analysis of their strengths and limitations. The paper also discusses the challenges associated with implementing predictive analytics for sepsis detection in clinical settings.
3) "Early Detection of Sepsis Using Machine Learning Techniques: A Literature Survey" by Shweta Garg and Vivek Kumar Singh. This paper focuses specifically on the use of machine learning techniques for early detection of sepsis. It provides an overview of the different machine learning algorithms that have been used for this purpose, including decision trees, support vector machines, and artificial neural networks. The paper also discusses the challenges associated with implementing machine learning-based sepsis detection systems in clinical settings.
4) "Predictive Analytics for Sepsis: A Review of Current Approaches and Future Directions" by Sharmila Devi Ramalingam, Harini Suresh, and Vidya Sagar. This paper provides an overview of the different approaches that have been used for sepsis detection, including traditional clinical criteria, biomarkers, and predictive analytics. It discusses the limitations of existing approaches and highlights the potential of predictive analytics for improving sepsis detection and treatment. The paper also identifies areas for further research, including the development of more accurate predictive models and the integration of predictive analytics into clinical workflows.

III. A CASE STUDY ON AI-POWERED PREDICTIVE ANALYTICS FOR EARLY DETECTION OF SEPSIS

Sepsis is a life-threatening condition that occurs when the body's response to infection causes damage to its tissues and organs. It is estimated to affect over 30 million people worldwide each year, and is a leading cause of death in hospitals. Early detection and treatment of sepsis is critical for improving patient outcomes, but can be challenging due to the complex and rapidly evolving nature of the condition.

One promising approach to addressing this challenge is the use of AI-powered predictive analytics. A case study from the Cleveland Clinic illustrates the potential of this approach. The Cleveland Clinic developed an AI-powered predictive analytics system called Sepsis Watch, which uses machine learning algorithms to analyze electronic health record (EHR) data and identify patients who are at risk of developing sepsis.

The system works by analyzing EHR data in real-time, including vital signs, laboratory results, and medication orders. It then uses machine learning algorithms to identify patterns and trends that may indicate the presence of sepsis. When a patient is identified as being at risk of developing sepsis, an alert is sent to the care team, who can then take appropriate action, such as initiating antibiotic therapy or performing additional diagnostic tests.

The results of the study were promising. In a retrospective analysis of over 50,000 patient encounters, the Sepsis Watch system was able to identify patients with sepsis with a sensitivity of 83% and a specificity of 90%, outperforming existing sepsis screening tools. The system also led to a significant reduction in sepsis-related mortality, from 15.4% in the pre-implementation period to 11.8% in the post-implementation period.

The success of the Sepsis Watch system demonstrates the potential of AI-powered predictive analytics for early detection and treatment of sepsis, as well as other complex and rapidly evolving conditions. It also highlights the importance of interdisciplinary collaboration between healthcare providers and technology developers, as well as the need for rigorous evaluation of these technologies to ensure that they are safe, effective, and ethical.

Overall, this case study provides a compelling example of the potential of emerging trends in artificial intelligence in health tech, and underscores the importance of continued research and development in this field.

IV. PROPOSED ARCHITECTURE FOR AI-POWERED PREDICTIVE ANALYTICS FOR EARLY DETECTION OF SEPSIS

The architecture for an AI-powered predictive analytics system for early detection of sepsis could include the following components:

1) *Data ingestion:* The system would ingest real-time patient data from electronic health records (EHRs), including vital signs, laboratory results, and medication orders.

2) *Data preprocessing:* The raw data would then undergo preprocessing to remove noise, normalize values, and convert data into a structured format suitable for analysis.
3) *Feature Extraction:* The system would extract relevant features from the preprocessed data, such as trends in vital signs or abnormal laboratory values. This would involve the use of statistical methods and machine learning algorithms.
4) *Machine learning models:* The system would use machine learning algorithms, such as logistic regression or decision trees, to analyze the extracted features and generate predictions about the likelihood of sepsis.
5) *Alerting system:* When a patient is identified as being at risk of developing sepsis, an alert would be sent to the care team, triggering appropriate actions such as antibiotic therapy or additional diagnostic tests.
6) *Data storage and management:* The system would store and manage patient data and predictions, allowing for ongoing monitoring and analysis.
7) *User interface:* The system would have a user interface that allows healthcare providers to visualize patient data, receive alerts, and interact with the system.
8) *Performance monitoring and evaluation:* The system would be monitored and evaluated to ensure that it is performing accurately, and that any issues or errors are identified and addressed.

Overall, the proposed architecture would allow for the real-time analysis of patient data and the early detection of sepsis, improving patient outcomes and reducing mortality rates. The use of machine learning algorithms would enable the system to learn and adapt over time, improving its accuracy and effectiveness. Additionally, ongoing monitoring and evaluation would ensure that the system remains safe, effective, and ethical.

There are several potential future implications of emerging trends in artificial intelligence (AI) for predictive analytics in the early detection of sepsis. Here are a few examples:

a) *Improved accuracy:* One of the key benefits of AI is its ability to learn from large amounts of data and make predictions with high accuracy. As more data on sepsis becomes available, AI algorithms can be trained to detect subtle patterns and early warning signs of the condition, leading to earlier and more accurate diagnosis.
b) *Personalized medicine:* AI can also be used to personalize sepsis treatment based on a patient's unique clinical and genetic profile. By analyzing patient data in real-time, AI algorithms can identify the most effective treatment options and adjust dosages based on a patient's response.
c) *Real-time monitoring:* With the use of sensors and wearables, AI can enable real-time monitoring of patient vital signs, which can help detect sepsis at an earlier stage. This technology can also alert healthcare providers to sudden changes in a patient's condition, allowing for rapid intervention and improved outcomes.
d) *Remote monitoring:* AI-enabled remote monitoring can enable patients to be monitored from home or other remote locations, reducing the risk of hospital-acquired infections and improving patient outcomes. This can be especially beneficial for patients with chronic conditions or those who live in rural or underserved areas.
e) *Integration with electronic health records (EHRs):* AI can be integrated with EHRs to provide a more comprehensive view of a patient's health history and facilitate early detection of sepsis. This can help reduce diagnostic errors and improve treatment outcomes.

Overall, the emerging trends in AI have the potential to revolutionize the early detection and treatment of sepsis, leading to improved patient outcomes and reduced healthcare costs. However, careful consideration and evaluation of these emerging technologies will be necessary to ensure their safety and efficacy in clinical practice.

V. CONCLUSION

AI is transforming the healthcare industry, and the emerging trends in AI in health tech are poised to have a significant impact on healthcare delivery, research, and patient engagement. Machine learning, natural language processing, robotics, and computer vision are some of the most significant emerging trends in AI in health tech. While there are challenges associated with the use of AI in health tech, the opportunities presented by these emerging technologies are enormous. As the healthcare industry continues to adopt AI, it will be important to ensure that the technology is used ethically and responsibly, to ensure that it benefits patients and healthcare professionals alike.

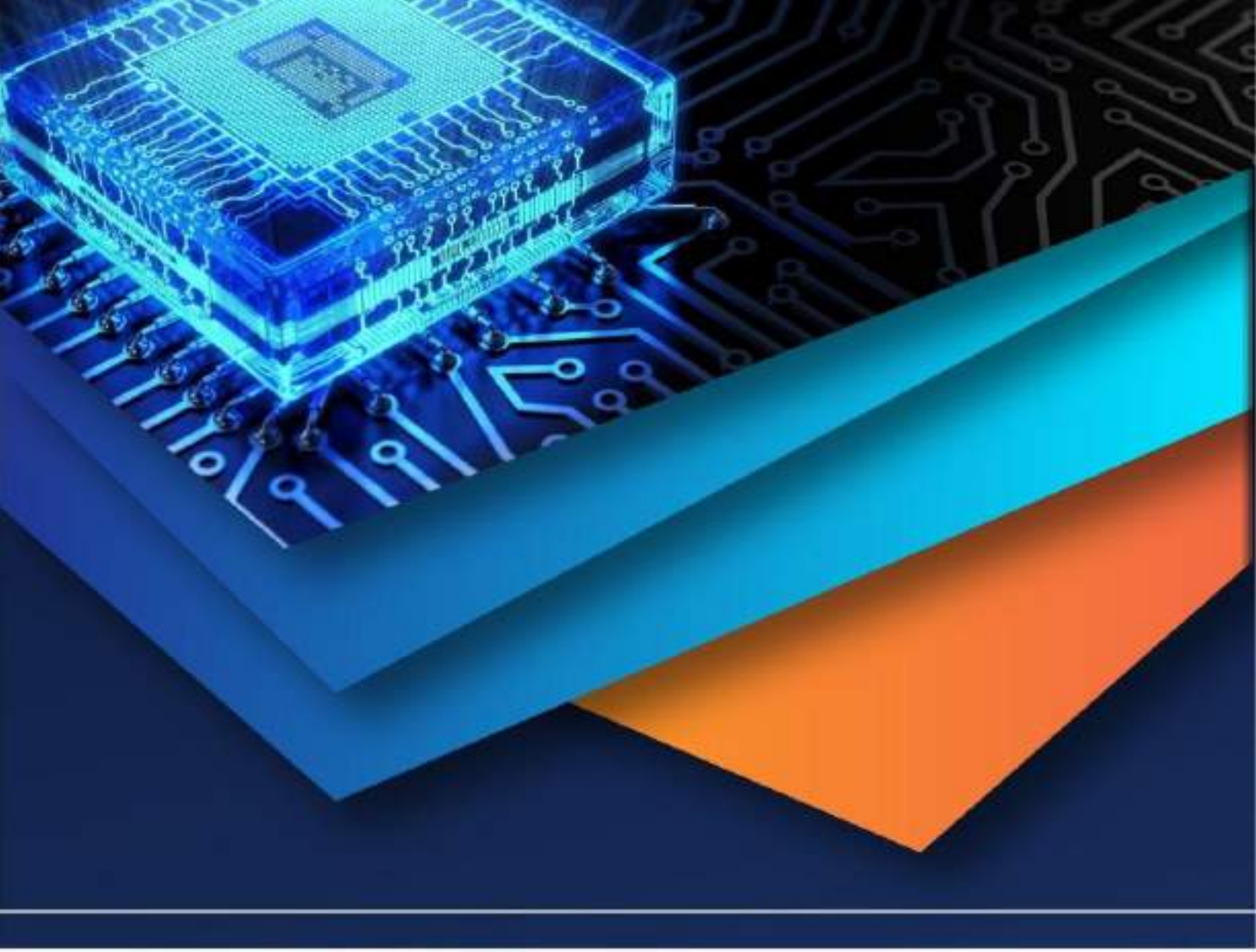
In conclusion, emerging trends in artificial intelligence in health tech have the potential to revolutionize the healthcare industry. AI-powered technologies can help healthcare providers deliver more accurate diagnoses, develop more effective treatments, optimize workflows, and increase accessibility to care. However, there are also challenges that need to be addressed, including ethical considerations, regulatory challenges, and the need for a skilled workforce.

Moving forward, the future scope of AI in healthcare is vast. There are several areas in which AI can be applied, including drug discovery, disease diagnosis and prediction, personalized medicine, and remote monitoring. As these technologies continue to evolve, it will be important for healthcare providers, regulators, and technology developers to work together to ensure that they are safe, effective, and ethical.

One key area for future research is the development of explainable AI, which can help address concerns related to the lack of transparency and interpretability of some AI-powered technologies. Additionally, further research is needed to explore the potential of AI in addressing health disparities and improving healthcare access for underserved populations.

REFERENCES

[1] "Predictive Analytics for Early Detection of Sepsis: A Literature Survey" by Yashika Arora, Pratibha Goyal, and Rajesh Kumar.
[2] "Predictive Analytics for Early Detection of Sepsis: A Systematic Literature Review" by Hicham Hajj, Mohamed Reda Bouadjenek, and Othmane Bouhali.
[3] "Early Detection of Sepsis Using Machine Learning Techniques: A Literature Survey" by Shweta Garg and Vivek Kumar Singh.
[4] "Predictive Analytics for Sepsis: A Review of Current Approaches and Future Directions" by Sharmila Devi Ramalingam, Harini Suresh, and Vidya Sagar.
[5] Davenport T, Kalakota R. The potential for artificial intelligence in healthcare. Future Healthc J. 2019 Jun;6(2):94-98. doi: 10.7861/futurehosp.6-2-94. PMID: 31363513; PMCID: PMC6616181.
[6] Bohr A, Memarzadeh K. The rise of artificial intelligence in healthcare applications. Artificial Intelligence in Healthcare. 2020:25–60. doi: 10.1016/B978-0-12-818438-7.00002-2. Epub 2020 Jun 26. PMCID: PMC7325854.
[7] Impact of Artificial Intelligence in the field of Health Care,V Ragavi et al 2021 J. Phys.: Conf. Ser. 1831 012006
[8] Guoguang Rong, Arnaldo Mendez, Elie Bou Assi, Bo Zhao, Mohamad Sawan, Artificial Intelligence in Healthcare: Review and Prediction Case Studies, Engineering, Volume 6, Issue 3, 2020, Pages 291-301, ISSN 2095-8099.
[9] "Artificial Intelligence in Healthcare: Past, Present and Future" by Paul Sonnier and Theodora Bloom.
[10] "Artificial Intelligence in Healthcare: A Comprehensive Review" by Shihab Jimaa and M. Shamim Hossain.
[11] "Applications of Artificial Intelligence in Healthcare Delivery" by David B. Hoyt and Shamsi Daneshvari.
[12] "Artificial Intelligence in Medicine: Current Trends and Future Possibilities" by E. Schreiber and S. Mengelkamp.
[13] "Artificial Intelligence in Healthcare: Opportunities and Challenges" by Yasar Khan and Samina Riaz.
[14] "Artificial Intelligence in Healthcare: A Systematic Review" by Rina Alawadhi and Nidhi Gupta.
[15] "Artificial Intelligence in Healthcare: Challenges and Opportunities for Patient-Centered Care" by Anna V. Doudchenko and Julia S. Polak."Artificial Intelligence in Healthcare: A Review of Current Applications and Ethical Implications" by Elinor B. Sullivan and Pilar Ossorio.
[16] Velagaleti, Sesha Bhargavi, Seetha M. GNITS S, and S. V. Raju. "A novel method for trust evaluation in a mobile Ad Hoc network." Inernational Journal of Computer Science and Information Security (IJCSIS) 18.2 (2020).
[17] Velagaleti, Sesha Bhargavi, M. Seetha, and S. Viswanadha Raju. "A Simulation and Analysis Of Secured AODV Protocol in Mobile Ad Hoc Networks." IJRET International Journal of Research in Engineering and Technology (2013).
[18] Zubin Mishra, Birendra Mishra and Oldooz Aloosh, 2020. Impact of Artificial Intelligence on the Healthcare Industry. Trends in Applied Sciences Research, 15: 59-65.
[19] Lee, D.; Yoon, S.N. Application of Artificial Intelligence-Based Technologies in the Healthcare Industry: Opportunities and Challenges. Int. J. Environ. Res. Public Health 2021, 18, 271.
[20] I.Ravi Prakash Reddy, “Intrusion Detection System using Multilayer Neural Networks”, Journal of Advanced Research in Dynamical and Control Systems, Vol-11, No-5, ISSN:1943-023X, April-2019.



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Volume: 11 Issue: VII Month of publication: July 2023

DOI: https://doi.org/10.22214/ijraset.2023.54661

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VII Jul 2023- Available at www.ijraset.com

Publications Information Retrieval and Management System

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Abstract: ***In a world where technology is advancing rapidly, it is a difficult task to manually maintain research profiles in any educational institution. Faculty have to go through an exhaustive ordeal to keep up to pace with the ever-changing demands of the publication committees. Hence, there is a significant need for an interface allowing researchers to easily sort, maintain and download their list of publications with minimum work from the user end. This paper attempts to set up an interface that would use web scraping with selenium and python modules to link a researcher's list of publications present on Google Scholar to a PostgreSQL database and Excel application, allowing them to access and manipulate their research profiles in minimal steps.***
Index Terms: Web Scraping, Selenium, Python, Django, PostgreSQL, Google Scholar, Scopus, WebOfScience.

I. INTRODUCTION

Academic Institutions often face several problems in maintaining their research profiles. In the current scenario, a person has to manually copy and paste the publication details from Google Scholar to Excel sheets or Word documents according to their preferred presentation medium. It often involves the laborious task of manually extracting the papers they have written along with the number of citations, year of publication, publication type, publisher name, and journal/conference/book name. It is coupled with the drudging task of placing this data individually into an excel sheet. In the last year, millions of scientific research papers were published. Considering this massive scale and the underlying problems faced by each academic institution, there is a need for a user-friendly interface that dynamically extracts the publication details from Google Scholar through web scraping and allows the user to view, update and download their data into an excel sheet in a minimum number of steps.

II. LITERATURE SURVEY

The interface is developed entirely in Python using Django Framework. The paper [5] UNO: A Web Application using Django helped in learning the process of creating the interface. It gave complete insight into creating a project using the Django framework. [6] Performance Analysis of PostgreSQL, MySQL, Microsoft SQL Server Systems Based on TPC-H Tests gave analysis on different types of databases that can be used and helped in choosing PostgreSQL which can store huge data and has many features like data integrity, fault-tolerant environment. [1] Web Scraping and Data Acquisition Using Google Scholar gave insights on scraping data from Google Scholar. This paper focused on publication data acquisition from Google Scholar to database and excel sheet using Web Scraping with Beautiful Soup. The details of journals and conferences like impact factor, h-index which are not available on Google Scholar website cannot be extracted. The above paper is not providing searching options for users to extract publications based on faculty name, ISBN number, Publication title etc. The proper scraping method should be needed which allows movement from one page to another page and scrape multiple pages at a time. Scraping using selenium is chosen after analyzing the paper [4] Web Scraping based Product Comparison Model for E-Commerce Websites.

III. PROPOSED SYSTEM

A. Objectives

This paper aims to provide an approach for web scraping concerning Google Scholar, Scopus, and WebOfScience and use the data acquired to build a user-friendly interface allowing users to easily access their publication details.
The above-mentioned aims produce the following objectives:

1) To analyze and extract key HTML links from Google Scholar, Scopus, and WebOfScience.
2) To extract the publication details as per institution requirements.
3) To create a database on PostgreSQL and store the extracted information.
4) To check whether the Published paper is Scopus and WebOfscience indexed.

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VII Jul 2023- Available at www.ijraset.com

5) To retrieve and display the stored information to the user with comfortable choices.

The long-term goal of this paper is to provide the institutions with a user-friendly interface that would minimize the time it would take them to complete these tasks.

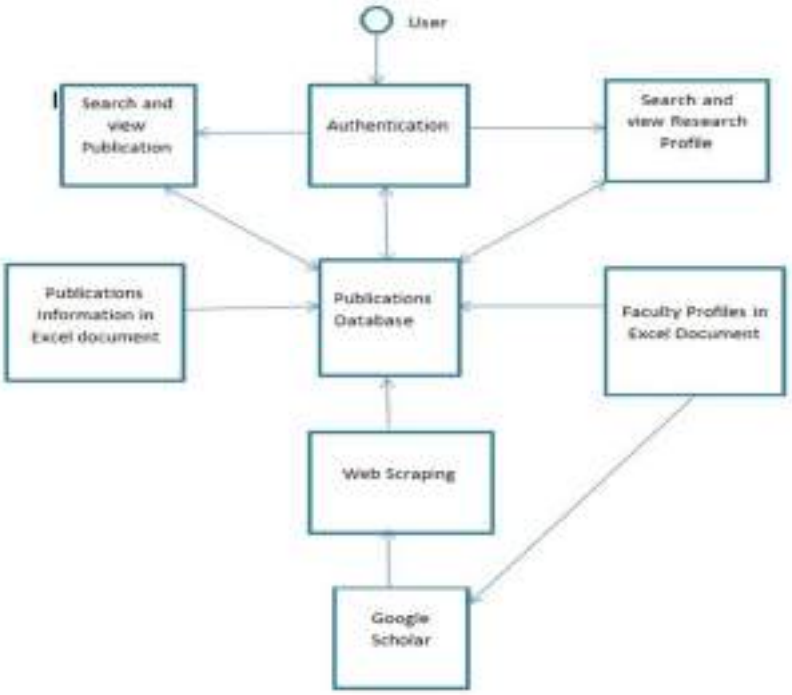


Fig-1 System Architecture

B. Methodology And Implementation

The following methodology was adopted in designing this interface.

1) Firstly, we need to store the URLs of different authors in an external file like an excel sheet, so that the URL of the page has to be accessed to fetch the details from Google Scholar.

2) The Google Scholar page which gives the list of articles that has been written by a particular author has basic HTML architecture. Web Scraping is the process of extracting information from web pages. Python provides simple methods to scrape any page.

The following interface was created in the following fragments:

a) The interface was created using advanced python (Django framework) and PostgreSQL database.

b) The first step is to have python installed in the system and it should have the following python modules installed in it – Selenium, CSV, requests, and Django. If not preinstalled user can install it using pip install command. Install the latest version of PostgreSQL. To use the PostgreSQL database update the settings.py file.

Fig 2 PostgreSQL database

c) The next step is to create an excel sheet that contains the faculty ids and their respective Google scholar URLs in an indexed manner which can be further used to fetch the URL.

d) Then create a user-friendly interface with HTML, CSS, JavaScript, and Bootstrap.

e) Create a table consisting of attributes with corresponding data types to store scraped publication details in the PostgreSQL database.

f) The next part is to connect to the database by registering the table in the models.py file.

```
class login_db(models.Model):
    username = models.CharField(max_length=15, primary_key=True)
    password = models.CharField(max_length=8)
    def __str__(self):
        return str(self.username)

class author_ids(models.Model):
    faculty_id = models.ForeignKey(login_db, on_delete=models.CASCADE)
    author_id = models.CharField(max_length=25, null=True, unique=True)

class publication(models.Model):
    faculty_id = models.ForeignKey(login_db, on_delete=models.CASCADE)
    faculty_name = models.CharField(max_length=50)
    title = models.CharField(max_length=100)
    authors = models.CharField(max_length=200, default="-")
    publication_type = models.CharField(max_length=10, default="-")
    name = models.CharField(max_length=150, default="-")
    publisher_name = models.CharField(max_length=100, default="-")
    published_yr = models.CharField(max_length=4, default="-")
    issn_no = models.CharField(max_length=15, default="--")
    impact_factor = models.FloatField(default=0)
    h_index = models.IntegerField(default=0)
    citations = models.IntegerField(default=0)
    Scopus = models.IntegerField(default=0)
    WebOfScience = models.IntegerField(default=0)
```

Fig 3 Publications table creation in Models.py

g) Using the selenium module, a chrome web driver is created to scrape the specific URL and simple methods can be used to extract the required details.

h) Then the PostgreSQL commands have to be written to insert the extracted details.

i) Finally check the output compatibility with the database table. This completes the creation of the interface.

[row] bigint	faculty_id_id character varying (15)	faculty_name character varying (50)	title character varying (200)
1	FA1207	sesha bhargavi Velagaleti	A hybrid secure routing scheme for MANETS
2	FA1207	sesha bhargavi Velagaleti	A trust based secure routing scheme for MANETS
3	FA1207	sesha bhargavi Velagaleti	Detection of Multiple Malicious Nodes in MANETS in a Single Query
4	FA1207	sesha bhargavi Velagaleti	Enhance safety and security system for children in school campus by using wearable senso
5	FA1207	sesha bhargavi Velagaleti	Challenges in handling imbalanced big data: a survey
6	FA1207	sesha bhargavi Velagaleti	A Simulation And Analysis Of Secured S-DSR Protocol In Mobile Ad Hoc Networks
7	FA1207	sesha bhargavi Velagaleti	A novel method for trust evaluation in a mobile Ad Hoc network
8	FA1207	sesha bhargavi Velagaleti	A Simulation and Analysis Of Secured AODV Protocol in Mobile Ad Hoc Networks
9	FA1207	sesha bhargavi Velagaleti	Recommendation Based P2P File Sharing on Disconnected MANET
10	FA1207	sesha bhargavi Velagaleti	unreliable image material screening with contrast enhancement
11	FA1207	sesha bhargavi Velagaleti	Privacy Preserving and fully Anonymous Protocols for Profile matching in Mobile Social Net
12	FA1207	sesha bhargavi Velagaleti	A simulation and analysis of secured DSR protocol in mobile Ad hoc networks

rows: 124 of 124 Query complete 00:00:00.402 Ln 1, Col 1

Fig 4 Acquisition in PostgreSQL database

The programming language employed for the stated objective was HTML, CSS, JavaScript, and Bootstrap at the front end and python (Django Framework) at the back end. The back-end programming language was chosen as python because it is rich in a set of modules.

These modules made it easier to provide interfaces between the program and the Google scholar web page, the interface and the destination of the results i.e. the PostgreSQL database and the Excel sheet. Furthermore, it reduced the size of the code and helped in faster outputs with efficient results. Python also provides in-built functions for data acquisition directly from the web page. Bootstrap made a simple and user-friendly interface for input purposes. Due to these advantages which the above technologies offer, it was the go-to choice for us to make this interface. The following interface was completely built on the VSCode which can be downloaded from the code.visualstudio.com.

The platform on which the whole interface works is Windows 10 and Windows 11. The results and outcomes were stored in the PostgreSQL database and the user can download them as an Excel sheet if required. VSCode is a very simple platform for writing python code and it provides various extensions to make the tasks easier. Django is a high-level Python web framework that helps in developing secure and maintainable websites. Django takes care of much of the hassle of web development, so we just focused on writing our app. PostgreSQL comes with many features which help developers build applications, administrators protect data integrity and build fault-tolerant environments, and helps to manage data no matter how big or small the dataset. Overall, all these platforms were chosen for better connectivity.

IV. RESULTS

124 Publications Found

PUBLICATIONS

FACULTY_ID	FACULTY_NAME	TITLE	AUTHORS	PUBLICATION TYPE	NAME	PUBLISHER	PUBLISHED YEAR	ISSN	IMPACT FACTOR	CITATIONS	SCOPUS	WEB OF SCIENCE
FA1201	Dr Ravi Prakash Reddy	A Literature Survey And Comprehensive Study Of Intrusion Detection	Sravan Kumar Jonnalagadda, Ravi Prakash Reddy	-	-	-	2013	--	0.0	15	0	0
FA1201	Dr Ravi Prakash Reddy	Study And Comparison Of Non-Traditional Cloud Storage Services For High Load Text Data	L Srinivasa Rao, I Raviprakash Reddy	CONFERENCE	Proceedings Of First International Conference On Information And Communication Technology For Intelligent Systems: Volume 2	Springer International Publishing	2016	ISBN:978-3-319-30927-9	0.0	2	1	0
FA1201	Dr Ravi Prakash Reddy	Exploring The Dichotomy On Opportunities And Challenges Of Smart Technologies In Healthcare Systems	S Prabavathy, I Ravi Prakash Reddy	-	-	Academic Press	2022	--	0.0	0	1	0
FA1201	Dr Ravi Prakash Reddy	An Efficient Intrusion Detection System With Convolutional Neural Network	V Maheshwar Reddy, I Ravi Prakash Reddy, K Adi Narayana Reddy	CONFERENCE	Advances In Computational Intelligence And Informatics: Proceedings Of ICACII 2019	Springer Singapore	2020	ISBN:978-981-15-3338-9	0.0	1	1	0

Fig 5 List of publications

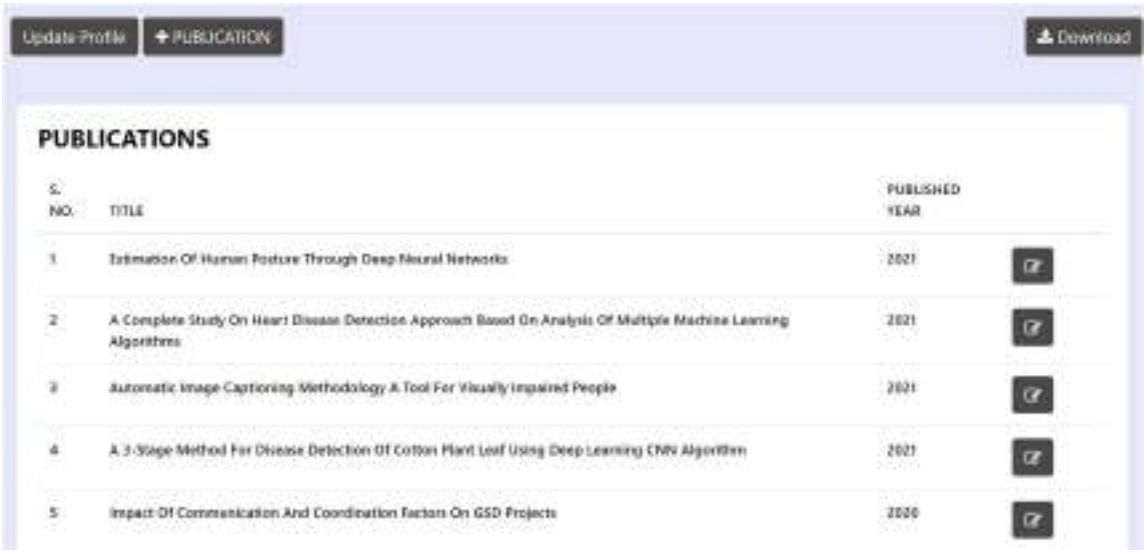


Fig 6 Profile page

Fig 7 Adding new publication

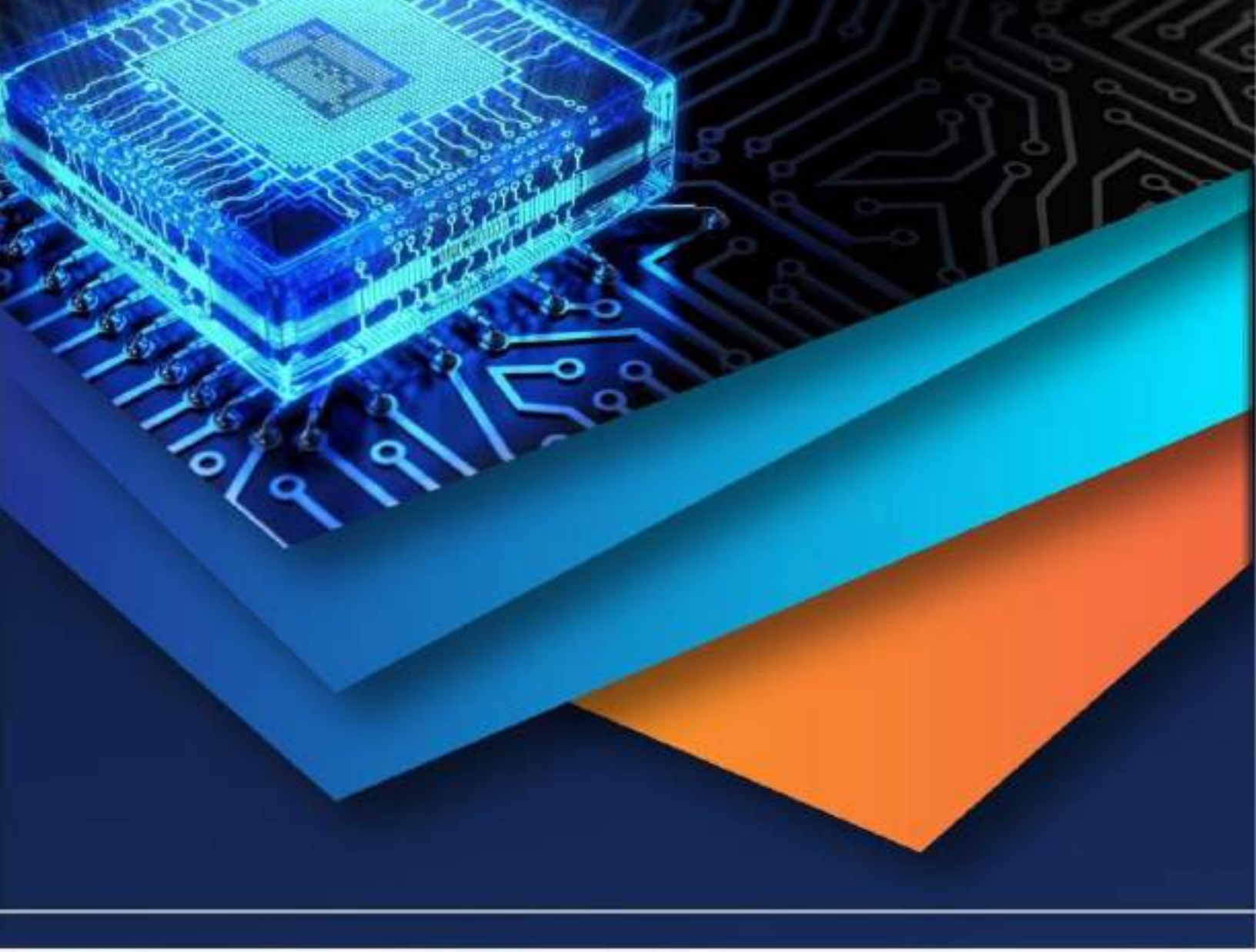
Fig 8 Summary Report

V. CONCLUSIONS & FUTURE WORK

The work as of now uses an excel sheet that stores faculty names and URLs referring to their accounts in Google scholar in order to extract the details of the publication, instead development can be made so that publications can be extracted directly using faculty names. This can be done using NLP. NLP allows creating different patterns based on their full name and university name in order to identify all the available Google Scholar accounts of a particular faculty. Then we can even extract publication details of faculty having more than one Google Scholar account. In order to check whether the publication is WebOfScience indexed the faculty ids and author-ids are collected in an excel sheet, instead development can be made so that publications are searched by opening their profiles on the WebOfScience website. An update option is provided so that the profile gets updated with new publications in Google Scholar. Manual adding and editing of publication details are provided to the faculty. As of now ISSN numbers and impact factors are extracted only for IEEE and Springer papers, instead they can be retrieved from all the papers published by various publishers.

REFERENCES

[1] D. PRATIBA, ABHAY M.S., AKHIL DUA, Giridhar K. SHANBHAG, NEEL BHANDARI, UTKARSH SINGH (2022). 'Web Scraping and Data Acquisition Using Google Scholar '. In: 2018 3rd International Conference on Computational Systems and Information Technology for Sustainable Solutions (CSITSS) .
[2] Đorđe Petrović, Ilja Stanišević (2017). 'Web scrapping and storing data in a database, a case study of the used cars market '. In: 2017 25th Telecommunication Forum (TELFOR).
[3] ERDINÇ UZUN (2022). 'A Novel Web Scraping Approach Using the Additional Information Obtained From Web Pages '. In: 2022 IEEE International Conference on Data Science and Information System (ICDSIS).
[4] Harsh Khatter, Dravid, Akshat Sharma, Ajay Kumar Kushwaha (2022). 'Web Scraping based Product Comparison Model for E-Commerce Websites '. In : 2022 IEEE International Conference on Data Science and Information System (ICDSIS).
[5] Ishan Adhikari Bairagi, Anchal Sharma, Bibhas Kumar Rana, Aditya Singh (2022). 'UNO: A Web Application using Django'. In: 2021 3rd International Conference on Advances in Computing, Communication Control and Networking (ICAC3N).
[6] I. S. Vershinin, A. R. Mustafina (2021). 'Performance Analysis of PostgreSQL, MySQL, Microsoft SQL Server Systems Based on TPC-H Tests'. In: 2021 International Russian Automation Conference (RusAutoCon).
[7] Sesha Bhargavi, V., Spandana, T. (2017). Recommendation Based P2P File Sharing on Disconnected MANET. In: Deiva Sundari, P., Dash, S., Das, S., Panigrahi, B. (eds) Proceedings of 2nd International Conference on Intelligent Computing and Applications. Advances in Intelligent Systems and Computing, vol 467. Springer, Singapore. https://doi.org/10.1007/978-981-10-1645-5_18
[8] Velagaleti, Sesha. (2012). Design of A Scheme for Secure Routing in Mobile Ad Hoc Networks. 33-46. 10.5121/csit.2012.2104.
[9] P. L. Sebba, R. T. de Sousa, M. Holanda, A. P. F. Araújo and A. P. B. da Silva(2019). 'Database Administration: A Case Study at Public Defender of the Union in Brazil'. In: 14th Iberian Conf. on Information Systems and Technologies.
[10] [8] Vidhi Singrodia, Anirban Mitra and Subrata Paul (2019). 'A Review on Web Scrapping and its Applications'. In: 2019 International Conference on Computer Communication and Informatics (ICCCI).



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IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VII Month of publication: July 2023

DOI: https://doi.org/10.22214/ijraset.2023.54663

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VII Jul 2023- Available at www.ijraset.com

Quick Witted Security System

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Abstract: In the present era, safety and security are the main concerns. Due to complicated activities, homes are frequently left unattended. Closed-circuit television is typically used by people to protect their houses while they are gone. These systems are unaware of happenings in the surroundings as they just observe without any detection. It requires human interaction to work properly. We propose a Quick-Witted Security System using OpenCV. It includes features like Monitoring the theft, Detecting the noise. System also checks the visitors count and updates in and out count. This system comes with an extra feature of face recognition (Using OpenCV) where it identifies image of known and unknown faces by image processing. This technology is created to offer intelligent security in home and commercial environments.

I. INTRODUCTION

People only want one thing these days, and that is to feel secure and safe. Closed-circuit television, or CCTV, is the most widely utilised security technology. The price to install CCTV varies according to the system's size and intended purpose. The industrial site, hospitals, banks, museums, and jails can all profit from this initiative in a variety of ways, such as reduced theft, employee protection, increased building security, remote monitoring of facilities via smartphones or tablets, and a reduction in attempts by trespassers to enter the institution. Numerous features, including facial recognition, theft monitoring, visitor counts, motion detection, and recording, were developed. We chose the Python programming language because it has a wealth of features that make it easy to create GUI applications and do machine learning and computer vision. The theft detection feature is used to identify what has been taken from the webcam-visible frame. A visitor count feature that can identify when someone enters or leaves the room. Recording feature records the frame which is similar to normal CCTV. Face detection feature detects the face which comes into the frame picture. We also have a different feature that is used to find the motion in a particular desired frame. Because of all these features, this project different from normal CCTV. The Python GUI application Quick Witted Security System employs a webcam and offers a lot of features not seen in standard CCTV. It may be used with any operating system. It includes features like monitoring the theft, detecting the noise. System also checks the visitors count and updates in and out count. This system comes with an extra feature of face recognition (Using OpenCV) where it identifies image of known and unknown faces by given data set

II. LITERATURE SURVEY

1) "A Motion Detection System in Python and Opencv," AUTHORS: S. Parveen and J. Shah,
This article presents the search software that allows us to see the movement of objects or objects. One of the most crucial security elements nowadays is motion detection software, which is generally recognised for its importance. It is used to upgrade already-installed security tools, such as the motion sensor lights in security cameras for both indoor and outdoor use. One of the most popular motion detecting systems is a security camera [1]. Now, voice recorders are indispensable for better protection.

2) "Face Detection and Recognition Using OpenCV,"
AUTHORS: M. Khan, S. Chakraborty, R. Astya and S. Khepra
Facial recognition and image or video recognition are hot topics in biometrics research. Facial recognition in a real-time environment is an exciting and rapidly growing challenge. A framework for application authentication using facial recognition. This leads to PCA (Principal Component Analysis) face recognition. Principal component analysis (PCA) is a statistical method based on multivariate analysis.

3) "Face Detection & Face Recognition Using Open Computer Vision Classifies"
AUTHOR:LAHIRU DINALANKARA
Identifying people with photographs has become popular through the mass media. However, it is less sensitive to fingerprints or retinal scans.

In this report, the University of Plymouth's tiny face identification and recognition project for the Visual Perception and Autonomy module is discussed. It demonstrates the OpenCV library's methods and how to use Python to put them into practise. Face detection is done using Haar-Cascades, Eigenfaces, Fisherfaces, and local binary pattern histograms.

III. EXISTING SYSTEM

The surveillance systems now in use are obsolete and ineffective. The majority of them utilise similar functionality. preserving videos for 40–45 days before removing the older ones. Storage concerns are to blame for this. There isn't enough storage to accommodate storing a lot of data. But the majority of the data consists of static pictures of nothing happening. The main negative aspect is this. In typical CCTV systems, over 75% of the footage is pointless still images with nothing happening. Much database storage space might be saved if this data could be automatically found and removed. The amount of video content that can be stored can be multiplied by three. There won't be a noise detection option for the recording.

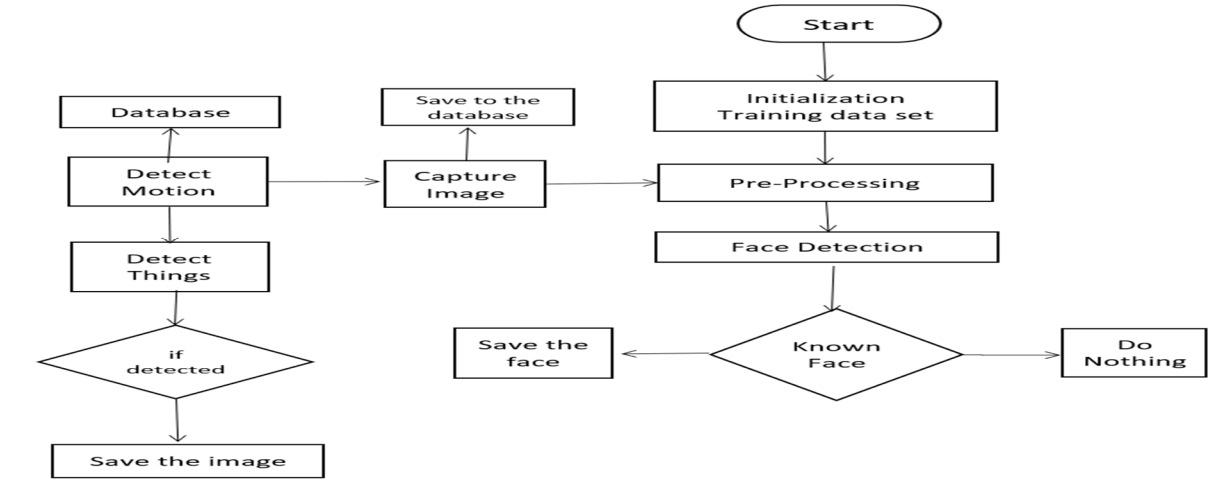
Drawbacks in Existing System

1) The surveillance systems now in use are obsolete and ineffective. The majority of them utilise similar functionality. preserving videos for 40–45 days, after which they are deleted. Storage concerns are to blame for this.
2) There isn't enough storage to accommodate a lot of data. However, the majority of the data are still images showing nothing happening. The main negative aspect is this.
3) In typical CCTV systems, over 75% of the footage is pointless still images with nothing happening. Much database storage space might be saved if this data could be automatically found and removed.
4) The amount of video content that can be stored can be multiplied by three. There won't be a noise detection option for the recording.

IV. PROPOSED SYSTEM

1) For industrial sites, hospitals, banks, museums and jails, a Quick-Witted security camera system can provide a number of advantages, such as (reduced theft, employee protection, building security, remote monitoring of facilities from smartphones or tablets, deterring trespassers from trying to enter the facility).
2) Facial recognition, theft monitoring, visitor counts, motion detection, noise detection, and recording are just a few of the features we developed.A CCTV camera or surveillance system has the drawback of being expensive due to the utilisation of numerous components, including a computer, camera, and cables. To preserve the video, we require a hard disc with a larger storage space. More room is needed for ongoing recording, and more personnel is needed to spot unauthorised activity.
3) However, our system will be far less expensive and have excellent resolution and low power consumption advantages when compared to the Raspberry Pi.
4) Many of the cost-related difficulties that would deter consumers from purchasing remote monitoring technology could be resolved by it.

V. SYSTEM ARCHITECTURE



Below are the different features which can performed by using this minor project:

a) Monitor Feature: This feature is used to determine what was taken from the webcam's captured frames. It keeps track of the cargo and determines which item or things were taken from it by the criminal. SSIM is used to assess how similar two provided photos are to one another. Since SSIM has been a part of technology since 2004, there are a lot of documents that explain its basic principles, but few of them delve into great detail because SSIM is frequently used as a fallback and is thus well suited for gradient applications.

The Structural Similarity Index (SSIM) metric extracts 3 key *features* from an image:

- *Luminance, Contrast, Structure*

These three features are used as the basis for comparing the two photos.The Structural Similarity Index, which ranges in value from -1 to +1, is calculated using this system between two provided images. A number of +1 denotes that the two photographs are identical or extremely similar, whereas a value of -1 denotes that the two images are highly dissimilar. These numbers are frequently changed to fall between [0, 1], where the extremes have the same meaning.

Luminance: Averaging across all of the pixel data yields the luminance value. Its symbol is (Mu), and the formula is shown below.

Structure: A condensed formula is used to perform the structural comparison (more on that later), but in essentially, we divide the input signal by its standard deviation to produce a result with a unit standard deviation, allowing for a more reliable comparison.

Fortunately, we don't need to duplicate all of these mathematical calculations in Python because the skimage package in Python includes built-in functionality that takes care of all of these duties for us.Just two of the previous frames or images that we took need to be fed into the system, so we just feed them in and its gives us out the masked image with score

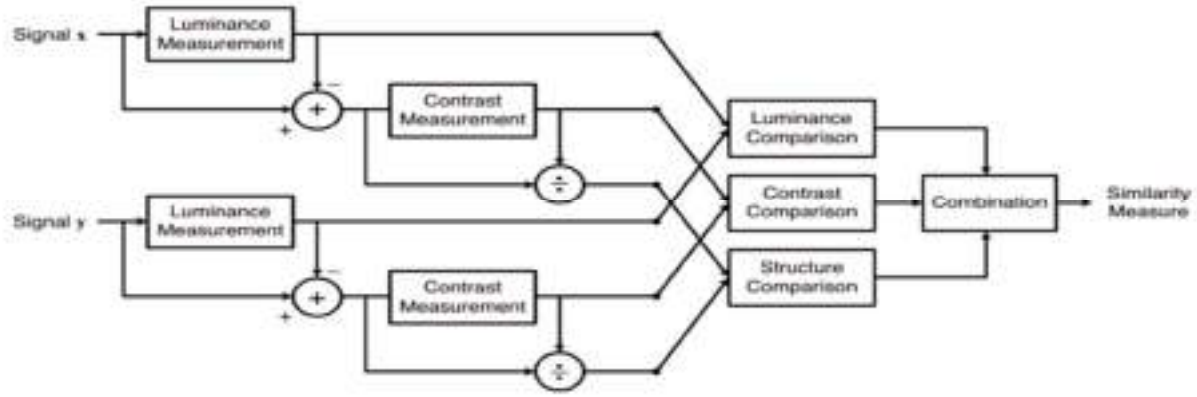
$$\mu_x = \frac{1}{N}\sum_{i=1}^{N} x_i. \qquad (2)$$

The luminance comparison function $l(\mathbf{x}, \mathbf{y})$ is then a function of μ_x and μ_y.

$$(\mathbf{x} - \mu_x)/\sigma_x .$$

$$\sigma_x = \left(\frac{1}{N-1}\sum_{i=1}^{N}(x_i - \mu_x)^2\right)^{\frac{1}{2}}. \qquad (4)$$

The contrast comparison $c(\mathbf{x}, \mathbf{y})$ is then the comparison of σ_x and σ_y.

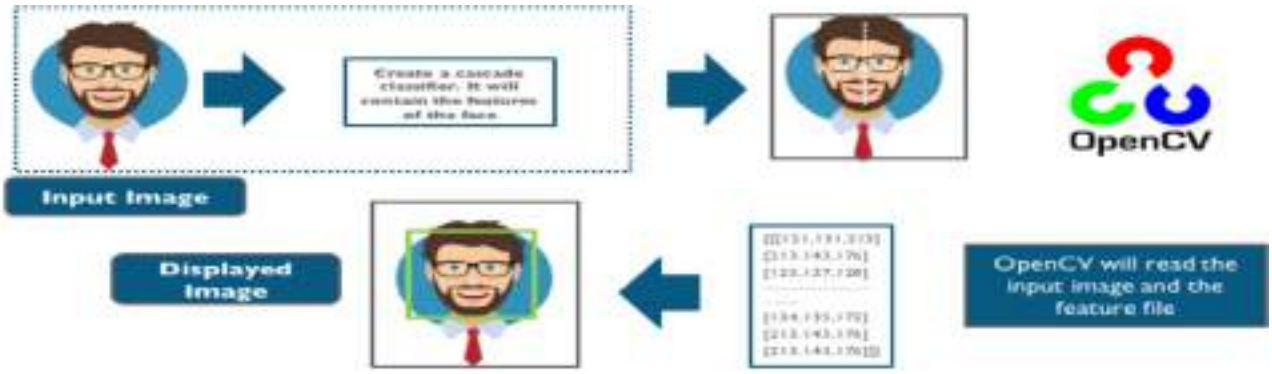


b) Identify the Face feature

The purpose of this function in our small project is to determine whether the individual in the frame is well-known or not. This process takes two steps:

- Recognise the faces in the pictures.
- Using the LBPH face recognizer technique, use the trained model to predict who the individual is.

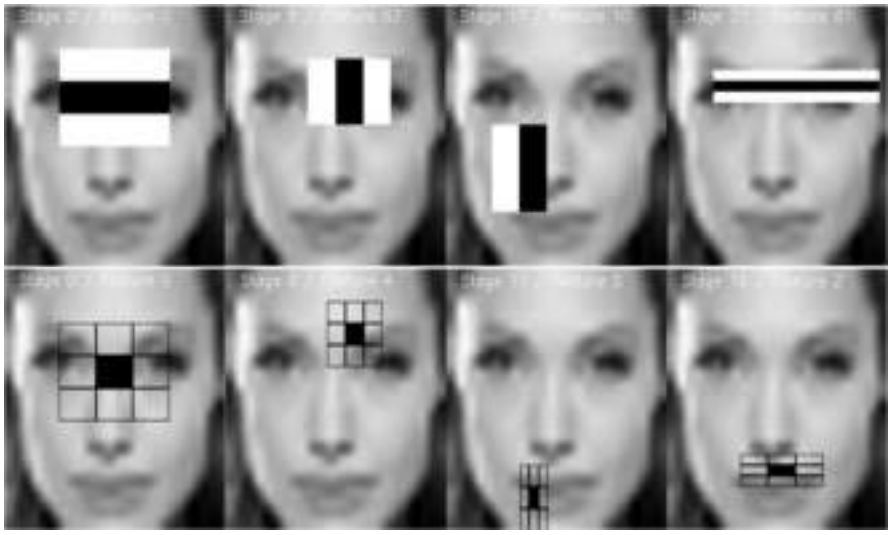
Let's categorise this into the following groups:
Detecting faces in the frames
This is done with Haarcascade classifiers reimplemented in python's openCV module.



Graded classifiers are part of a subset of powered classifiers known as reinforcement learning that use haar-like features. The Adaboost classifier is typically its foundation (as well as additional models like Real Adaboost, Gentle Adaboost, or Logitboost). Hundreds of example photos, both those with and without the objects we want to recognise, are used to train the cascading classifier. Some facets of the human face are visible:

- A slight bridge in the nose compared to the eyes; • Dark eyes compared to the upper jaw area
- The two eyes, mouth, and nose in various locations...

These characteristics are known as Haar features. The method for extracting videos will resemble this:
To identify their presence in the image, Haar features resemble convolution kernels.
To accomplish all of this, we use the cascadeclassifier function that is a built-in feature of the openCV module in Python**.**



c) Visitors In Room Detection

This feature has the power to regulate who is allowed to enter and exit the space. In order to make it function, take these steps:

- noticed the noise in the frame in step one.
- If a movement occurs later, it is seen on the left or right side.
- Lastly, it is tested to determine if it passes from left to right or vice versa since it will enter the frame and show that it has caught.

So there is no arithmetic in this particular function. By first seeing the motion, then drawing a rectangle over the sound, and finally checking the controls, it is simple to determine which side the motion is coming from. If the content is on the left, it is categorised as such. movement.

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
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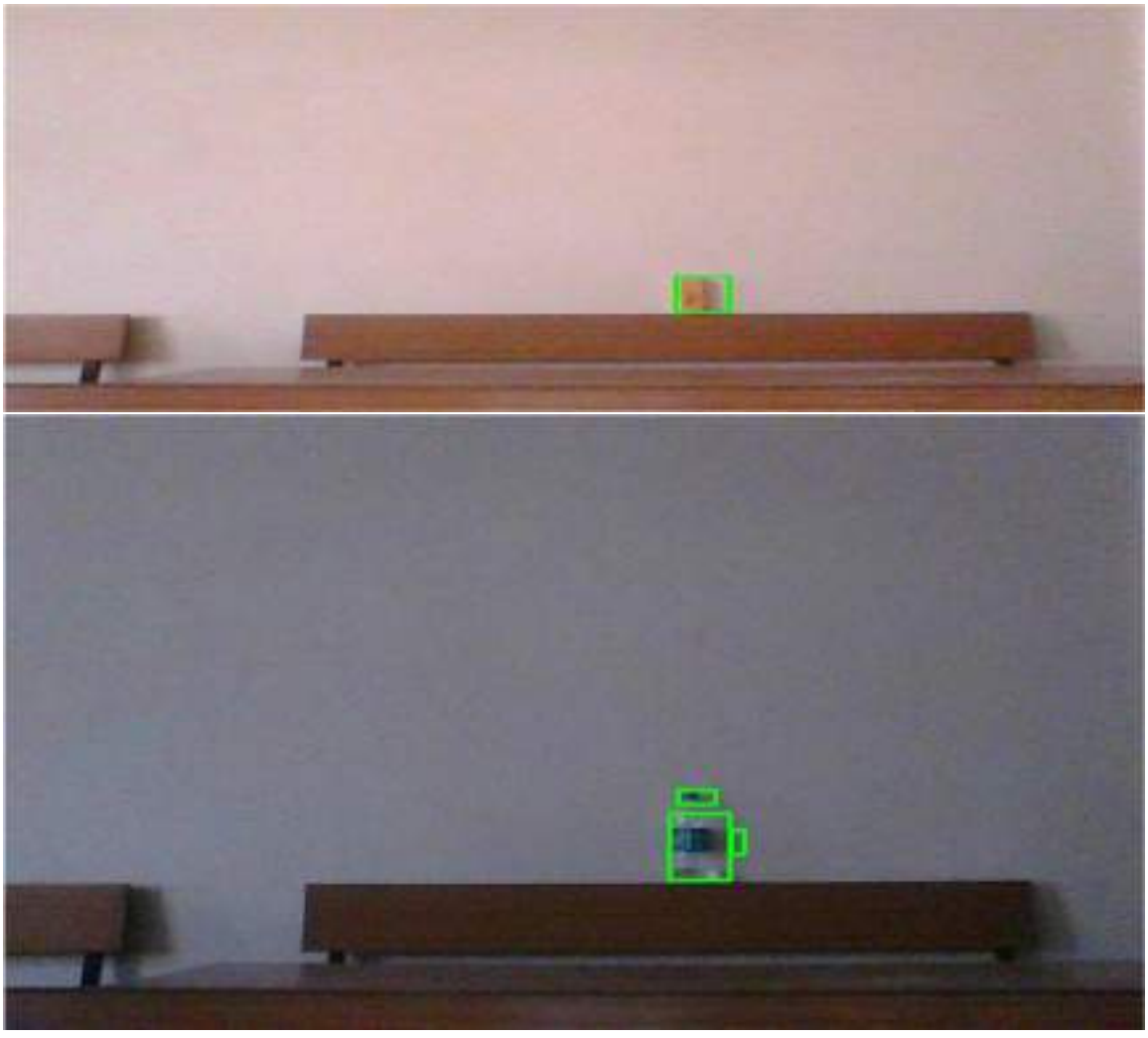
VI. RESULTS AND CONCLUSION

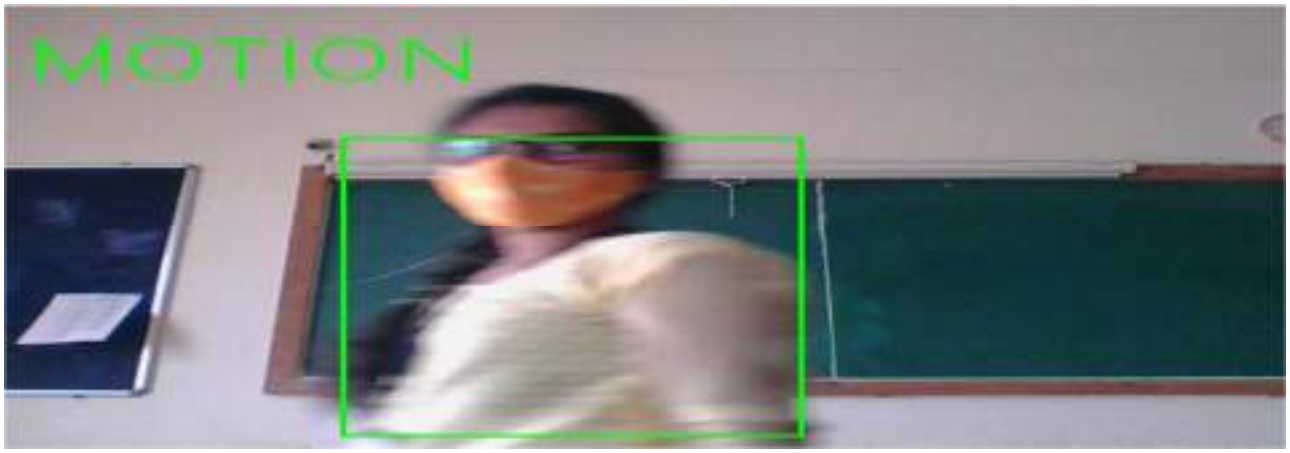
GUI

VII. FEATURES

A. Theft Detection



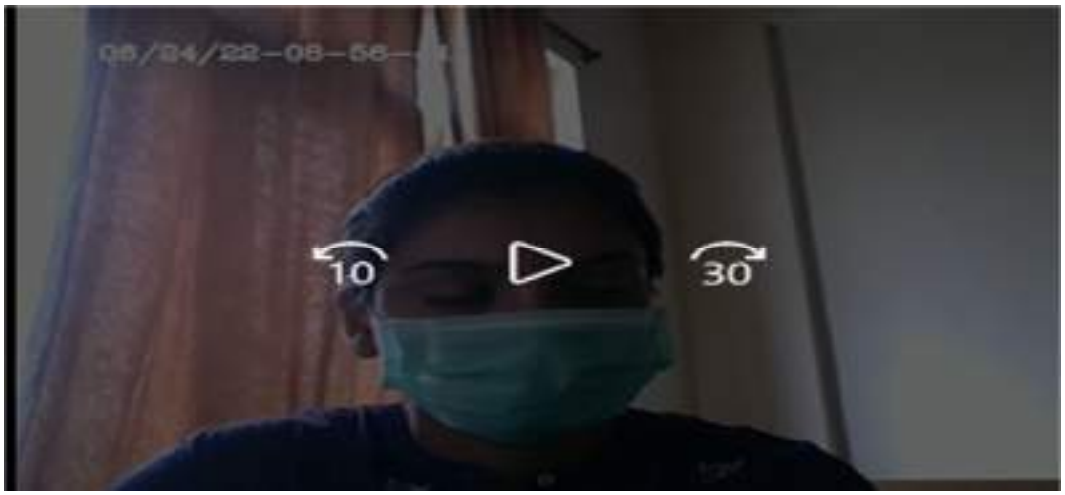
B. Motion



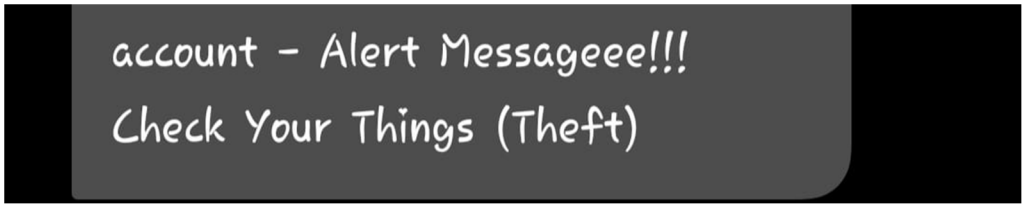
C. Motion In Frame

D. Noise Detection

E. Recording



F. Message Alert



VIII. FUTURE SCOPE

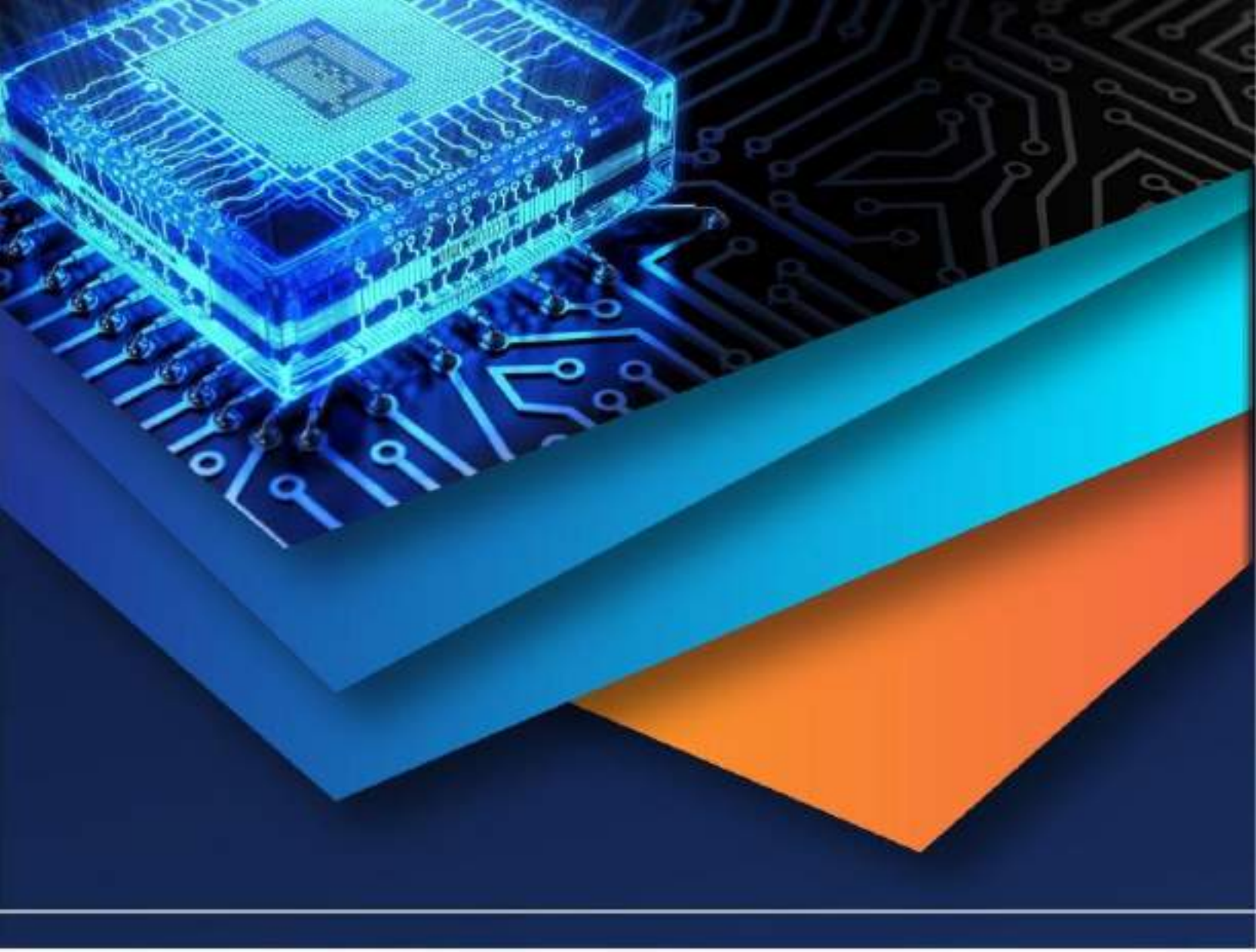
Based on technological advancements, such as the capacity to combine tiny size and high processing power, this project has a wide range of applications. The project's future exercises are listed below.

1) Building mobile CCTV.
2) Including built-in night vision.
3) Including deep learning if you have a powerful device.
4) Additional features, such as the ability to detect deadly weapons, accidents, fires, and standalone devices.

The project would have a considerably wider scope if DL support were included because we would be able to incorporate much more functionality.

REFERENCES

[1] S. Parveen and J. Shah, "A Motion Detection System in Python and Opencv," 2021 Third International Conference on Intelligent Communication Technologies and Virtual Mobile Networks (ICICV), 2021, pp. 1378-1382, doi: 10.1109/ICICV50876.2021.9388404.
[2] M. Khan, S. Chakraborty, R. Astya and S. Khepra, "Face Detection and Recognition Using OpenCV," 2019 International Conference on Computing, Communication, and Intelligent Systems (ICCCIS), 2019, pp. 116-119, doi: 10.1109/ICCCIS48478.2019.8974493.
[3] I.Ravi Prakash Reddy, "Trust Rate based Cooperative Neighbor Selection for Reliable Data Transmission in Mobile Adhoc Networks", International Journal of Research, ISSN No:2236-6124, IJR Journal, Vol-VII, Issue-X, October-2018.
[4] Hasan, Ramadan & Sallow, Amira. (2021). Face Detection and Recognition Using OpenCV. Journal of Soft Computing and Data Mining. 2. 10.30880/jscdm.2021.02.02.008.
[5] Sesha Bhargavi, V., Spandana, T. (2017). Recommendation Based P2P File Sharing on Disconnected MANET. In: Deiva Sundari, P., Dash, S., Das, S., Panigrahi, B. (eds) Proceedings of 2nd International Conference on Intelligent Computing and Applications. Advances in Intelligent Systems and Computing, vol 467. Springer, Singapore. https://doi.org/10.1007/978-981-10-1645-5_18
[6] Velagaleti, Sesha & Seetha, M. & Somalaraju, Viswanadha raju. (2013). A Simulation and analysis of DSR Protocol in Mobile ad hoc Networks. INTERNATIONAL JOURNAL OF MANAGEMENT & INFORMATION TECHNOLOGY. 8. 1279-1286. 10.24297/ijmit.v8i1.692.



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Volume: 11 Issue: VII Month of publication: July 2023

DOI: https://doi.org/10.22214/ijraset.2023.54664

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
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Supervise and Apprehension of Students Presence using RFID

A.Vijaya Krishna[1], S. Ramacharan[2], C. Sudhakar Reddy[3], B. Vijay Kumar[4]
[1, 4]Assistant Professor, [2]Professor, [3]Associate Professor, Department of Information Technology, G Narayanamma Institute of Technology and Science, Hyderabad, India

Abstract: ***Student attendance is now recognised as one of the most important variables or issues that represent academic accomplishments and performance at any university, as opposed to more time-consuming and wasteful methods. Differing programmed distinguishing proof advances have been more stylish, for example, the wireless technology like Radio Frequency Identification (RFID). A broad look into and a few applications are delivered for exploiting this innovation. An RFID tag or signature is used to send data from a remote innovation known as RFID as the reason for recognising an item via radio waves to RFID for each user. The present investigation centers around proposing a RFID based Attendance Management System (AMS) and furthermore data administration framework for a scholastic area by utilizing RFID innovation notwithstanding the programmable Logic Circuit, (for example, Raspberry Pi), and PHP Server.***
Keywords: RFID, Raspberry Pi, Attendance, Students, Server.

I. INTRODUCTION

Students are required to sign and write their names on the attendance roster when using a manual method of documenting attendance. Problems with this strategy include unnecessary time waste and inadequate documentation, such as students neglecting to sign the attendance sheet or writing on behalf of absent classmates. RFID technology is used to construct an automated system that eliminates the deficiencies of the human attendance method. Various factors may prevent some students from attending study hall, causing them to perform inadequately on exams. Therefore, in order to improve academic performance, it is essential to monitor homeroom attendance. Students must have attended at least 60 percent of class time in order to take the course examination. The manual strategy for gauging participation in schools and universities in instructive foundations throughout the years has become a thing of concern. In the manual technique for gauging participation understudies are required to record their names and sign the participation list. The issues related with this strategy differ from pointless time wastage to ill-advised documentation, understudies neglecting to put down their names on the participation rundown or understudies composing in the interest of different understudies that are missing from the class. The RFID based programmed participation framework incorporates the RFID per user, RFID labels, PC framework, and host framework application. The RFID based programmed participation framework is utilized for naturally taking understudies' participation and offering cautioning to understudies on instances of low participation which could corrupt the exhibition of understudy or keep the understudy. The RFID based programmed participation framework is utilized for naturally taking understudies' participation and offering cautioning to understudies on instances of low participation which could corrupt the exhibition of understudy or keep the understudy from taking the course assessment, if the class participation rate is under 60.

II. EXISTING SYSTEM

Gauging participation by calling names or marking on paper is very time-taking and shaky, and furthermore this strategy is wasteful. This at times have come in basic structures like move calls, while in all the more fascinating cases, can be positions like astonishment tests, additional credit in class, and so forth. These methodologies are anyway tedious, upsetting and difficult on the grounds that the important talk time that could some way or another been utilized for addresses is devoted to understudy participation taking and some of the time not exact. Notwithstanding every one of these difficulties, the attendances are recorded physically by the coach and accordingly it might prompt individual blunders.

Disadvantages of existing model:

1) More tedious
2) Lack of security
3) Human blunder
4) Lack of development

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
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III. PROPOSED SYSTEM

In this System, every understudy is allotted a RFID Tag that has an extraordinary ID. At whatever point the Student enters the school premises, he will swipe that card close to the Reader. The Reader will peruse the Student's Information and on the off chance that that data is effectively coordinated, at that point the understudy is allowed to enter. After some time, message will get showed on LCD demonstrating that the participation has been taken.

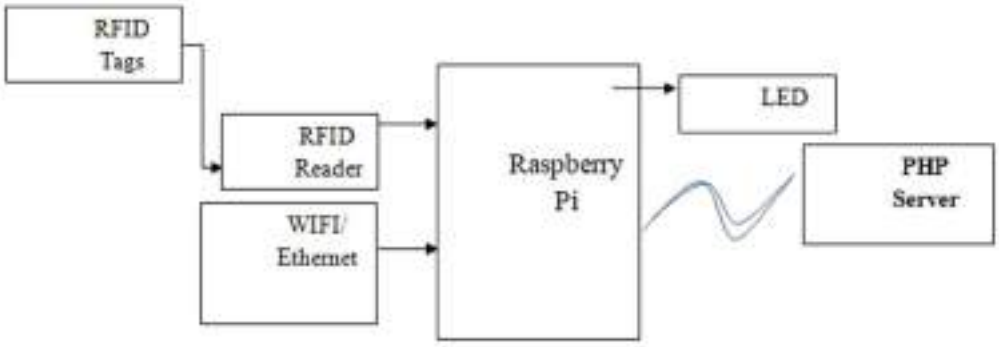


Figure 1: Block Diagram of a Proposed System

We utilise RFID in our operations. The objective of the Radio Frequency Identification and Detection framework is to promote information transmission via the small device known as the label, which is scanned by an RFID reader, and to process it according to an application's requirements. The data conveyed by a label provides verification of location or identification, as well as additional information about the branded item, such as the purchase date, colour, and price. An RFID device typically consists of a radio receiving wire and a microchip mounted on a substrate.

RFID labels are designed to respond to RFID devices' transmitted signals. This enables label reading from a distance, in contrast to different types of verification innovation. A RFID (Radio-recurrence ID and location) peruser is a gadget which is utilized to speak with RFID labels by accepting and transmitting signals. These signs utilize radio waves for remote correspondence. RFID tag is applied to items, people or creatures to distinguish and follow them. The ID is done through an interesting sequential number.

This subject covers the interfacing of a latent RFID framework with microcontroller. The code of RFID tag is likewise shown on a LCD interface. The free source code for the program is accessible in C. A RFID module fundamentally comprises of two sections, in particular, a tag and a peruser. A common RFID framework comprises of a reception apparatus, a handset and a transponder (RF tag). The data (the one of a kind sequential number) to be transmitted is put away in the tag or transponder.

Advantages of proposed system:

1) Smart and secure
2) Easy to access
3) Avoids duplication and errors
4) Tracking is easy
5) Less paper work

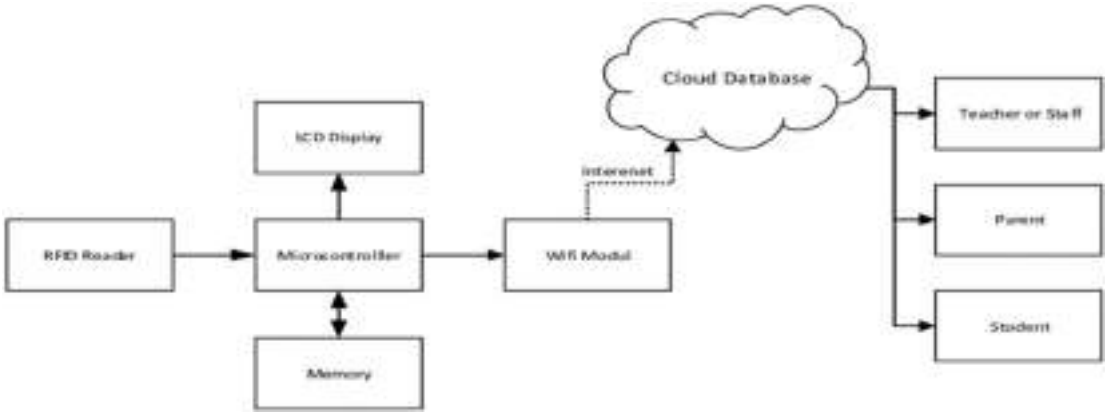


Figure 2: Architecture of Supervise and Apprehension of Student Presence using RFID

IV. HARDWARE IMPLEMENTATION

In our work we uses Raspberry Pi, RFID as Hardware. The Raspberry Pi organisation in the United Kingdom designed and constructed a credit card-sized computer with the intention of teaching elementary software engineering to schools and anyone interested in computer hardware. Three distinct Raspberry Pi board configurations are manufactured by Newark Component 14 (Premier Farnell), RS Components, and Egomania, who are authorised assembly administrators. These businesses sell Raspberry Pis online. Red coloration and the absence of FCC/CE certifications distinguish Egoman's Pi from other Pis, which are only available in China and Taiwan. The apparatus produces the same amount of output overall.

RFID is a tracking technology capable of identifying and validating tags affixed to any object, person, or animal. The generic term for devices that use radio radiation to identify individuals and objects is "radio frequency identification and detection."

LCD (Liquid Crystal Display) technology is used in the displays of scratch pads and other miniature computers.LCD technology, along with gas plasma and LED technology, enables presentations that are substantially thinner than cathode beam tube (CRT) technology. LCD screens consume significantly less power than LED and gas displays because they obscure light rather than emitting it.

V. RESULTS AND DISCUSSION

In our work, we uses Raspbian OS and Python programming Language for developing of this work.

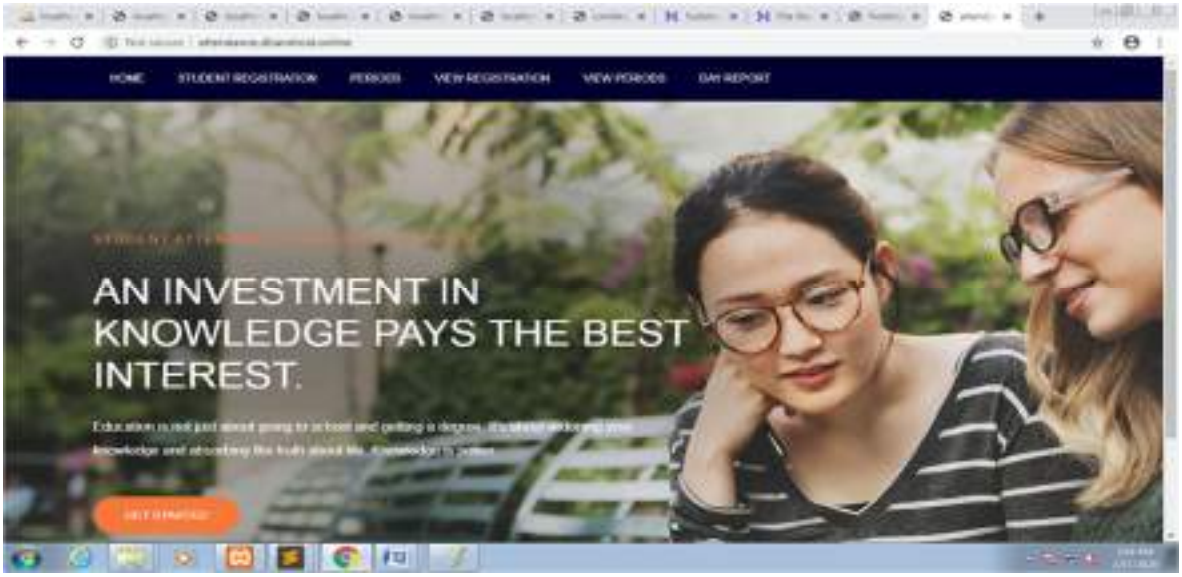


Figure 3: index page

From the above figure shows the diagram and design of website page

Figure 4: Student Registration Page

From the above enrollment page shows how a page looks when the understudy will tap on the understudy enlistment section.

Figure 5: periods Registration Page

From the above figure of times of enlistment page show the name of understudy followed by the classes joined in and their separate branch and their course.

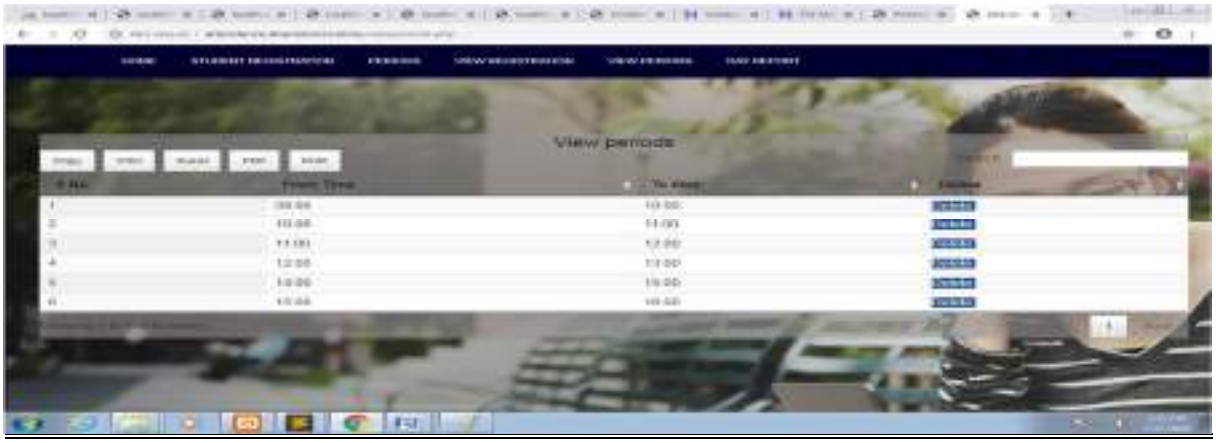


Figure 6: View Registration page

From the above figure of the view enlistment page gives perspective on number of periods and the time allocated starting with one period then onto the next period and here we have picked the 24hour time group.

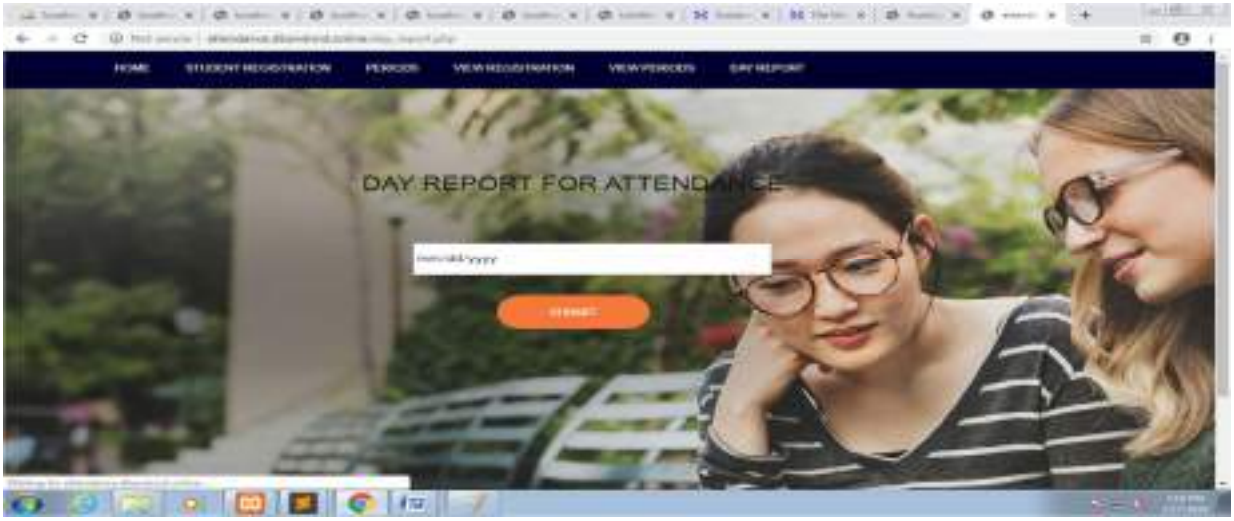


Figure 7: View Periods page

From the above figure of the view time frames page shows the day report of every understudy and when the understudy need to think about their day by day participation they can ready to enter the day, month, year and submit they can ready to know.

Figure 8: Day Report page

From the above figure of the day report page shows the quantity of classes the understudy has joined in and from which timeframe they had present.

VI. CONCLUSION AND FUTURE ENHANCEMENT

An understudy participation and data framework are planned and actualized to deal with understudy's information and give capacities to following understudy participation, analysing the grades of undergraduates and providing information on the schedule, address, and room number, among other information pertaining to undergraduates. In addition, the proposed structure increases staff productivity by eliminating the need for unnecessary documentation and archive data storage space. The progression of the framework's development produced firm support for the executives' framework for a scholastic division employing RFID technology and a microcontroller board with PHP Server. It is without question an effective execution.

Future enhancements could include a web camera that uses image processing to autonomously determine and record a student's presence at a facility. We can add Location tracking with improved technologies to track the location of the students continuously.

REFERENCES

[1] Rajan Patel, Nimisha Patel and Mona Gajjar, “Online Students Attendance Monitoring System in Classroom Using Radio Frequency Identification Technology: A Proposed System Framework”, International Journal of Emerging Technology and Advanced Engineering, ISSN 2250-2459, Volume 2, Issue 2, pp. 61- 66 February 2012

[2] Ch.S.R. Gowri V. Kiran and G. Rama Krishna, “Automated Intelligence System for Attendance Monitoring with Open CVBased on Internet of Things (IOT)”, International Journal of Science, Engineering and Technology Research (IJSETR), Volume 5, Issue 4, pp. 905-913 April 2016

[3] Tabassam Nawaz, Amber Assad and Zunaira Khalil, “Fully Automated Attendance Record System using Template Matching Technique”, International Journal of Engineering & Technology IJET-IJENS Vol.10 Issue.03 pp.57-64, 2010

[4] Tabassam Nawaz, Saim Pervaiz, Arash Korrani and Azhar-UD-Din, “Development of Academic Attendance Monitoring System Using Fingerprint Identification”, IJCSNS International Journal of Computer Science and Network Security, VOL.9, No.5, pp.164-168 May 2009

[5] Muhammad Fuzail, Hafiz Muhammad Fahad Nouman, Muhammad Omer Mushtaq, Banish Raza, Awaits Tayyab and Muhammad Waqas Talib, “Face Detection System for Attendance of Class Students”, International Journal of Innovative Research in Computer and Communication Engineering, Vol. 5, Issue 3, pp.6- 10 March 2017

[6] B. Mani Kumar, Praveen Kumar and Rangareddy, “RFID based Attendance monitoring system Using IOT with TI CC3200 Launchpad”, International Journal & Magazine of Engineering, Technology, Management and Research, Volume No.2, Issue No. 7, pp.1465-1467, 2015

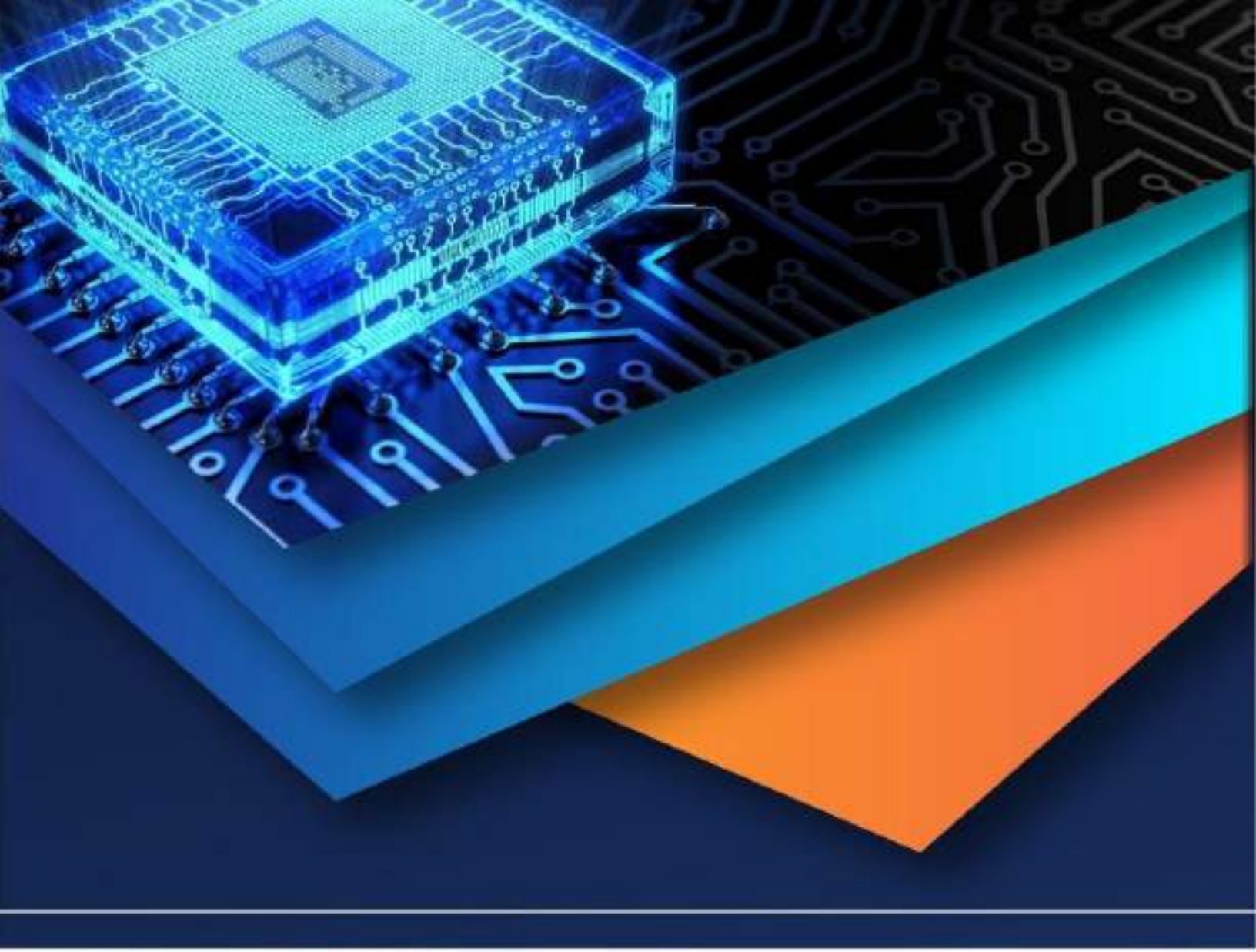
[7] V. S. Bhargavi and S. V. Raju, "Enhancing security in MANETS through trust-aware routing," 2016 International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET), Chennai, India, 2016, pp. 1940-1943, doi: 10.1109/WiSPNET.2016.7566481.

[8] Nirmalya Kar, Mrinal Kanti Debbarma, Ashim Saha, and Dwijen Rudra Pal “Study of Implementing Automated Attendance System Using Face Recognition Technique”, International Journal of Computer and Communication Engineering, Vol. 1, No. 2, PP.100- 103, July 2012.

[9] Velagaleti, Sesha. (2012). Design of A Scheme for Secure Routing in Mobile Ad Hoc Networks. 33-46. 10.5121/csit.2012.2104.

[10] Yongqiang Zhang and Ji Liu, “Wireless Fingerprint Attendance Management System”, in Proceedings of the 2007 WSEAS International Conference on Computer Engineering and Applications, Gold Coast, Australia, pp.451-455, January 17-19, 2007

[11] Muhammad Faiz Mokhtar1, Chi Wan Shamsul Bahri C.W. Ahmad and Khirulnizam Abd Rahman, “ E-Attendances system (EAS) using Bluetooth”, in Proceeding of the 3rd International Conference on Artificial Intelligence and Computer Science (AICS2015), MALAYSIA, pp.252-261, 12 -13 October 2015.



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INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Wireless Personal Communications
https://doi.org/10.1007/s11277-023-10513-1

Energy Aware Priority Based Event Routing Protocol Using TDMA Communication for Internet of Things

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Accepted: 17 May 2023

Abstract
The Internet of Things (IoT) is a well-known platform for analysing data generated by environmental sensors and instruments. Transporting data from IoT sensor nodes to the cloud is time-consuming due to congestion and energy consumption in IoT networks. As a consequence, in this paper the Priority-Based Event Routing Protocol using TDMA channel to forward the packets in different network traffic constraints. In our proposed work we categorize the normal and priority packet by two properties such as transmission rate and priority then we can uses the Time slot based mechanism TDMA protocol to forward the packet in the network based on their time intervals to avoid the congestion and increase the packet forwarding ratio. This approach will increase the network robustness and reduces the congestion. In our work we uses the Qualnet Simulator, the experiments showed that the proposed technique performs more and enhance the performance in IoT networks with saving energy consumption by 19.696%, reduces routing overhead by 77%, and reduces end-to-end delay by 50.6% with respect to existing ones.

Keywords Internet of things · Routing protocols · Energy · Congestion · Communications

1 Introduction

The most recent development in communication technology is IoT, where it is collection of RFID Tags or Sensor nodes [1]. The communication between the sensor nodes are carried through the Wifi, LTE, Wimax and Bluetooth [2-4]. The sensor nodes are having limited storage, computation and battery power and they can communicate with in shorter distances. IoT devices need to be smart in handling, communicating and transmitting about the occurred event in the environment [5, 6]. The event manager in the IoT environment handles the middleware to publish or subscribe events and it acts as the coordinator between the sensor nodes. Many routing protocols are developed to address the communication in IoT [7]. Most of them are concentrated on IEEE 802.15.4 and extended IPV6 standards and it is not preferable for small sensor networks. In the recent studies [8-10], the researchers are concentrated on developing the clustering techniques for effective routing in IoT nodes. The most common issue in the IoT network is event based routing. The events in the IoT

Extended author information available on the last page of the article

need to be delivered instantaneously to achieve the requirements of the applications. Event based routing allows the devices to concentrate on particular events. If any device found the event triggering, it notifies to the subscribers who are interested in particular event.

The following is a list of significant contributions made by the study:

- Creating an event-routing-first approach in IoT systems for node traffic, latency and energy consumption may be reduced
- In the RPL protocol, node selection for the purpose of a parent node to avoid excessive branching and save time and energy.
- Improving IoT network's optimal packet transmission speed efficiency.

The remainder of the work is organised in the following manner. The second portion focuses on recent research in priority routing and energy-aware routing. Section 3 goes into the energy notion of the IoT Network. The priority order that is suggested for an effective routing method is explained in 4. Segment 5 discusses the experimental analysis. Finally, Segment 6 brings the investigation to an end.

2 Literature Survey

This section deals with the related work regarding the energy efficient and priority based routing protocols in the IoT environment.

2.1 Energy Efficient Models

The authors of [11] created a method for calculating data centre electricity consumption in a cloud environment that is energy-conscious. The effectiveness of the suggested approach was evaluated using the linear programming model. [12] offers the ant colony technique for IoT routing. This method is useful for determining the shortest path between two places. The authors developed the energy-aware AODV protocol for vehicle ad-hoc networks in [13]. By joining the vehicles that are close to one another, this technique finds the fastest path. To cut down on data centres' energy usage, the authors of [14] developed an autonomous cloud architecture. With the goal of lowering network latency, eliminating duplicate packets, and extending network lifetime, the authors of [15] established the content-centric routing strategy for content information flow and data integration.

In [16], The multi-objective routing technique for the energy-aware IoT model was created by the authors. Node lifetime, distance, and energy consumption are three factors taken into account while evaluating its performance. The authors developed the C-means clustering approach to help the IoT network have fewer nodes. The process performed better than heuristic strategies, according to the test findings. In [17], the authors developed the fuzzy approach for clustering in IoT networks. This mechanism used the immune system model for routing to minimize the nodes energy consumption. This method proved that the jitter ratio and packet delivery ratio is less compared against the optimization algorithms. In [18], the authors proposed the markov model for routing in vehicular IoT networks. The probabilistic graph is used to help the communication between the nodes for minimizing the energy and delay.

2.2 Priority Based Routing Protocols

The routing protocols in WSNs are broadly classified as centralized and distributed. For instance, in [19], the authors developed the merger tree mechanism for sensor networks which is a centralized process. This mechanism improves the network lifetime of the WSN. In [20], the authors developed the data aggregation model for minimizing the energy consumption it the WSNs. It uses the distributed clustering process for reducing the packet overhead. Furthermore, DAG [6] or tree based model [21] require the specific routing mechanism to handle the network dynamically. It is due to that if any network failure or the discharge of crucial IoT nodes occurs, To avoid packet loss, the routing mechanism must update the information to the remaining IoT nodes.

In [22], the authors presented a priority-based and energy-efficient routing method. This technique is based on the routing protocol for low-power and lossy networks (RPL model), which establishes routing through contents. Each network slot uses timing patterns to deliver data to the destination while accounting for network traffic, audio, and image data. In this work, they are more concerned with traffic than with energy consumption.

In [23], the authors presented a Cluster-based Backpressure routing scheme was proposed. It employs an energy load-balancing strategy to improve data transmission reliability and network longevity. Furthermore, this technique will do data aggregation and prevent duplicate data packets. They select the closest cluster head and sink node to save the greatest energy in this work, however they do not focus on forwarding priority packets in emergency situations.

In [24], the authors proposed a Cluster-based Energy-aware Data Aggregation Routing (CEDAR) protocol in the IoT. To overcome these challenges, the fuzzy logic system and the Capuchin Search Algorithm (CapSA) were combined. The proposed hybrid routing algorithm involves two main phases: cluster formation and intra/extra cluster routing. They primarily organise sensor nodes into optimal clusters in the first phase. In the second step, identify the most effective paths between cluster heads and cluster members. In this work, they primarily concentrated on cluster construction and data transport within and between clusters. They fall short, however, in terms of handling congestion in low-powered devices and sending packets in emergency scenarios in the event of unusual events.

By this study we can analyze that there is some gaps and challenges in the Existed works. Many of the researchers are not resolved these issues. They are:

- Delay
- Priority Based Packets Routing
- Congestion
- Packet Loops

In our Proposed work we are working on this challenges to enhance the performance in IoT.

3 Energy Model for IOT

When designing a routing system for an IoT network, energy balance and economy are essential factors. The aim of this research was to develop a node-life-extending, energy-efficient routing method. We explored network heterogeneity to three different degrees based on node initial energy to minimize energy loss. The network's nodes are all in static mode. Ordinary nodes have the least energy, transitional nodes have a medium amount, and super nodes have the most energy on the first level.

In our proposed work we are using the modified version of LEACH protocol. We are able to cluster the nodes using these techniques. Each cluster picks a cluster head to collect data from the member nodes and send it to the sink node. The cluster head is crucial for reducing energy consumption and extending node life as a result. We investigated network heterogeneity at three distinct levels based on node starting energy in order to restrict energy dissipation. The network's nodes are all operating in static mode. The energy level of normal nodes is the lowest, that of intermediate nodes is the middle, and that of advanced nodes is the highest. In this method, we can save the energy of WSNs.

The aggregate energy of the ordinary, transitional, and super nodes is shown in Eqs. 1, 2, and 3.

$$\vartheta_{On} = k\vartheta_0(1 - a - b) \tag{1}$$

$$\vartheta_{Tn} = kb\vartheta_0(1 + B) \tag{2}$$

$$\vartheta_{Sn} = ka\vartheta_0(1 + A) \tag{3}$$

An ordinary node is shown with ϑ_{On}, for Transitional nodes it has an energy of ϑ_{Tn}, and for advanced nodes is ϑ_{Sn}. The energy of the network's Super nodes are denoted by the symbol a, and their energy leveling is given the letter A. In the network, b represents the Transitional nodes and their energy leveling is specified as $B=A/2$. k denotes the node size of each kind.

The overall energy usage of the entire network is listed.

$$\begin{aligned}\vartheta_{tot} &= k\vartheta_0(1 - a - b) + kb\vartheta_0(1 + B) + ka\vartheta_0(1 + A)\\ &= k\vartheta_0(1 + aA + bB)\end{aligned} \tag{4}$$

We investigate the SEP and LEACH protocol models for CH election. The likelihood of being chosen as the cluster head determines the threshold value for each type of node. Assume S1, S2, and S3 are sets of nodes that belong to each category but were not selected as cluster heads. Cluster heads should be chosen from the nodes below.

For O_n:

$$P_{On} = \frac{P}{1 + aA + bB} \tag{5}$$

$$T_{K_{On}} = \begin{cases} \frac{P_{On}}{1 - P_{On}^{\left(u \bmod \frac{1}{P_{On}}\right)}}; & if\ k_{On} \in S_1 \\ 0; & otherwise \end{cases} \tag{6}$$

For T_n:

$$P_{Tn} = \frac{P(1+B)}{1+aA+bB} \tag{7}$$

$$T_{K_{Tn}} = \begin{cases} \dfrac{P_{Tn}}{1 - P_{Tn}^{(u \bmod 1/P_{Tn})}}; \; if \; k_{Tn} \in S_2 \\ 0; \; otherwise \end{cases} \tag{8}$$

For S_n:

$$P_{Sn} = \frac{P(1+A)}{1+aA+bB} \tag{9}$$

$$T_{K_{Sn}} = \begin{cases} \dfrac{P_{Sn}}{1 - P_{Sn}^{(u \bmod 1/P_{Sn})}}; \; if \; k_{Sn} \in S_3 \\ 0; \; otherwise \end{cases} \tag{10}$$

Expected probability of choosing the cluster heads on each epoch is deliberated using Eqs. 5, 7 and 9.

$$k(1-a-b)P_{On} + kaP_{Sn} + kbP_{Tn} = kP \tag{11}$$

Equation 11 generates an average probability of selecting cluster heads in a diverse environment that is comparable to the value of the LEACH method.

The communication paradigm for heterogeneous IoT networks is depicted in Fig. 1. In a heterogeneous network, energy dissipation is computed using either a free space or a multipath fading model. The sensor node uses up energy to transfer each packet of 'n' bits, as shown in 12 and 13.

$$\vartheta_{tr}(N,D) = \vartheta_{tr\_ele}(N) + \vartheta_{tr\_amp}(N,D) \tag{12}$$

$$\vartheta_{tr}(N,D) = \begin{cases} \vartheta_{ele} \times N + \vartheta_{FS} \times N \times D^2, \; D \le D_0 \\ \vartheta_{ele} \times N + \vartheta_{MP} \times N \times D^4, \; D > D_0 \end{cases} \tag{13}$$

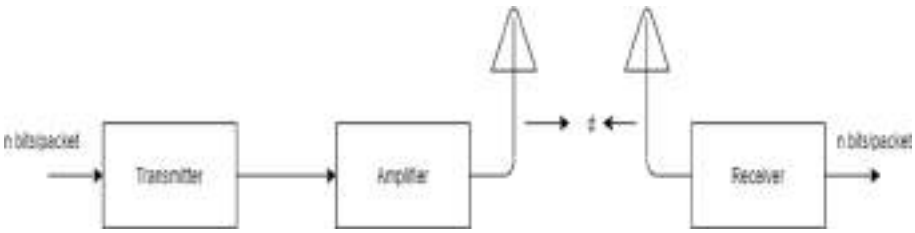

Fig. 1 IoT sensor node communication model

ϑ_{FS} and ϑ_{MP} describes the fading channels with free and multi-path ϑ_{ele} how much power the sensor node used throughout the packet delivery operation is represented by

$$\vartheta_{rc}(N) = \vartheta_{rc\_ele}(N) + N\vartheta_{ele} \tag{14}$$

The amount of energy consumed by a sensor nodes to receive the packets by total number of sensor nodes is represented in the Eq. 14.With this equation we can calculate how much amount of energy is consumed by an IoT sensor nodes for receiving the packets in the network.

The cluster head is chosen by keeping track of each round's energy usage based on an energy threshold value. To increase network longevity, the suggested method establishes the energy dissipation threshold for each type of node.

4 Proposed Model

In IoT, gathering huge amounts of information from the different contents leads to the congestion in the system. To overcome this dispute, we propose the priority-based event routing model where it considers the trimming pattern in the network. This timing pattern considers the time and distance of each time slot's packets that were transmitted to the receiver. This method helps to prevent network congestion and improves QoS in routing. [25].

Figure 2 explains about the framework for the priority-based event routing mechanism. The node must figure out the most effective way to send data to other nodes. Finding the best path is the challenging task in the IoT network. In IoT network, sensor nodes are suffering with resource restrictions, hence managing the resources is important in the node communication over the Internet. The proposed routing model finds the appropriate route based on the priority

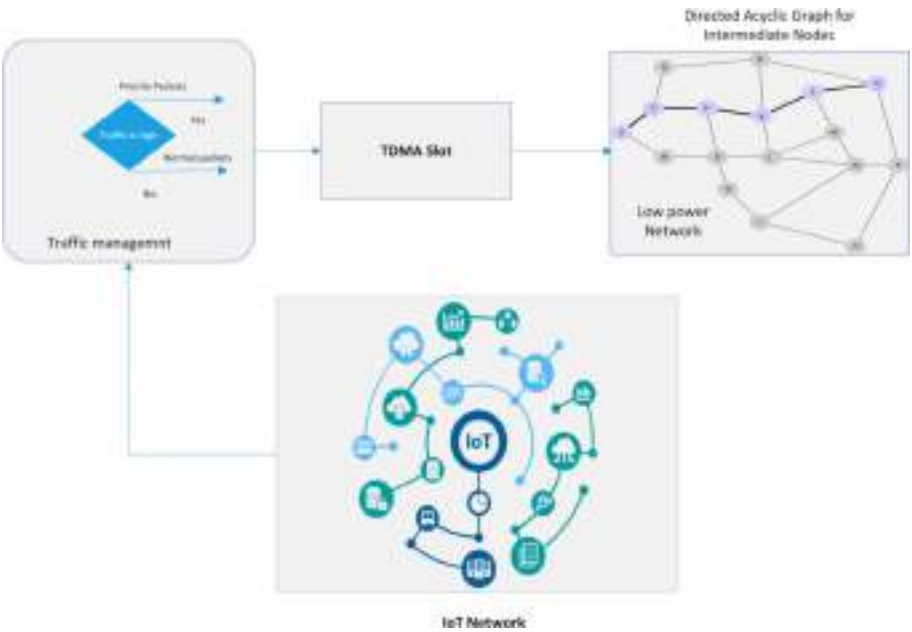

Fig. 2 Proposed priority based event routing framework

packets. The network traffic is considered as two types: low traffic and high traffic scenario. In the low traffic scenario, the normal packets with general procedure are adapted. In the high traffic scenario, the packets with highest priority are given preference to transmit in to the network.

In our work we are uses trimming mechanism based on that we can categorize the Packets and assigns the timeslots to forward the packet in TDMA channel. After that we uses RPL protocol to forward the packets into the cloud. For networks with various forms of traffic, this technology, which utilizes the same Zigbee standard, enables both one-to-one and many-to-one communication. It creates only one route in order to create Directed Acyclic Graphs (DAGs), an Objective Function (OF) that the user specifies is used. The process for choosing the best path among all sensing devices is described in the OF. In our work we supposed to forward the priority and regular packets by avoiding loops using RPL protocol to the cloud.

In our work we uses the TDMA channel allocation method. With TDMA, the spectrum is used more effectively because more users can share the same frequency depending on the time period. Using the TDMA approach, we can avoid channel contention for several users. Because TDMA networks have lower operational costs than typical FDMA networks, we can favour them in our work over alternative channel allocation techniques such as FDMA and CDMA. Voice, data, and video are all provided at different data speeds, and TDMA can handle all of them. The energy of an IoT sensor node can be enhanced thanks to TDMA's efficient resource use on a need-basis.

4.1 Proposed Priority Based Event Routing Model

We concentrated on event based routing approach the nodes are assigned with two properties such as transmission rate and priority. Here we classify the priority and regular packets by labelling. The node priority is assigned with high and low using 0 and 1. The packets with highest priority are attached with 0 bit by the sender and forward to the receiver. The nodes with lowest priority are attached with 1 bit by the sender and forward to the receiver. When there is network congestion or in the emergency conditions, the highest priority packets are forwarded and in the normal load conditions the low priority packets are forwarded.

The TDMA channel is used for communication. This time slot used in TDMA channel synchronizes the sender and receiver for data forwarding and also it reduces the energy consumption. Before forwarding the packets in the TDMA channel, the network traffic is verified. If the network traffic is high, the high priorities packets are forwarded otherwise low priority packets are forwarded. The timeslot allocation for data transmission in IoT network is depending on the node transmission rate and priorities. The coordination is compulsory between the sender and receiver for deciding the time slots. If the two are more nodes having the same priority, then TDMA slot is selected based on the rate of data transmission.

Algorithm 1: priority based Event routing (PBER)

Input: G -> {priority packets, Non-priority packets)

Output: optimal route based on the energy consumption and packet priority

Begin

1. TDMA time slot allocation
2. NC: Network Congestion
3. If NC==1 then
4. Send the priority packets
5. Call **function send-priority (priority packets)**
6. Else
7. Send the non-priority packets
8. End if
9. Return
10. **function send-priority (priority packets)**
11. While(priority packets)
12. Divide data stream in to packets
13. Configure frame settings
14. Prioritize frames
15. Send the packets based on their priorities
16. If packets are received then
17. Verify the TDMA slot for ordering the packets
18. End if
19. Calculate the energy consumption using Eqs.13 and 14 to send and receive the packets
20. packets
21. End while
22. return

In the above algorithm we can categorizes the packets into Priority and Regular packets by assigning the packet label with o or 1. Based on this the proposed mechanism identifies the regular and priority packet. After that we can apply trimming pattern mechanism. This trimming pattern mechanism is works on two properties such as Transmission rate and Priority. If there is a priority packets we can send the priority packets, otherwise we can forward the regular packets. While sending the priority packets we can divide the data stream into packets and configure the frame arding the

Table 1 Parameters for experimental analysis

Parameters	Values
Size of the Network	1000 m × 1000 m
Node radio range	250 m
Simulation time	200 s
Movement model of the Node	Random waypoint
Type of the Traffic	CBR
Node Energy	3 J
Packet Size	3000 bits
Transmission Power	20dBm

packets we can calculate the energy consumption and monitor the network. Settings and send the packets in assigned TDMA slots. In this we can avoid the congestion in the network. While forwarding the packets we can calculate the energy consumption and monitor the network.

5 Experimental Analyses

The QualNet simulator was used to test the proposed PBER technique. Table 1 shows the experimental assessment parameters. In our work we are comparing our proposed mechanism PBER against QoS-based routing (QRPL) [26] and PRAI [27] techniques in terms of end-to-end latency, routing overhead, and energy use. We choosen these existed algorithms for comparing our work with respect to modified version of RPL protocol with the existed ones QRPL and for priority event routing we can take the consideration of existed work PRAI.

Routing Overhead (R_{OH}): Psize is the ratio of the total size of control packets to all packets received at the destination. Route request (Rreq) and route error (RErr) packets are two types of control packets. The routing overhead associated with the IoT network is depicted in Eq. 15.

$$R_{OH} = \frac{R_{req} + R_{Err}}{P_{size}} \tag{15}$$

End-to- End delay (E^2D): it is defined with three parameters such as packet transfer time (d_{tr}), time taken for identifying the packet priority in the TDMA slot (d_{pr}), time taken for verifying the network traffic (d_{tff}).

$$E^2D = \frac{(\sum_{i=1}^{n} d_{tr} + d_{pr} + d_{tff})i}{K} \tag{16}$$

k represents the overall number of packets that were successfully delivered to the destination.

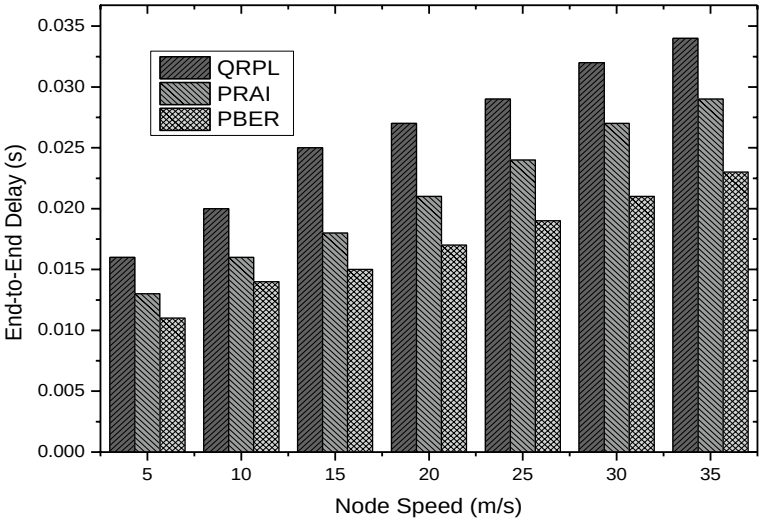

Fig. 3 End-to-end delay Vs node speed

5.1 Comparison of End-to-End Delay

In relation to node speed, Fig. 3 compares the end-to-end delays of the proposed and existing algorithms. The nodes' speed is shown to be increasing, the delay of the algorithms are also increases. It happens due to the breakdown of the network paths in the network topology.

The End-to-End Delay with regard to Node Speed attained with the help of the QRPL, PRAI, and PBER algorithms is shown in Fig. 3. In QRPL and PRAI, the End-to-End Delay is respectively 54.6% and 72.2% of the Node speed.In PBER, the End-to-End Delay in relation to Node Speed is 45.7%.We may conclude from the findings that our suggested approach, End-to-End Delay Vs Node speed, is 26.5% less efficient than QRPL and 8.9% less efficient than PRAI. By doing this, even if node performance improves, we may decrease the End-to-End delay in our model.

Figure 4 illustrates the system's end-to-end delay when node pause time is applied to the network. Observations indicate that when node rest periods are increased, the network becomes more dependable, reduces delays, and experiences fewer link failures. The proposed PBER algorithm gives messages a higher priority based on latency reduction.

Figure 4 show the End-to-End Delay with respect to Node Pause Time achieved using the QRPL, PRAI and PBER algorithms. The End-to-End Delay with respect to Node Pause Time in QRPL and PRAI is 58.3% and 50%.The End-to-End Delay with respect to Node Pause Time in PBER is 42%.With the results we can say that our proposed algorithm, End-to-End Delay Vs Node Pause Time is 16.3% less than as compared to QRPL and 8% less than PRAI. In this way we can reduce the End-to-End delay in our model even the node Pause Time increases also.

In Fig. 5, the end-to-end latency and node count of QRPL, PRAI, and PBER are all compared. The nodes' maximum speed, energy consumption, and pause time are all set at 30 m/s, 3 J, and 2 s, respectively. End-to-end latency appears to have minimal influence as the number of nodes rises, as seen in the graph. Both the suggested and present

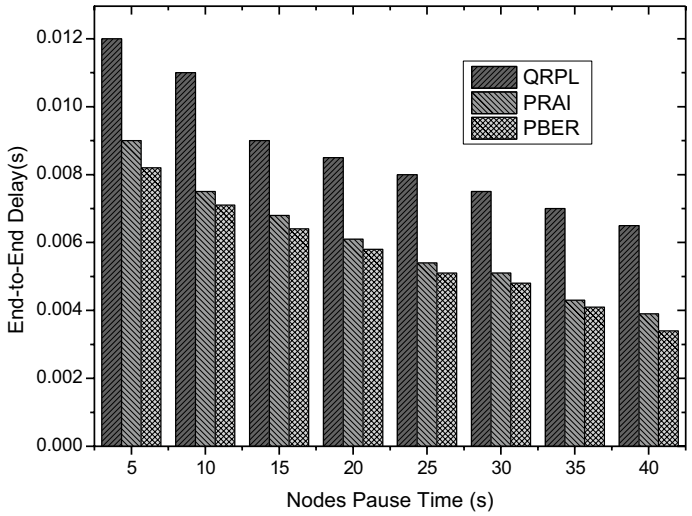

Fig. 4 End-to-end delay Vs node pause time

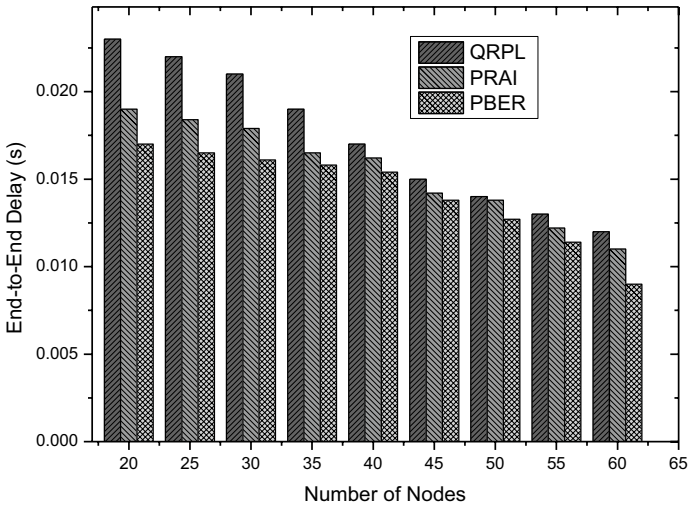

Fig. 5 End-to-end delay Vs number of nodes

techniques, on the other hand, showed a reduction in end-to-end latency. This is due to the fact that there are several pathways from the source to the destination, as well as the option of using auxiliary nodes.

Using the QRPL, PRAI, and PBER algorithms, the End-to-End Delay with respect to Number of Nodes is shown in Fig. 5. In QRPL and PRAI, the End-to-End Delay is 81.6% and 69.08%, respectively, depending on the number of nodes.According to the number of nodes in PBER, the end-to-end delay is 64.2%.We may conclude from the findings that our suggested approach, End-to-End Delay Vs Number of Nodes, is 17.4%

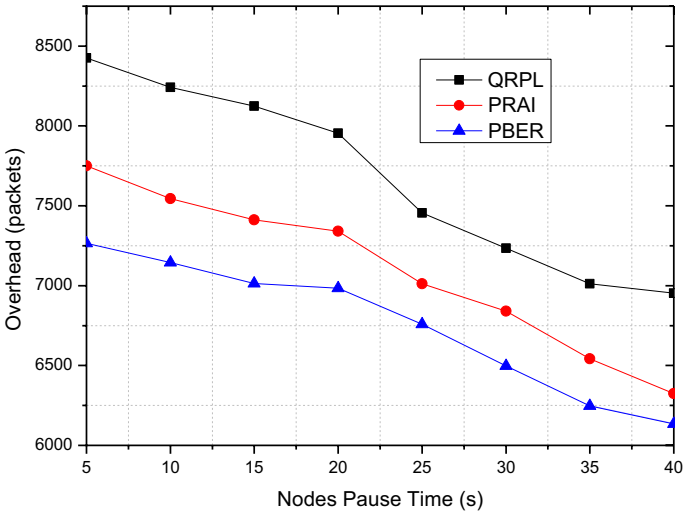

Fig. 6 Routing overhead Vs nodes pause time

faster than QRPL and 4.88% faster than PRAI. By doing this, even as the number of nodes in our model grows, we can decrease the end-to-end delay.

5.2 Routing Overhead

Figure 6 depicts the routing overhead for the QRPL, PRAI, and PBER algorithms. For the simulation, 100 nodes are chosen, with each node having a maximum speed of 30 m/s, spending 3 J of energy, and halting for 2 s. The PBER algorithm offers a smaller routing overhead than the QRPL and PRAI algorithms. It is due to that the node pause time increases will ultimately slows the mobility of the nodes. This process reduces the routing overhead. In the proposed PBER algorithms, the packet prioritization and path selection is easily carried when the routing overhead is less.

The Routing Overhead with reference to Node Pause time is displayed in Fig. 6 using the QRPL, PRAI, and PBER algorithms. The Routing Overhead in relation to Node Pause time in QRPL and PRAI is 92% and 84%, respectively.In PBER, the Routing Overhead to Node Pause Time ratio is 77%.According to the data, our proposed method has a 15% lower routing overhead than QRPL and a 7% lower routing overhead than PRAI when compared to node pause time. In this way we can reduce the routing overheard in our model even the Nodes Pause Time increases also.

5.3 Energy Consumption

Figure 7 shows how the PBER algorithm compares to the QPRL and PRAI algorithms in terms of energy usage. It has been observed that as node speeds increase, so does network energy consumption. The network dynamics alter when the node speed of the recommended model is raised, demanding extra routing and wasting substantial energy.

Figure 7 depicts the Energy Consumption with relation to Node Speed using the QRPL, PRAI, and PBER algorithms. QRPL and PRAI consume 30% and 22.2% of their energy in

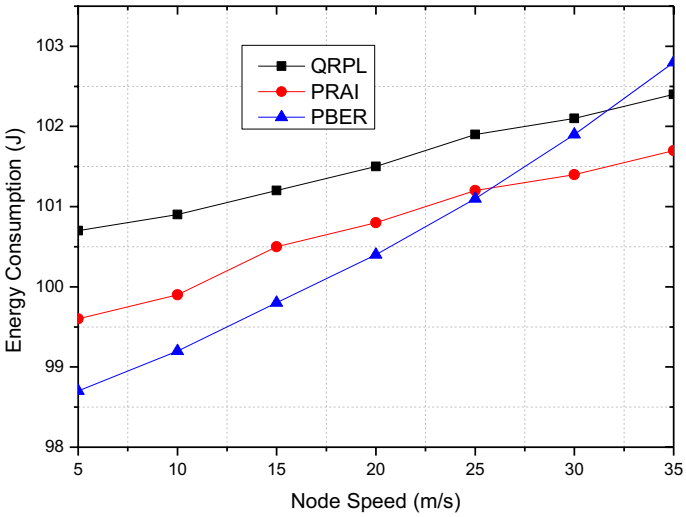

Fig. 7 Energy consumption Vs node speed

relation to node speed, respectively. PBER consumes 19.96% of its energy as a function of node speed. With the results we can say that our proposed algorithm, Energy Consumption Vs Node speed is 10.04% less than as compared to QRPL and 2.04% less than PRAI. In this way we can reduce the Energy Consumption in our model even the node speed increases also.

6 Conclusion

In IoT networks, many of the researchers are not focused on some issues like Priority Based Packets Routing, Congestion, Packet Loops But in our proposed work we are working on this challenges to enhance the performance in IoT. In this work, we proposed the priority-based event routing for IoT networks. The suggested technique takes into account the IoT's QoS characteristics and transmits packets via a TDMA slot. This time slot used in TDMA channel synchronizes the sender and receiver for data forwarding and also it reduces the energy consumption. Before forwarding the packets in the TDMA channel, the network traffic is verified. If the network traffic is high, the high priorities packets are forwarded otherwise low priority packets are forwarded. By using the suggested algorithm, you can cut your energy use by 19.96%, routing overhead by 77%, end-to-end delays based on node speed by 45.7%, end-to-end delays based on node pause time by 42%, and end-to-end delays based on node number by 64.2%. Meta heuristic frame transfer capabilities for the IoT will be included in later iterations of the suggested approach.

Author Contribution VKA: Conceptualization, Data curation, Formal Analysis, Methodology, Software, Writing—original draft; RPRI: Data Curation, Investigation, Resources, Software; ALA: Supervision, Writing – review & editing, Project administration, Visualization; RK: Supervision, Writing – review & editing, Project administration, Visualization; GD: Writing – review & editing, Visualization, RD: Software, Project administration, Validation; PK: Supervision, Writing – review & editing, Visualization.

Funding This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Data and Material Availability The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to containing information that could compromise the privacy of research participants.

Code Availability The code that supports the findings of this study are available on request from the corresponding author. The code is not publicly available due to containing information that could compromise the privacy of research participants.

Data Availability The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to containing information that could compromise the privacy of research participants.

Declarations

Conflict of interest The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Ethical Approval This research did not contain any studies involving animal or human participants, nor did it take place on any private or protected areas. No specific permissions were required for corresponding locations.

References

1. Park, S., Crespi, N., Park, H., & Kim, S. H. (2014, March). IoT routing architecture with autonomous systems of things. In *2014 IEEE World Forum on Internet of Things (WF-IoT)* (pp. 442-445). IEEE.
2. Dhumane, A., Guja, S., Deo, S., & Prasad, R. (2018). Context awareness in IoT routing. In *2018 Fourth International Conference on Computing Communication Control and Automation (ICCUBEA)* (pp. 1-5). IEEE.
3. Yehia, K., et al. (2019). Cloud-based multi-agent cooperation for IoT devices using workflow-nets. *Journal of Grid Computing, 17*, 625–650.
4. Al Ridhawi, I., Kotb, Y., Aloqaily, M., Jararweh, Y., & Baker, T. (2019). A profitable and energy-efficient cooperative fog solution for IoT services. *IEEE Transactions on Industrial Informatics, 16*(5), 3578–3586.
5. Souri, A., Hussien, A., Hoseyninezhad, M., & Norouzi, M. (2022). A systematic review of IoT communication strategies for an efficient smart environment. *Transactions on Emerging Telecommunications Technologies, 33*(3), e3736.
6. Kharrufa, H., Al-Kashoash, H. A., & Kemp, A. H. (2019). RPL-based routing protocols in IoT applications: A review. *IEEE Sensors Journal, 19*(15), 5952–5967.
7. Zikria, Y. B., Afzal, M. K., Ishmanov, F., Kim, S. W., & Heejung, Y. (2018). A survey on routing protocols supported by the Contiki Internet of things operating system. *Future Generation Computer Systems, 82*, 200–219. https://doi.org/10.1016/j.future.2017.12.045
8. Souri, A., & Norouzi, M. (2019). A state-of-the-art survey on formal verification of the internet of things applications. *Journal of Service Science Research, 11*(1), 47–67. https://doi.org/10.1007/s12927-019-0003-8
9. Musaddiq, A., Zikria, Y. B., & Kim, S. W. (2018, November). Energy-aware adaptive trickle timer algorithm for RPL-based routing in the Internet of Things. In *2018 28th International Telecommunication Networks and Applications Conference (ITNAC)* (pp. 1-6). IEEE.
10. Souraya, Y., et al. (2018). An energy efficient and QoS aware routing protocol for wireless sensor and actuator networks. *AEU-International Journal of Electronics and Communications, 83*, 193–203.
11 Baker, T., Al-Dawsari, B., Tawfik, H., Reid, D., & Ngoko, Y. (2015). GreeDi: An energy efficient routing algorithm for big data on cloud. *Ad Hoc Networks, 35*, 83–96. https://doi.org/10.1016/j.adhoc.2015.06.008

12. Baker, T., García-Campos, J. M., Reina, D. G., Toral, S., Tawfik, H., Al-Jumeily, D., & Hussain, A. (2018). GreeAODV: An energy efficient routing protocol for vehicular ad hoc networks. In *Intelligent Computing Methodologies: 14th International Conference, ICIC 2018, Wuhan, China, Proceedings, Part III* 14 (pp. 670-681). Springer International Publishing.
13. Baker, T., Ngoko, Y., Tolosana-Calasanz, R., Rana, O. F., & Randles, M. (2013). Energy efficient cloud computing environment via autonomic meta-director framework. In *2013 Sixth International Conference on Developments in eSystems Engineering* (pp. 198-203). IEEE.
14. Cai, Y., Liu, J., Fan, X., Qiu, Y., & Tan, B. (2018). Software defined status aware routing in content-centric networking. In *2018 International Conference on Information Networking (ICOIN)* (pp. 283-288). IEEE.
15 Dhumane, A. V., & Prasad, R. S. (2019). Multi-objective fractional gravitational search algorithm for energy efficient routing in IoT. *Wireless networks, 25*, 399–413.
16 Preeth, S. S. L., Dhanalakshmi, R., Kumar, R., & Shakeel, P. M. (2018). An adaptive fuzzy rule based energy efficient clustering and immune-inspired routing protocol for WSN-assisted IoT system. *Journal of Ambient Intelligence and Humanized Computing*. https://doi.org/10.1007/s12652-018-1154-z
17. Wang, Y., & Wang, Z. (2019). Routing algorithm of energy efficient wireless sensor network based on partial energy level. *Cluster computing, 22*, 8629–8638.
18. Yuan, P., Wang, Y., Su, M., Yang, Z., & Zhang, Q. (2019). Markov decision process-based routing algorithm in hybrid Satellites/UAVs disruption-tolerant sensing networks. *IET Communications, 13*(10), 1415–1424.
19 Ambigavathi, M., & Sridharan, D. (2018). Energy-aware data aggregation techniques in wireless sensor network. In A. Garg, A. K. Bhoi, S. PadmanabanSanjeevikumar, & K. Kamani (Eds.), *Advances in Power Systems and Energy Management: ETAEERE-2016* (pp. 165–173). Singapore: Springer Singapore. https://doi.org/10.1007/978-981-10-4394-9_17
20. Karkazis, P., Leligou, H. C., Sarakis, L., Zahariadis, T., Trakadas, P., Velivassaki, T. H., & Capsalis, C. (2012). Design of primary and composite routing metrics for RPL-compliant wireless sensor networks. In *2012 international conference on telecommunications and multimedia (TEMU)* (pp. 13-18). IEEE.
21. Han, Z., Li, Y., & Li, J. (2018). A novel routing algorithm for IoT cloud based on hash offset tree. *Future Generation Computer Systems, 86*, 456–463.
22. Safara, F., Souri, A., Baker, T., Al Ridhawi, I., & Aloqaily, M. (2020). PriNergy: A priority-based energy-efficient routing method for IoT systems. *The Journal of Supercomputing, 76*(11), 8609–8626.
23. Maheswar, R., Jayarajan, P., Sampathkumar, A., Kanagachidambaresan, G. R., Hindia, M. N., Tilwari, V., & Amiri, I. S. (2021). CBPR: A cluster-based backpressure routing for the internet of things. *Wireless Personal Communications, 118*, 3167–3185.
24. Mohseni, M., Amirghafouri, F., & Pourghebleh, B. (2023). CEDAR: A cluster-based energy-aware data aggregation routing protocol in the internet of things using capuchin search algorithm and fuzzy logic. *Peer-to-Peer Networking and Applications, 16*(1), 189–209.
25. Mohamed, B., & Mohamed, F. (2015). QoS routing RPL for low power and lossy networks. *International Journal of Distributed Sensor Networks, 11*(11), 971545.
26 Krishna, A. V., & Leema, A. A. (2022). Efficient routing algorithm for improving the network performance in internet of things. *International Journal of Internet Protocol Technology, 15*(2), 107–115.
27. Krishna, P. V., Obaidat, M. S., Nagaraju, D., & Saritha, V. (2017). CHSEO: an energy optimization approach for communication in the internet of things. In *GLOBECOM 2017-2017 IEEE Global Communications Conference* (pp. 1-6). IEEE.

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Wireless Personal Communications
https://doi.org/10.1007/s11277-023-10513-1

Energy Aware Priority Based Event Routing Protocol Using TDMA Communication for Internet of Things

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Accepted: 17 May 2023

Abstract
The Internet of Things (IoT) is a well-known platform for analysing data generated by environmental sensors and instruments. Transporting data from IoT sensor nodes to the cloud is time-consuming due to congestion and energy consumption in IoT networks. As a consequence, in this paper the Priority-Based Event Routing Protocol using TDMA channel to forward the packets in different network traffic constraints. In our proposed work we categorize the normal and priority packet by two properties such as transmission rate and priority then we can uses the Time slot based mechanism TDMA protocol to forward the packet in the network based on their time intervals to avoid the congestion and increase the packet forwarding ratio. This approach will increase the network robustness and reduces the congestion. In our work we uses the Qualnet Simulator, the experiments showed that the proposed technique performs more and enhance the performance in IoT networks with saving energy consumption by 19.696%, reduces routing overhead by 77%, and reduces end-to-end delay by 50.6% with respect to existing ones.

Keywords Internet of things · Routing protocols · Energy · Congestion · Communications

1 Introduction

The most recent development in communication technology is IoT, where it is collection of RFID Tags or Sensor nodes [1]. The communication between the sensor nodes are carried through the Wifi, LTE, Wimax and Bluetooth [2-4]. The sensor nodes are having limited storage, computation and battery power and they can communicate with in shorter distances. IoT devices need to be smart in handling, communicating and transmitting about the occurred event in the environment [5, 6]. The event manager in the IoT environment handles the middleware to publish or subscribe events and it acts as the coordinator between the sensor nodes. Many routing protocols are developed to address the communication in IoT [7]. Most of them are concentrated on IEEE 802.15.4 and extended IPV6 standards and it is not preferable for small sensor networks. In the recent studies [8-10], the researchers are concentrated on developing the clustering techniques for effective routing in IoT nodes. The most common issue in the IoT network is event based routing. The events in the IoT

Extended author information available on the last page of the article

need to be delivered instantaneously to achieve the requirements of the applications. Event based routing allows the devices to concentrate on particular events. If any device found the event triggering, it notifies to the subscribers who are interested in particular event.

The following is a list of significant contributions made by the study:

- Creating an event-routing-first approach in IoT systems for node traffic, latency and energy consumption may be reduced
- In the RPL protocol, node selection for the purpose of a parent node to avoid excessive branching and save time and energy.
- Improving IoT network's optimal packet transmission speed efficiency.

The remainder of the work is organised in the following manner. The second portion focuses on recent research in priority routing and energy-aware routing. Section 3 goes into the energy notion of the IoT Network. The priority order that is suggested for an effective routing method is explained in 4. Segment 5 discusses the experimental analysis. Finally, Segment 6 brings the investigation to an end.

2 Literature Survey

This section deals with the related work regarding the energy efficient and priority based routing protocols in the IoT environment.

2.1 Energy Efficient Models

The authors of [11] created a method for calculating data centre electricity consumption in a cloud environment that is energy-conscious. The effectiveness of the suggested approach was evaluated using the linear programming model. [12] offers the ant colony technique for IoT routing. This method is useful for determining the shortest path between two places. The authors developed the energy-aware AODV protocol for vehicle ad-hoc networks in [13]. By joining the vehicles that are close to one another, this technique finds the fastest path. To cut down on data centres' energy usage, the authors of [14] developed an autonomous cloud architecture. With the goal of lowering network latency, eliminating duplicate packets, and extending network lifetime, the authors of [15] established the content-centric routing strategy for content information flow and data integration.

In [16], The multi-objective routing technique for the energy-aware IoT model was created by the authors. Node lifetime, distance, and energy consumption are three factors taken into account while evaluating its performance. The authors developed the C-means clustering approach to help the IoT network have fewer nodes. The process performed better than heuristic strategies, according to the test findings. In [17], the authors developed the fuzzy approach for clustering in IoT networks. This mechanism used the immune system model for routing to minimize the nodes energy consumption. This method proved that the jitter ratio and packet delivery ratio is less compared against the optimization algorithms. In [18], the authors proposed the markov model for routing in vehicular IoT networks. The probabilistic graph is used to help the communication between the nodes for minimizing the energy and delay.

2.2 Priority Based Routing Protocols

The routing protocols in WSNs are broadly classified as centralized and distributed. For instance, in [19], the authors developed the merger tree mechanism for sensor networks which is a centralized process. This mechanism improves the network lifetime of the WSN. In [20], the authors developed the data aggregation model for minimizing the energy consumption it the WSNs. It uses the distributed clustering process for reducing the packet overhead. Furthermore, DAG [6] or tree based model [21] require the specific routing mechanism to handle the network dynamically. It is due to that if any network failure or the discharge of crucial IoT nodes occurs, To avoid packet loss, the routing mechanism must update the information to the remaining IoT nodes.

In [22], the authors presented a priority-based and energy-efficient routing method. This technique is based on the routing protocol for low-power and lossy networks (RPL model), which establishes routing through contents. Each network slot uses timing patterns to deliver data to the destination while accounting for network traffic, audio, and image data. In this work, they are more concerned with traffic than with energy consumption.

In [23], the authors presented a Cluster-based Backpressure routing scheme was proposed. It employs an energy load-balancing strategy to improve data transmission reliability and network longevity. Furthermore, this technique will do data aggregation and prevent duplicate data packets. They select the closest cluster head and sink node to save the greatest energy in this work, however they do not focus on forwarding priority packets in emergency situations.

In [24], the authors proposed a Cluster-based Energy-aware Data Aggregation Routing (CEDAR) protocol in the IoT. To overcome these challenges, the fuzzy logic system and the Capuchin Search Algorithm (CapSA) were combined. The proposed hybrid routing algorithm involves two main phases: cluster formation and intra/extra cluster routing. They primarily organise sensor nodes into optimal clusters in the first phase. In the second step, identify the most effective paths between cluster heads and cluster members. In this work, they primarily concentrated on cluster construction and data transport within and between clusters. They fall short, however, in terms of handling congestion in low-powered devices and sending packets in emergency scenarios in the event of unusual events.

By this study we can analyze that there is some gaps and challenges in the Existed works. Many of the researchers are not resolved these issues. They are:

- Delay
- Priority Based Packets Routing
- Congestion
- Packet Loops

In our Proposed work we are working on this challenges to enhance the performance in IoT.

3 Energy Model for IOT

When designing a routing system for an IoT network, energy balance and economy are essential factors. The aim of this research was to develop a node-life-extending, energy-efficient routing method. We explored network heterogeneity to three different degrees based on node initial energy to minimize energy loss. The network's nodes are all in static mode. Ordinary nodes have the least energy, transitional nodes have a medium amount, and super nodes have the most energy on the first level.

In our proposed work we are using the modified version of LEACH protocol. We are able to cluster the nodes using these techniques. Each cluster picks a cluster head to collect data from the member nodes and send it to the sink node. The cluster head is crucial for reducing energy consumption and extending node life as a result. We investigated network heterogeneity at three distinct levels based on node starting energy in order to restrict energy dissipation. The network's nodes are all operating in static mode. The energy level of normal nodes is the lowest, that of intermediate nodes is the middle, and that of advanced nodes is the highest. In this method, we can save the energy of WSNs.

The aggregate energy of the ordinary, transitional, and super nodes is shown in Eqs. 1, 2, and 3.

$$\vartheta_{On} = k\vartheta_0(1 - a - b) \tag{1}$$

$$\vartheta_{Tn} = kb\vartheta_0(1 + B) \tag{2}$$

$$\vartheta_{Sn} = ka\vartheta_0(1 + A) \tag{3}$$

An ordinary node is shown with ϑ_{On}, for Transitional nodes it has an energy of ϑ_{Tn}, and for advanced nodes is ϑ_{Sn}. The energy of the network's Super nodes are denoted by the symbol a, and their energy leveling is given the letter A. In the network, b represents the Transitional nodes and their energy leveling is specified as $B=A/2$. k denotes the node size of each kind.

The overall energy usage of the entire network is listed.

$$\begin{aligned}\vartheta_{tot} &= k\vartheta_0(1 - a - b) + kb\vartheta_0(1 + B) + ka\vartheta_0(1 + A)\\ &= k\vartheta_0(1 + aA + bB)\end{aligned} \tag{4}$$

We investigate the SEP and LEACH protocol models for CH election. The likelihood of being chosen as the cluster head determines the threshold value for each type of node. Assume S1, S2, and S3 are sets of nodes that belong to each category but were not selected as cluster heads. Cluster heads should be chosen from the nodes below.

For O_n:

$$P_{On} = \frac{P}{1 + aA + bB} \tag{5}$$

$$T_{K_{On}} = \begin{cases} \frac{P_{On}}{1 - P_{On}^{\left(u \bmod \frac{1}{P_{On}}\right)}}; & if\ k_{On} \in S_1 \\ 0; & otherwise \end{cases} \tag{6}$$

For T_n:

$$P_{Tn} = \frac{P(1+B)}{1+aA+bB} \tag{7}$$

$$T_{K_{Tn}} = \begin{cases} \dfrac{P_{Tn}}{1 - P_{Tn}^{(u \bmod 1/P_{Tn})}}; \; if \; k_{Tn} \in S_2 \\ 0; \; otherwise \end{cases} \tag{8}$$

For S_n:

$$P_{Sn} = \frac{P(1+A)}{1+aA+bB} \tag{9}$$

$$T_{K_{Sn}} = \begin{cases} \dfrac{P_{Sn}}{1 - P_{Sn}^{(u \bmod 1/P_{Sn})}}; \; if \; k_{Sn} \in S_3 \\ 0; \; otherwise \end{cases} \tag{10}$$

Expected probability of choosing the cluster heads on each epoch is deliberated using Eqs. 5, 7 and 9.

$$k(1-a-b)P_{On} + kaP_{Sn} + kbP_{Tn} = kP \tag{11}$$

Equation 11 generates an average probability of selecting cluster heads in a diverse environment that is comparable to the value of the LEACH method.

The communication paradigm for heterogeneous IoT networks is depicted in Fig. 1. In a heterogeneous network, energy dissipation is computed using either a free space or a multipath fading model. The sensor node uses up energy to transfer each packet of 'n' bits, as shown in 12 and 13.

$$\vartheta_{tr}(N,D) = \vartheta_{tr\_ele}(N) + \vartheta_{tr\_amp}(N,D) \tag{12}$$

$$\vartheta_{tr}(N,D) = \begin{cases} \vartheta_{ele} \times N + \vartheta_{FS} \times N \times D^2, \; D \le D_0 \\ \vartheta_{ele} \times N + \vartheta_{MP} \times N \times D^4, \; D > D_0 \end{cases} \tag{13}$$

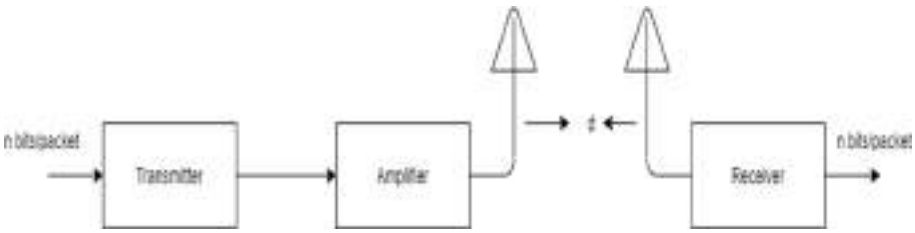

Fig. 1 IoT sensor node communication model

ϑ_{FS} and ϑ_{MP} describes the fading channels with free and multi-path ϑ_{ele} how much power the sensor node used throughout the packet delivery operation is represented by

$$\vartheta_{rc}(N) = \vartheta_{rc\_ele}(N) + N\vartheta_{ele} \tag{14}$$

The amount of energy consumed by a sensor nodes to receive the packets by total number of sensor nodes is represented in the Eq. 14.With this equation we can calculate how much amount of energy is consumed by an IoT sensor nodes for receiving the packets in the network.

The cluster head is chosen by keeping track of each round's energy usage based on an energy threshold value. To increase network longevity, the suggested method establishes the energy dissipation threshold for each type of node.

4 Proposed Model

In IoT, gathering huge amounts of information from the different contents leads to the congestion in the system. To overcome this dispute, we propose the priority-based event routing model where it considers the trimming pattern in the network. This timing pattern considers the time and distance of each time slot's packets that were transmitted to the receiver. This method helps to prevent network congestion and improves QoS in routing. [25].

Figure 2 explains about the framework for the priority-based event routing mechanism. The node must figure out the most effective way to send data to other nodes. Finding the best path is the challenging task in the IoT network. In IoT network, sensor nodes are suffering with resource restrictions, hence managing the resources is important in the node communication over the Internet. The proposed routing model finds the appropriate route based on the priority

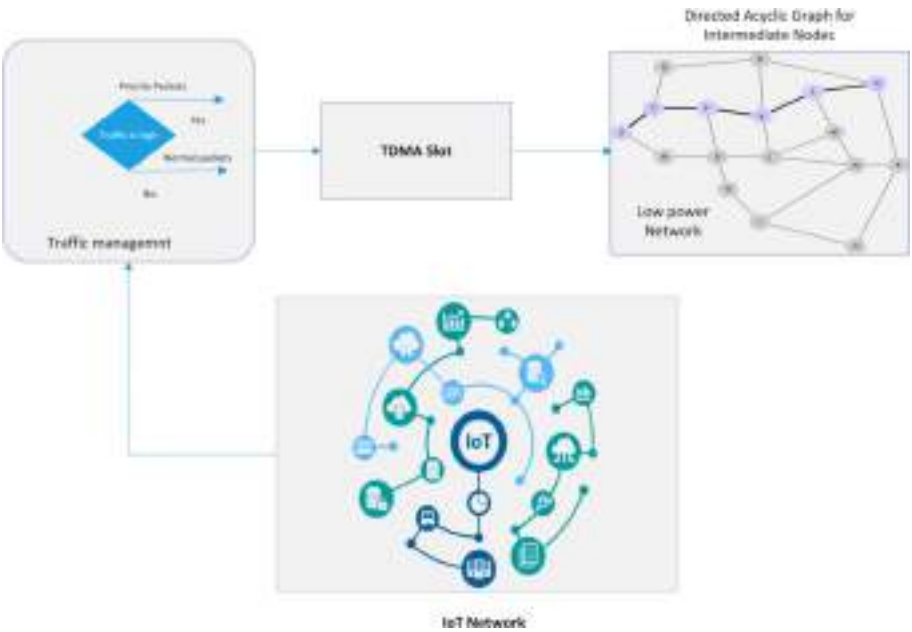

Fig. 2 Proposed priority based event routing framework

packets. The network traffic is considered as two types: low traffic and high traffic scenario. In the low traffic scenario, the normal packets with general procedure are adapted. In the high traffic scenario, the packets with highest priority are given preference to transmit in to the network.

In our work we are uses trimming mechanism based on that we can categorize the Packets and assigns the timeslots to forward the packet in TDMA channel. After that we uses RPL protocol to forward the packets into the cloud. For networks with various forms of traffic, this technology, which utilizes the same Zigbee standard, enables both one-to-one and many-to-one communication. It creates only one route in order to create Directed Acyclic Graphs (DAGs), an Objective Function (OF) that the user specifies is used. The process for choosing the best path among all sensing devices is described in the OF. In our work we supposed to forward the priority and regular packets by avoiding loops using RPL protocol to the cloud.

In our work we uses the TDMA channel allocation method. With TDMA, the spectrum is used more effectively because more users can share the same frequency depending on the time period. Using the TDMA approach, we can avoid channel contention for several users. Because TDMA networks have lower operational costs than typical FDMA networks, we can favour them in our work over alternative channel allocation techniques such as FDMA and CDMA. Voice, data, and video are all provided at different data speeds, and TDMA can handle all of them. The energy of an IoT sensor node can be enhanced thanks to TDMA's efficient resource use on a need-basis.

4.1 Proposed Priority Based Event Routing Model

We concentrated on event based routing approach the nodes are assigned with two properties such as transmission rate and priority. Here we classify the priority and regular packets by labelling. The node priority is assigned with high and low using 0 and 1. The packets with highest priority are attached with 0 bit by the sender and forward to the receiver. The nodes with lowest priority are attached with 1 bit by the sender and forward to the receiver. When there is network congestion or in the emergency conditions, the highest priority packets are forwarded and in the normal load conditions the low priority packets are forwarded.

The TDMA channel is used for communication. This time slot used in TDMA channel synchronizes the sender and receiver for data forwarding and also it reduces the energy consumption. Before forwarding the packets in the TDMA channel, the network traffic is verified. If the network traffic is high, the high priorities packets are forwarded otherwise low priority packets are forwarded. The timeslot allocation for data transmission in IoT network is depending on the node transmission rate and priorities. The coordination is compulsory between the sender and receiver for deciding the time slots. If the two are more nodes having the same priority, then TDMA slot is selected based on the rate of data transmission.

Algorithm 1: priority based Event routing (PBER)

Input: G -> {priority packets, Non-priority packets)

Output: optimal route based on the energy consumption and packet priority

Begin

1. TDMA time slot allocation
2. NC: Network Congestion
3. If NC==1 then
4. Send the priority packets
5. Call **function send-priority (priority packets)**
6. Else
7. Send the non-priority packets
8. End if
9. Return
10. **function send-priority (priority packets)**
11. While(priority packets)
12. Divide data stream in to packets
13. Configure frame settings
14. Prioritize frames
15. Send the packets based on their priorities
16. If packets are received then
17. Verify the TDMA slot for ordering the packets
18. End if
19. Calculate the energy consumption using Eqs.13 and 14 to send and receive the packets
20. packets
21. End while
22. return

In the above algorithm we can categorizes the packets into Priority and Regular packets by assigning the packet label with o or 1. Based on this the proposed mechanism identifies the regular and priority packet. After that we can apply trimming pattern mechanism. This trimming pattern mechanism is works on two properties such as Transmission rate and Priority. If there is a priority packets we can send the priority packets, otherwise we can forward the regular packets. While sending the priority packets we can divide the data stream into packets and configure the frame arding the

Table 1 Parameters for experimental analysis

Parameters	Values
Size of the Network	1000 m × 1000 m
Node radio range	250 m
Simulation time	200 s
Movement model of the Node	Random waypoint
Type of the Traffic	CBR
Node Energy	3 J
Packet Size	3000 bits
Transmission Power	20dBm

packets we can calculate the energy consumption and monitor the network. Settings and send the packets in assigned TDMA slots. In this we can avoid the congestion in the network. While forwarding the packets we can calculate the energy consumption and monitor the network.

5 Experimental Analyses

The QualNet simulator was used to test the proposed PBER technique. Table 1 shows the experimental assessment parameters. In our work we are comparing our proposed mechanism PBER against QoS-based routing (QRPL) [26] and PRAI [27] techniques in terms of end-to-end latency, routing overhead, and energy use. We choosen these existed algorithms for comparing our work with respect to modified version of RPL protocol with the existed ones QRPL and for priority event routing we can take the consideration of existed work PRAI.

Routing Overhead (R_{OH}): Psize is the ratio of the total size of control packets to all packets received at the destination. Route request (Rreq) and route error (RErr) packets are two types of control packets. The routing overhead associated with the IoT network is depicted in Eq. 15.

$$R_{OH} = \frac{R_{req} + R_{Err}}{P_{size}} \tag{15}$$

End-to- End delay (E^2D): it is defined with three parameters such as packet transfer time (d_{tr}), time taken for identifying the packet priority in the TDMA slot (d_{pr}), time taken for verifying the network traffic (d_{tff}).

$$E^2D = \frac{(\sum_{i=1}^{n} d_{tr} + d_{pr} + d_{tff})i}{K} \tag{16}$$

k represents the overall number of packets that were successfully delivered to the destination.

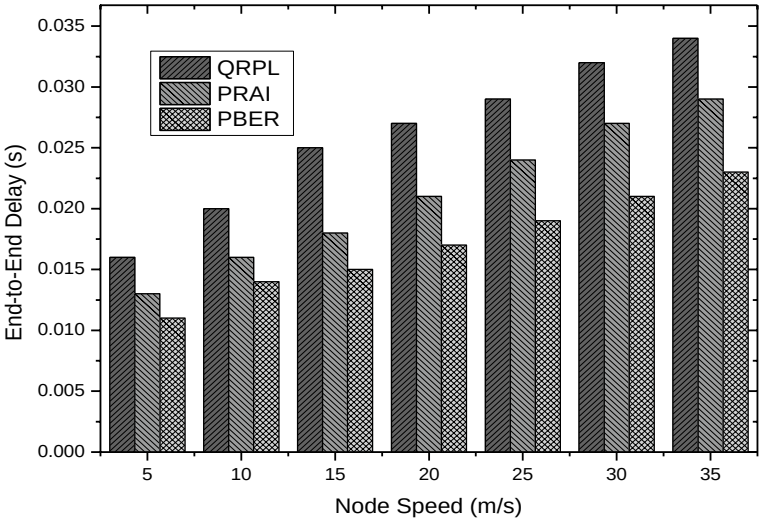

Fig. 3 End-to-end delay Vs node speed

5.1 Comparison of End-to-End Delay

In relation to node speed, Fig. 3 compares the end-to-end delays of the proposed and existing algorithms. The nodes' speed is shown to be increasing, the delay of the algorithms are also increases. It happens due to the breakdown of the network paths in the network topology.

The End-to-End Delay with regard to Node Speed attained with the help of the QRPL, PRAI, and PBER algorithms is shown in Fig. 3. In QRPL and PRAI, the End-to-End Delay is respectively 54.6% and 72.2% of the Node speed.In PBER, the End-to-End Delay in relation to Node Speed is 45.7%.We may conclude from the findings that our suggested approach, End-to-End Delay Vs Node speed, is 26.5% less efficient than QRPL and 8.9% less efficient than PRAI. By doing this, even if node performance improves, we may decrease the End-to-End delay in our model.

Figure 4 illustrates the system's end-to-end delay when node pause time is applied to the network. Observations indicate that when node rest periods are increased, the network becomes more dependable, reduces delays, and experiences fewer link failures. The proposed PBER algorithm gives messages a higher priority based on latency reduction.

Figure 4 show the End-to-End Delay with respect to Node Pause Time achieved using the QRPL, PRAI and PBER algorithms. The End-to-End Delay with respect to Node Pause Time in QRPL and PRAI is 58.3% and 50%.The End-to-End Delay with respect to Node Pause Time in PBER is 42%.With the results we can say that our proposed algorithm, End-to-End Delay Vs Node Pause Time is 16.3% less than as compared to QRPL and 8% less than PRAI. In this way we can reduce the End-to-End delay in our model even the node Pause Time increases also.

In Fig. 5, the end-to-end latency and node count of QRPL, PRAI, and PBER are all compared. The nodes' maximum speed, energy consumption, and pause time are all set at 30 m/s, 3 J, and 2 s, respectively. End-to-end latency appears to have minimal influence as the number of nodes rises, as seen in the graph. Both the suggested and present

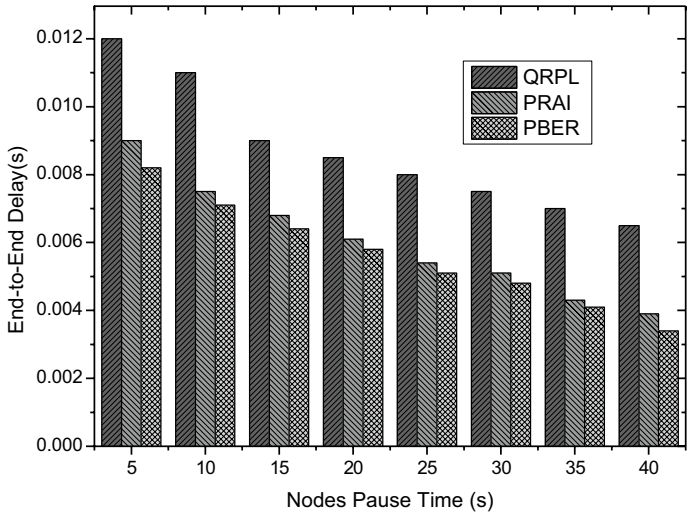

Fig. 4 End-to-end delay Vs node pause time

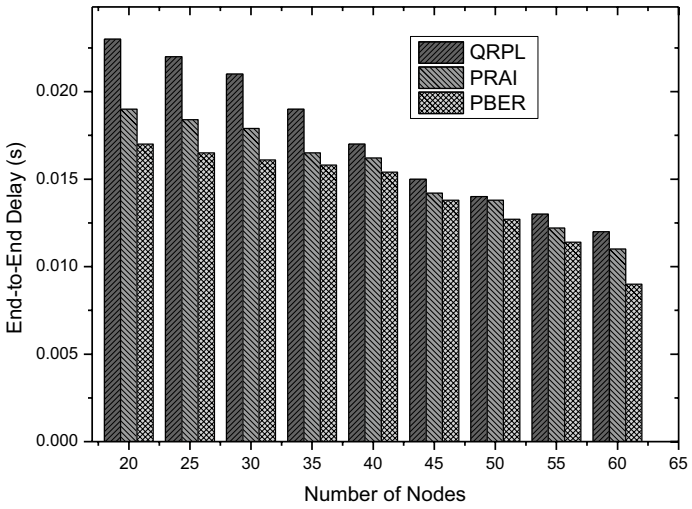

Fig. 5 End-to-end delay Vs number of nodes

techniques, on the other hand, showed a reduction in end-to-end latency. This is due to the fact that there are several pathways from the source to the destination, as well as the option of using auxiliary nodes.

Using the QRPL, PRAI, and PBER algorithms, the End-to-End Delay with respect to Number of Nodes is shown in Fig. 5. In QRPL and PRAI, the End-to-End Delay is 81.6% and 69.08%, respectively, depending on the number of nodes.According to the number of nodes in PBER, the end-to-end delay is 64.2%.We may conclude from the findings that our suggested approach, End-to-End Delay Vs Number of Nodes, is 17.4%

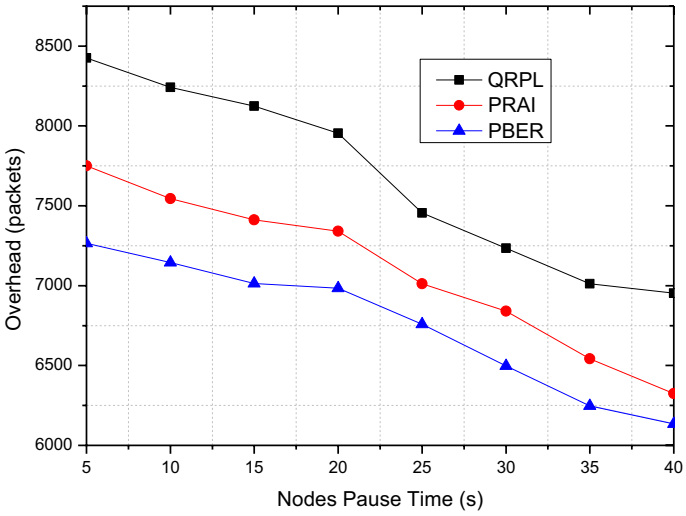

Fig. 6 Routing overhead Vs nodes pause time

faster than QRPL and 4.88% faster than PRAI. By doing this, even as the number of nodes in our model grows, we can decrease the end-to-end delay.

5.2 Routing Overhead

Figure 6 depicts the routing overhead for the QRPL, PRAI, and PBER algorithms. For the simulation, 100 nodes are chosen, with each node having a maximum speed of 30 m/s, spending 3 J of energy, and halting for 2 s. The PBER algorithm offers a smaller routing overhead than the QRPL and PRAI algorithms. It is due to that the node pause time increases will ultimately slows the mobility of the nodes. This process reduces the routing overhead. In the proposed PBER algorithms, the packet prioritization and path selection is easily carried when the routing overhead is less.

The Routing Overhead with reference to Node Pause time is displayed in Fig. 6 using the QRPL, PRAI, and PBER algorithms. The Routing Overhead in relation to Node Pause time in QRPL and PRAI is 92% and 84%, respectively.In PBER, the Routing Overhead to Node Pause Time ratio is 77%.According to the data, our proposed method has a 15% lower routing overhead than QRPL and a 7% lower routing overhead than PRAI when compared to node pause time. In this way we can reduce the routing overheard in our model even the Nodes Pause Time increases also.

5.3 Energy Consumption

Figure 7 shows how the PBER algorithm compares to the QPRL and PRAI algorithms in terms of energy usage. It has been observed that as node speeds increase, so does network energy consumption. The network dynamics alter when the node speed of the recommended model is raised, demanding extra routing and wasting substantial energy.

Figure 7 depicts the Energy Consumption with relation to Node Speed using the QRPL, PRAI, and PBER algorithms. QRPL and PRAI consume 30% and 22.2% of their energy in

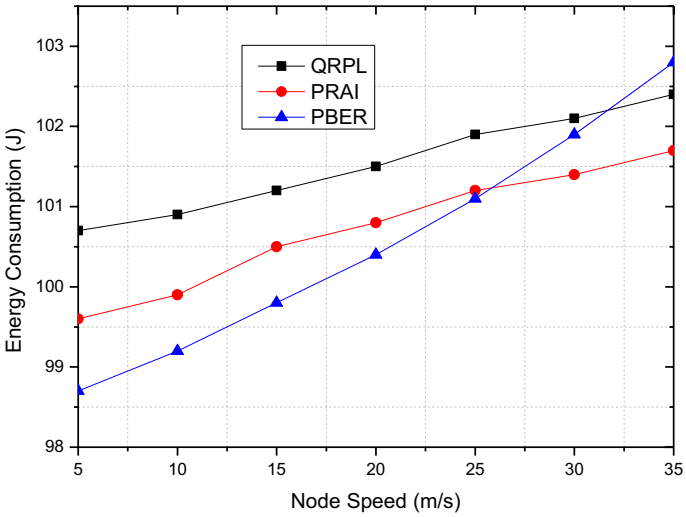

Fig. 7 Energy consumption Vs node speed

relation to node speed, respectively. PBER consumes 19.96% of its energy as a function of node speed. With the results we can say that our proposed algorithm, Energy Consumption Vs Node speed is 10.04% less than as compared to QRPL and 2.04% less than PRAI. In this way we can reduce the Energy Consumption in our model even the node speed increases also.

6 Conclusion

In IoT networks, many of the researchers are not focused on some issues like Priority Based Packets Routing, Congestion, Packet Loops But in our proposed work we are working on this challenges to enhance the performance in IoT. In this work, we proposed the priority-based event routing for IoT networks. The suggested technique takes into account the IoT's QoS characteristics and transmits packets via a TDMA slot. This time slot used in TDMA channel synchronizes the sender and receiver for data forwarding and also it reduces the energy consumption. Before forwarding the packets in the TDMA channel, the network traffic is verified. If the network traffic is high, the high priorities packets are forwarded otherwise low priority packets are forwarded. By using the suggested algorithm, you can cut your energy use by 19.96%, routing overhead by 77%, end-to-end delays based on node speed by 45.7%, end-to-end delays based on node pause time by 42%, and end-to-end delays based on node number by 64.2%. Meta heuristic frame transfer capabilities for the IoT will be included in later iterations of the suggested approach.

Author Contribution VKA: Conceptualization, Data curation, Formal Analysis, Methodology, Software, Writing—original draft; RPRI: Data Curation, Investigation, Resources, Software; ALA: Supervision, Writing – review & editing, Project administration, Visualization; RK: Supervision, Writing – review & editing, Project administration, Visualization; GD: Writing – review & editing, Visualization, RD: Software, Project administration, Validation; PK: Supervision, Writing – review & editing, Visualization.

Funding This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Data and Material Availability The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to containing information that could compromise the privacy of research participants.

Code Availability The code that supports the findings of this study are available on request from the corresponding author. The code is not publicly available due to containing information that could compromise the privacy of research participants.

Data Availability The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to containing information that could compromise the privacy of research participants.

Declarations

Conflict of interest The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Ethical Approval This research did not contain any studies involving animal or human participants, nor did it take place on any private or protected areas. No specific permissions were required for corresponding locations.

References

1. Park, S., Crespi, N., Park, H., & Kim, S. H. (2014, March). IoT routing architecture with autonomous systems of things. In *2014 IEEE World Forum on Internet of Things (WF-IoT)* (pp. 442-445). IEEE.
2. Dhumane, A., Guja, S., Deo, S., & Prasad, R. (2018). Context awareness in IoT routing. In *2018 Fourth International Conference on Computing Communication Control and Automation (ICCUBEA)* (pp. 1-5). IEEE.
3. Yehia, K., et al. (2019). Cloud-based multi-agent cooperation for IoT devices using workflow-nets. *Journal of Grid Computing, 17*, 625–650.
4. Al Ridhawi, I., Kotb, Y., Aloqaily, M., Jararweh, Y., & Baker, T. (2019). A profitable and energy-efficient cooperative fog solution for IoT services. *IEEE Transactions on Industrial Informatics, 16*(5), 3578–3586.
5. Souri, A., Hussien, A., Hoseyninezhad, M., & Norouzi, M. (2022). A systematic review of IoT communication strategies for an efficient smart environment. *Transactions on Emerging Telecommunications Technologies, 33*(3), e3736.
6. Kharrufa, H., Al-Kashoash, H. A., & Kemp, A. H. (2019). RPL-based routing protocols in IoT applications: A review. *IEEE Sensors Journal, 19*(15), 5952–5967.
7. Zikria, Y. B., Afzal, M. K., Ishmanov, F., Kim, S. W., & Heejung, Y. (2018). A survey on routing protocols supported by the Contiki Internet of things operating system. *Future Generation Computer Systems, 82*, 200–219. https://doi.org/10.1016/j.future.2017.12.045
8. Souri, A., & Norouzi, M. (2019). A state-of-the-art survey on formal verification of the internet of things applications. *Journal of Service Science Research, 11*(1), 47–67. https://doi.org/10.1007/s12927-019-0003-8
9. Musaddiq, A., Zikria, Y. B., & Kim, S. W. (2018, November). Energy-aware adaptive trickle timer algorithm for RPL-based routing in the Internet of Things. In *2018 28th International Telecommunication Networks and Applications Conference (ITNAC)* (pp. 1-6). IEEE.
10. Souraya, Y., et al. (2018). An energy efficient and QoS aware routing protocol for wireless sensor and actuator networks. *AEU-International Journal of Electronics and Communications, 83*, 193–203.
11 Baker, T., Al-Dawsari, B., Tawfik, H., Reid, D., & Ngoko, Y. (2015). GreeDi: An energy efficient routing algorithm for big data on cloud. *Ad Hoc Networks, 35*, 83–96. https://doi.org/10.1016/j.adhoc.2015.06.008

12. Baker, T., García-Campos, J. M., Reina, D. G., Toral, S., Tawfik, H., Al-Jumeily, D., & Hussain, A. (2018). GreeAODV: An energy efficient routing protocol for vehicular ad hoc networks. In *Intelligent Computing Methodologies: 14th International Conference, ICIC 2018, Wuhan, China, Proceedings, Part III* 14 (pp. 670-681). Springer International Publishing.
13. Baker, T., Ngoko, Y., Tolosana-Calasanz, R., Rana, O. F., & Randles, M. (2013). Energy efficient cloud computing environment via autonomic meta-director framework. In *2013 Sixth International Conference on Developments in eSystems Engineering* (pp. 198-203). IEEE.
14. Cai, Y., Liu, J., Fan, X., Qiu, Y., & Tan, B. (2018). Software defined status aware routing in content-centric networking. In *2018 International Conference on Information Networking (ICOIN)* (pp. 283-288). IEEE.
15 Dhumane, A. V., & Prasad, R. S. (2019). Multi-objective fractional gravitational search algorithm for energy efficient routing in IoT. *Wireless networks, 25*, 399–413.
16 Preeth, S. S. L., Dhanalakshmi, R., Kumar, R., & Shakeel, P. M. (2018). An adaptive fuzzy rule based energy efficient clustering and immune-inspired routing protocol for WSN-assisted IoT system. *Journal of Ambient Intelligence and Humanized Computing*. https://doi.org/10.1007/s12652-018-1154-z
17. Wang, Y., & Wang, Z. (2019). Routing algorithm of energy efficient wireless sensor network based on partial energy level. *Cluster computing, 22*, 8629–8638.
18. Yuan, P., Wang, Y., Su, M., Yang, Z., & Zhang, Q. (2019). Markov decision process-based routing algorithm in hybrid Satellites/UAVs disruption-tolerant sensing networks. *IET Communications, 13*(10), 1415–1424.
19 Ambigavathi, M., & Sridharan, D. (2018). Energy-aware data aggregation techniques in wireless sensor network. In A. Garg, A. K. Bhoi, S. PadmanabanSanjeevikumar, & K. Kamani (Eds.), *Advances in Power Systems and Energy Management: ETAEERE-2016* (pp. 165–173). Singapore: Springer Singapore. https://doi.org/10.1007/978-981-10-4394-9_17
20. Karkazis, P., Leligou, H. C., Sarakis, L., Zahariadis, T., Trakadas, P., Velivassaki, T. H., & Capsalis, C. (2012). Design of primary and composite routing metrics for RPL-compliant wireless sensor networks. In *2012 international conference on telecommunications and multimedia (TEMU)* (pp. 13-18). IEEE.
21. Han, Z., Li, Y., & Li, J. (2018). A novel routing algorithm for IoT cloud based on hash offset tree. *Future Generation Computer Systems, 86*, 456–463.
22. Safara, F., Souri, A., Baker, T., Al Ridhawi, I., & Aloqaily, M. (2020). PriNergy: A priority-based energy-efficient routing method for IoT systems. *The Journal of Supercomputing, 76*(11), 8609–8626.
23. Maheswar, R., Jayarajan, P., Sampathkumar, A., Kanagachidambaresan, G. R., Hindia, M. N., Tilwari, V., & Amiri, I. S. (2021). CBPR: A cluster-based backpressure routing for the internet of things. *Wireless Personal Communications, 118*, 3167–3185.
24. Mohseni, M., Amirghafouri, F., & Pourghebleh, B. (2023). CEDAR: A cluster-based energy-aware data aggregation routing protocol in the internet of things using capuchin search algorithm and fuzzy logic. *Peer-to-Peer Networking and Applications, 16*(1), 189–209.
25. Mohamed, B., & Mohamed, F. (2015). QoS routing RPL for low power and lossy networks. *International Journal of Distributed Sensor Networks, 11*(11), 971545.
26 Krishna, A. V., & Leema, A. A. (2022). Efficient routing algorithm for improving the network performance in internet of things. *International Journal of Internet Protocol Technology, 15*(2), 107–115.
27. Krishna, P. V., Obaidat, M. S., Nagaraju, D., & Saritha, V. (2017). CHSEO: an energy optimization approach for communication in the internet of things. In *GLOBECOM 2017-2017 IEEE Global Communications Conference* (pp. 1-6). IEEE.

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Received: April 9, 2023. Revised: June 7, 2023. 488

International Journal of
Intelligent Engineering & Systems

http://www.inass.org/

Prediction of Seed Germination Quality Utilizing Ensemble-Based Precision Forming

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Abstract: Seed germination is a primary objective of precision agriculture. Precision agriculture, which makes extensive use of machine learning, has been the subject of recent studies on predictive analytics. These machine learning methods typically employ supervised learning models to make predictions about how successfully seeds will germinate. However, a major challenge that modern models face when attempting to make accurate predictions is the curse of dimensionality in the training corpus. The primary contribution of this manuscript is an ensemble-based method for predicting seed germination quality (EL-GQP) in precision agriculture. The accuracy of predictions can be improved using this ensemble method, which combines the positive aspects of a number of different models while minimising the negative aspects of the individual models. The proposed model is significantly superior to the current model, as demonstrated by experimental results of cross-validation on the benchmark dataset. During the simulation, work is done on the corpus dataset contains 4250 negative records and 6230 positive records.

Keywords: Precision farming, Ensemble classification, Germination quality, Machine learning, Predictive analytics.

1. Introduction

[1] Asserts that seed quality is an essential component of agricultural production that directly influences yield. Utilizing high-quality seeds and inbreeding the plant lowers the cost of field experiments while increasing the likelihood of finding the best crop variety. As shown in [2] programmes for ensuring the quality of seeds use a range of methods to validate the traits of seed-like vigour and germination tests. These processes have limitations associated with the consumption of time, destructive nature, and subjectivity of measuring seed quality [3-5]. The work [6] presents that there has been a rapidly increasing demand for effective approaches, which might provide reliable, rapid, objective, and non-destructive identification of the quality of seed [6].

To a human society, seeds are required as the main source of food and service to be significant crops materials. The yield of a crop is heavily influenced by seed quality and environmental factors. According to [7], measuring seed germination is a necessary task for seed researchers in order to evaluate the various seed lots and enhance the efficiency of the food chain. It is important to note that worldwide crop product needs to be doubled to supply the increasing population by 2050 as in [8]. Traditional measures of seed testing, mainly tests of seed-vigor, have not been utilized extensively because of time-intensive and cumbersome protocols as in [9]. Moreover, many seed tests introduced by ISTA (international seed testing association) have been manually assessed by utilizing a standardized

process, which varies for diversified crops [10]. Concerning to the prologue abovementioned, it is necessary to contribute computer aided models those build on machine learning, artificial intelligence, and deep h platforms. In this context, a novel machine learning model, which is an ensemble learning-based seed germination quality check model has portrayed in this manuscript.

EL-GQP, the proposed precision agriculture method, has several advantages over current methods. First, it uses ensemble-based modelling to improve prediction accuracy. This method reduces model drawbacks, improving predictions. Second, EL-GQP addresses the curse of dimensionality, which plagues machine learning models. Predictions are difficult when the training dataset has many variables. EL-GQP solves this problem by using an ensemble of models to handle more variables and produce more accurate results.

Third, EL-GQP accurately predicts seed germination. Precision agriculture aims to achieve this, and the suggested approach outperforms existing models. Cross-validation on the benchmark dataset shows that EL-GQP performs significantly better than existing models.

The EL-GQP method has several advantages over current precision agriculture methods. Precision agriculture practitioners use it to integrate multiple models, overcome dimensionality, and accurately predict seed germination quality.

This article has been organized into five parts. The first section discusses seed germination and how machine learning (ML) algorithms can be used to predict seed germination quality. The second section contains a comprehensive review of the most recent ML algorithms for predicting seed germination quality. The third section discusses the study's methods and materials, with a focus on an ensemble learning-based seed germination quality check model. Section four presents the results of an experimental study on seed germination quality prediction using the proposed model, as well as performance measures. Finally, the conclusion highlights the study's contribution and summarises the key findings.

2. Related work

Generally, variations in internal anatomical characteristics and chemical composition of seeds have been associated with loss of vigor and viability, as in [11]. However, these variations have been unlikely recognized through visual inspection. Moreover, approaches dependent on X-ray imaging and spectrometric strategies have been utilized successfully to gather data on complex traits associated with seed quality. In this case, FT-NIR (Fourier transform near-infrared) spectroscopy has demonstrated significant potential for identifying seed compounds by acquiring a large number of spectral details, as shown in [12-18]. FT-NIR spectroscopy can acquire a large amount of spectral data and is effective in identifying seed compounds, according to several studies. As shown in [19], the FT-NIR spectroscopy is dependent on electromagnetic radiation absorption at wavelengths ranging from 780 to 2500 nm. This wide range of wavelengths enables direct and simultaneous measurement of multiple constituents in seed samples. As a result, it is versatile for simultaneous and direct measurements of various constituents in seed samples, as demonstrated in [16, 20-23]. Previous research has found that these characteristics make it an effective method for analysing seed samples. On other dimensions, X-ray imaging has been dependent on X-ray attenuation variances in diversified tissues types [24]. Therefore, it might reveal a physical seed state with an internal morphology as in [11]. Even though these strategies have the maximal possibility for classification of seed quality, integrating the datasets might produce novel information regarding the samples of seed or enhance the performance of the classifier as in [25].

Current advancements of ML algorithms have revolutionized agriculture due to their fundamental for building approaches to categorize products, mainly seeds quality attributes. The robust algorithms might capture non-linear and linear associations, and they might attain maximal accuracy of classification. Various algorithms proved as effective to solve the issues in several researching domains like PLS-DA (partial least squares discriminant analysis), LDA (linear discriminant analysis), NB (naïve Bayes), SVM, and many more, as stated in [12, 15, 17, 25, 26]. Nevertheless, distinct algorithms perform differently, and they might have diversified performances as in [26].

Even though models based on optical might produce accurate data on the quality of seed, combining datasets by ML algorithms might enhance the further performance of classification. Therewere no endeavors in utilizing FT-NIR integrated with X-ray data images for categorizing the qualityof seed. Hence, by utilizing U. Brizantha grass seeds as an approach, we have tested whether combined data from the X-ray imaging and FT-NIR with ML algorithms might enhance the vigor and germination of seed predictions.

In order to cut down on the number of manual steps in the error-prone seed-testing process, several researchers have proposed models for automating

this process. Because they are easy to automate and provide more accurate measurements with fewer errors than alternative methods, traditional image analysis strategies are currently used to identify seeds. In contrast, many published algorithms predict the perimeter, roundness, colour, width, and perimeter values of the seed using colour-based thresholds. [32] Defines a "germinator" as a piece of software that, by calculating the variance and area between individual points in an image over time, predicts whether an Arabidopsis-thaliana seed will germinate. Different seeds require adjustments to different system components, and the system has probably failed in a variety of partial occlusion or illumination scenarios. Similar to [33], SVIS (Seed vigour imaging system) uses a flat-bed scanner to scan images and digitally process the RGB pixel values to determine the lengths of the seeds. The camera settings have been standardised to enhance performance on other dimensions when scanning in any lighting. In order to measure the seeds using this method, the researcher must be present during the entire germination simulation. KNN, SVM, NB, and ANN were previously compared to determine which ANN approaches had the highest accuracy and performance for recommended seed germination, as stated in [34]. As a result, the researchers manually performed an additional germination test using image processing to extract eleven features. Convolutional neural networks (CNN) are a relatively new technique for image processing, in contrast to deep learning [35]. CNNs use features that are automatically extracted and learned from the original images to solve a variety of image classification issues. One of the factors for success is a low reliance on clearly defined obstructions and illuminations to achieve maximum accuracy in computer vision tasks. Rice seed germination has already been automatically measured using CNNs [36]. This model could only forecast the final percentage of germination because images weren't taken until after the simulation of germination was complete.

Machine learning-based germination quality prediction for seeds (GDPQA) [37, 40] is another contemporary model that endeavored to speed up the assessment of seed germination quality prediction. The other contemporary model, −seed quality classification using merger data from spectroscopy and x-ray imaging (ML-SQC) [38, 41] has been aimed to avoid preprocessing of the input data to achieve rapid classification. However, these contemporary models do not address the curse of dimensionality that is considering lowering the prediction accuracy, specificity, and sensitivity.

The purpose of this contribution is to lessen the consumption of time and human intervention for experiments on seed germination and to enhance the prediction model of germination, which has been (a) independent thresholds based on custom color and hence could be implemented to various illumination settings and seed cultivars and (b) could be utilized for exploring the vigorous germination of seed by predicting not only the ultimate percentage of germination however different indices such as uniformity and rate [44, 45].

According to the existing literature, variations in the internal anatomical characteristics and chemical composition of seeds have been linked to a loss of vigour and viability. X-ray imaging and spectrometric methods have been used successfully to collect data on complex traits related to seed quality. Machine learning algorithms have been successfully used to classify seed quality attributes. However, no attempt has been made to use FT-NIR combined with X-ray data images to categorise seed quality, and the curse of dimensionality limits prediction accuracy, specificity, and sensitivity. The goal of this research is to create an accurate, efficient, and robust model that can predict seed germination and investigate the vigorous germination of seeds using machine learning algorithms and data from FT-NIR and X-ray imaging. The goal is to reduce the time and human intervention required for seed germination experiments, as well as to improve the germination prediction model, which is independent of thresholds based on custom colour and can be applied to various lighting settings and seed cultivars.

3. Methods and material

The characteristics of the dataset and their importance for the simulation study and systematic model of the suggested EL-GQP approach are examined in the subsections of this section (ensemble learning based seed germination quality prediction).

3.1 Quantitative phase imaging principle

The idea of quantitative stage imaging has been explained in this section. Seeds incident under a microscope can pass through a particular area and scatter at a particular sample area using light in the 400–1100 mm range, framing a structured sample background and indicating a quantitative image. Additionally, over the course of 48 hours, the light incident procedure on target would be repeated at various seed intervals in order to collect the quantitative images phase of the necessary sample.

Quantitative image phase processing can also be described mathematically as follows:

The intensity of light perceived at the light

incident event on the required sample could be measured under the below inputs, modulation of phase, coordinates of the incident [x, y], and phase variance among pass through light and scattered light in the following Eq. 1.

$$I_{\emptyset}^{[x,y]} = \left(L_p\right)^2 + \left(L_s^{[x,y]}\right)^2 + 2\left(L_p\right)x\left(L_s^{[x,y]}\right)x\cos\left(\Delta\emptyset^{[x,y]} + \emptyset\right) \quad (1)$$

The variance of quantitative phase among pass through light and scattered light has been measured by utilizing below Eq. 2.

$$\Delta\emptyset^{[x,y]} = \arctan\left(\frac{I_{3\pi/2}^{[x,y]} - I_{\pi/2}^{[x,y]}}{I_0^{[x,y]} - I_{\pi}^{[x,y]}}\right) \quad (2)$$

Microscopic images of these formulations at various quantitative stages might attain.

$$0, \frac{\pi}{2}, 3\frac{\pi}{4}, \pi \quad (3)$$

There would be three quantitative phase images for each sample in the data corpus described in section 3.1, leading to a total of 1,324 and 2,144 microscopic images for qualified and unqualified seeds, respectively.

3.2 Morphological characteristics

The non-variant moment's characteristics have been considered morphological characteristics, which have been resourceful for exhibiting the variance among seeds' optical phases. Moreover, these characteristics depend on examining the differences in volume and shape of quantitative and healthy phases of infested seed.

The morphometric information has a significant role in exhibiting abnormal seeds detection. Inthe case of shape, anemia, and size of seeds became imbalanced regarding the everyday environment. There are nine shape features like major axis, minor axis, area, eccentricity, orientation, perimeter, circularity, and seven moments of invariant that have been mined.

3.3 Choosing attributes

Let set *N* depicts one of the quantitative phase features, and set *M* depicts other optical seeds phase features.

Choose optimum features in respect to both seed's optical phases in the following way

- The feature will be optimum if coverage of the feature is for both optical phases has been covariant.If this property has been challenged through feature, where coverage at both infected and normal seeds would not be divergent, that feature would be eradicated. Also, this feature optimization has been carried out as follows:
- Values perceived for overall considered features corresponding to both optical seed phases have been represented in a matrix format in the corresponding sequence.
- The corresponding normal seeds matrix has been represented as follows:
- Values perceived in each row have been for overall considered texture and morphological features resulting to normal-seed.
- Similarly, the perceived values for each row in the infected seed matrix represent all of the factors that are thought to go into making an infected seed.
- Furthermore, by predicting the z-score among the observed values for the resultant feature corresponding to both optical phases of the seed, the significance of each feature is assessed. The corresponding feature is deemed optimal when the composite variance is significant at a specific threshold probability.
- By estimating the z-score between the values perceived for each feature during the two optical phases of the seed, the significance of each feature was also ascertained. The resulting feature is deemed ideal if the composite difference is significant at a specific probability threshold.

3.4 Composite variance

The datasets n-gram like generated attributes in the 2nd stage of the projected model that is organized further for attaining required attributes. Electing the required characteristics depends on variance among co-occurrence of 2 optical seed phases to cater to overall attributes.

For estimating the difference of overall features, the optical phase's co-occurrence in order in the recommended model depends on bi-face integrated variance estimation for statisticalmeasurement. The significance of different assessment models has been concerned for the projected model. The Bi-face variance compound estimation has been held for choosing required attributes related to overall records in the learning database. Following is Manifold group values associated to two distinct vectors differential values set associated to two diversified vectors as explored for estimation has been formulated

Begin

$\forall \{e_i \exists e_i \in v_i\}_{i=1}^{\lvert v_1 \rvert}$	// for overall elements presents in vector
$av_1 += e_i$	//identifying the accumulative of overall elements present in the vector
$\forall \{e_i \exists e_j \in v_2\}_{j=1}^{\lvert v_2 \rvert}$	//for all elements presents in vector
$av_2 += e_j$	//identifying the accumulative of overall elements present in the vector
$\mu(v_1) = \frac{av_1}{\lvert v_1 \rvert}$	//identifying average of overall elements presents in vector
$\mu(v_2) = \frac{av_2}{\lvert v_2 \rvert}$	//identifying average of overall elements presents in vector
$dv_1 += (\mu(v_1) - e_i)^2$	//Identifying the accumulative of squared-mean-distance of elements present in the vector
$md(v_1, v_2) = \mu(v_1) - \mu(v_2)$	//identifying the variance among mean-values of elements resents in corresponding vectors
$\sigma(v_1) = \sqrt{\frac{dv_1}{\lvert v_1 \rvert}}$	//Identifying standard-deviation that is the square-root of variance perceived for vector v_1
$\sigma(v_2) = \sqrt{\frac{dv_2}{\lvert v_1 \rvert}}$	//Identifying standard-deviation that is the square-root of variance perceived for vector v_2
$cv_{(v_1,v_2)=\frac{md(v_1,v_2)}{\sigma(v_1)+\sigma(v_2)}}$	//Identifying composite difference of vectors that is the ratio of variance among mean-values in opposed to sum of standard deviations value perceived for both vectors.

End

Moreover, the degree of composite variance probability has been lower than the preset threshold level; then, it depicts that specified vector distribution has diversified. Hence, the attribute depicting the values of the resulting vector has been regarded to be the required attribute.

3.5 Classification procedure

This segment details the classifier utilized in this proposal, the model of the training stage, and the objective function that has been utilized in the classification procedure.

3.5.1 Classifier

The projected classifier has been designed on an adaptive boosting strategy. The classifier has been designed to integrate manifold Boolean-classifiers often signified to be weak-classifiers, which were built by utilizing Cuckoo-search that has been explored in one-time contribution. Every weak-classifier has been built by utilizing optimum features chosen from diversified quantitative stages. These unreliable classifiers divide the given test data according to whether the condition is true or false. Bipartite negatives, which can contain both false positives and false negatives, would be produced by a second weak classifier. Until the overall weak-classifier was thought to have finished the job, this process was repeated. The combined results of all of these Weak-classifiers would also be included in the classification process' final outcomes.

The projected model has been combined with each weak-classifier in this study to determine the most effective ways to extract quantitative seed features for binary classification. The classification process has also been repeated after each weak-classifier iteration; the next iteration of the classifier, also known as boosting, would use the portion of the corpus that was incorrectly classified. Weight classification also recommends employing a weak classifier for each iteration. Records from each of these weak-classifiers would be accurately classified as a result of the iterative completion of weak-classifiers. According to the suggested strategy, each AdaBoost algorithm weak-classifier correctly identifies a particular n-gram.

Additionally, the output of weak classifiers can be used to establish the polarity of the given record. Adaboost classifier has been a resourceful solution to enhance the desired outcome of DT (decision trees) compared to other associated binary classification

Table 1. Corpus dataset of paddy-seed

Total Positives	7920
Total negatives	6140
Positives for training	5607
Negatives for training	5526
Positives for testing	2313
Negatives for testing	614

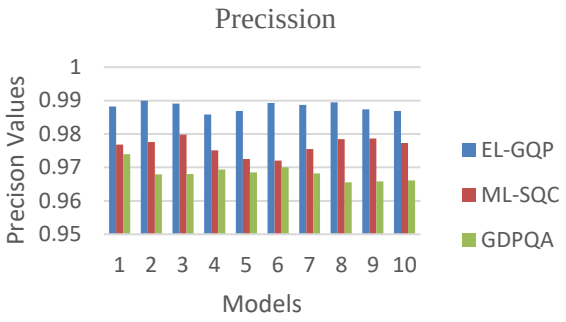

Figure. 1 Precision observed for proposed method EL-GQP, contemporary models ML-SQC, and GDPQA

issues. It might be extensively utilized in augmenting the outcome of distinct algorithms related to ML.

4. Experimental study

4.1 The data

The records corpus labeled negative and positive depicts the germination quality of paddy seed as stated in [39, 42] has been utilized in this simulation. The corpus dataset comprises of negative records 4250, and the number of positive records is 6230. In table 1, the input corpus statistics have been stated. The condition's performance depends on precision, TPR, TNR, and accuracy as significant optimum features elected depending on diversified thresholds set. The simulations have been conducted in cross-validation of 10 folds' format on both the projected EL-GQP model and existing approaches like ML-SQC (machine learning for seed quality classification) [38, 41] and GDPQA (Accurate machine learning-based germination detection, prediction, and quality assessment) [37, 40]. Ensemble algorithms form the [43] authors' are helpful to this research. Moreover, comparative analysis has been representing that the projected EL-GQP model is a possible ensemble supervised learning approach under crucially measured conditions while compared with the performance of existing approaches like GDPQA and ML-SQC.

In the article, performance metrics like precision, accuracy, and specificity are used to assess how well the ensemble-based precision forming method for predicting seed germination quality performs.

- The percentage of correctly predicted positive samples (true positives) among all positively predicted positive samples (true positives plus false positives) is known as precision. When predicting seed germination, precision would be defined as the percentage of correctly predicted viable seeds among all seeds predicted to be viable.
- The percentage of correctly predicted samples (true positives plus true negatives) among all samples is known as accuracy. The percentage of seeds that were correctly classified as viable or non-viable in a seed germination prediction would be considered accuracy.
- The percentage of samples that were correctly predicted to be negative (true negatives) out of all samples that were predicted to be negative (true negatives plus false positives) is known as specificity. In the context of predicting seed germination, specificity would be defined as the percentage of correctly predicted non-viable seeds among all seeds predicted to be non-viable.

The comparison has been carried out among projected model EL-GQP and existing models ML-SQC and GDPQA by plotting a graph among ten folds on the x-axis and metric precision on the y-axis, as shown in Fig. 1. The metric precision is also called a positive predictive value. From the statistics, the average standard deviation of projected model EL-GQP is 0.98818 ±0.001303 and contemporary models ML-SQC and GDPQA are 0.97638±0.002464 and 0.96798±0.001635 in respective order. It has been determined that our form carry out enhanced than the ones currently in use.

In Fig. 2, the graph has been plotted among ten folds on the x-axis and metric specificity on the y-axis for the projected EL-GQP and compared with other contemporary models like ML-SQC and GDPQA. From the statistics, the average standard deviation of specificity over the projected model EL-GQP is 0.95689±0.004955, and contemporary models ML-SQC and GDPQA are 0.91576±0.009092 and 0.88891±0.005879 respectively. It has been determined that our form carry out enhanced than the ones currently in use.

The comparison between projected model EL-GQP and existing models ML-SQC and GDPQA by plotting graph among ten folds on the x-axis and metric accuracy on the y-axis as shown in Fig. 3. From the statistics, the average standard deviation of

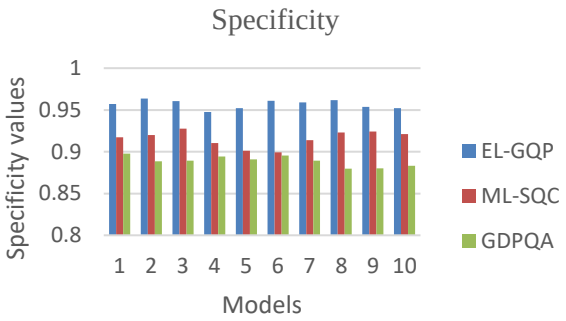

Figure. 2 Specificity observed for proposed method EL-GQP, contemporary models ML-SQC, and GDPQA

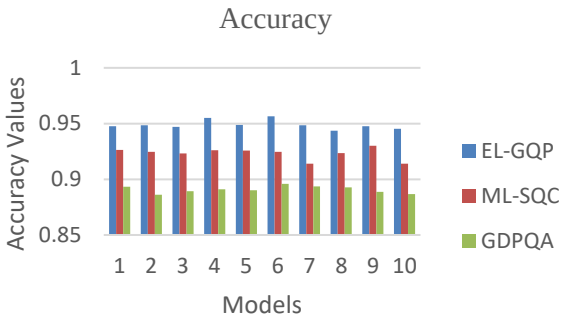

Figure. 3 Accuracy observed for proposed method EL-GQP, contemporary models MK-SQC, and GDPQ

accuracy over the projected model EL-GQP is 0.94887±0.003834and contemporary models ML-SQC and GDPQA are 0.9232±0.004999 and 0.89076±0.002999 in respective order. It has been determined that our form carry out enhanced than the ones currently in use.

5. Conclusion

The contribution of this paper endeavoured to deal with the constraints of the predictive analysis through classification to depict the seed germination quality. Unlike the contemporary models, the proposal is extracting values for the features from quantitative phases. It is observed that the contemporary models downgrade the prediction accuracy if the given microscopic images of seed at their premature level of infection. Predictive analysis based on classification is used in the healthcare industry. Since these microscopic images of seeds are provided, the proposed model, dubbed "Ensemble learning-based germination quality prediction" (EL-GQP), is meant to be trained using the values of the features observed at various quantitative phases. The performance analysis metrics of the EL-represented GQP outcomes were compared to those of existing models in the experimental study. The experimental study shows that the EL-GQP outperforms other contemporary models in terms of accuracy, sensitivity, and specificity. The fall-out and miss-rate of the proposal are also scaled low compared to contemporary models. But the ratio of fall-out and miss- rate observed from the proposed model EL-GQP are considerable constraints, which leads to future research scope.

Conflicts of interest

The authors declare that they have no conflicts of interest to report regarding the present study.

Authors' contributions

Mukkoti Maruthi Venkata Chalapathi conceptualised the study, curated the data, performed a formal analysis, devised the methodology, contributed to the coding, A Vijaya Krishna contributed in coding edited the article, G Gopichand devised the methodology, contributed to the coding, validated the content, Kadiyala Ramana supervised the study, validated the content, V C Bharathi helped with reviewed the software, Neeraj Sharma supervised the study.

References

[1] W. E. E. F. Savage and G. W. W. Bassel, "Seed vigour and crop establishment: Extending performance beyond adaptation", *J. Exp. Bot.*, Vol. 67, pp. 567–591, 2016.

[2] G. E. Masry, N. Mandour, S. A. Rejaie, E. Belin, and D. Rousseau, "Recent Applications of Multispectral Imaging in Seed Phenotyping and Quality Monitoring—An Overview", *Sensors*, Vol. 19, p. 1090, 2019.

[3] Y. Xia, Y. Xu, J. Li, C. Zhang, and S. Fan, "Recent advances in emerging techniques for non-destructive detection of seed viability: A review", *Artif. Intell. Agric.*, Vol. 1, pp. 35–47, 2019.

[4] C. Wakholi, L. M. Kandpal, H. Lee, H. Bae, E. Park, M. S. Kim, C. Mo, W. H. H. Lee, and B. K. K. Cho, "Rapid assessment of corn seed viability using short wave infrared line-scan hyperspectral imaging and chemometrics", *Sens. Actuators B. Chem.*, Vol. 255, pp. 498–507, 2018.

[5] M. R. Ahmed, J. Yasmin, W. Collins, and B. K. Cho, "X-ray CT image analysis for morphology of muskmelon seed in relation to germination", *Biosyst. Eng.*, Vol. 175, pp. 183–193, 2018.

[6] A. D. D. Medeiros, D. T. Pinheiro, W. A. Xavier, L. J. D. Silva, and D. C. F. D. Dias, "Quality

classification of Jatropha curcas seeds using radiographic images and machine learning", *Ind. Crops Prod.*, Vol. 146, p. 112162, 2020.

[7] T. King, M. Cole, J. M. Farber, G. Eisenbrand, D. Zabaras, E. M. Fox, and J. P. Hill, "Food safety for food security: Relationship between global megatrends and developments in food safety", *Trends Food Sci. Technol.*, Vol. 68, pp. 160–175, 2017.

[8] D. K. Ray, N. D. Mueller, P. C. West, and J. A. Foley, "Yield trends are insufficient to double global crop production by 2050", *PLoS ONE*, 2013.

[9] J. M. Filho and F. J. Marcos, "Seed vigor testing: an overview of the past, present and future perspective", *Sci Agric Scientia Agricola*, Vol. 72, pp. 363–374, 2015.

[10] ISTA, "The germination test", *Int Rules Seed Test*, 2015. [Online]. Available: https://doi.org/10.15258/istarules. 2015. 05.

[11] M. R. Ahmed, J. Yasmin, W. Collins, and B. K. Cho, "X-ray CT image analysis for morphology of muskmelon seed in relation to germination", *Biosyst. Eng.*, Vol. 175, pp. 183–193, 2018.

[12] A. D. D. Medeiros, D. T. Pinheiro, W. A. Xavier, L. J. D. Silva, and D. C. F. D. Dias, "Quality classification of Jatropha curcas seeds using radiographic images and machine learning", *Ind. Crops Prod.*, Vol. 146, p. 112162, 2020.

[13] A. D. D. Medeiros, M. J. Z. León, L. J. D. Silva, A. M. S. Oliveira, and D. C. F. D. Dias, "Relationship between internal morphology and physiological quality of pepper seeds during fruit maturation and storage", *Agron. J.*, 2020.

[14] É. F. L. Araújo, F. G. G. Junior, A. R. D. Silva, N. Peixoto, and E. R. B. D. Souza, "Evaluation of the desiccation of campomanesia adamantium seed using radiographic analysis and the relation with physiological potential", *Agron. J.*, Vol. 111, pp. 592–600, 2019.

[15] D. Kusumaningrum, H. Lee, S. Lohumi, C. Mo, M. S. Kim, and B. K. Cho, "Non-destructive technique for determining the viability of soybean (Glycine max) seeds using FT-NIR spectroscopy", *J. Sci. Food Agric.*, Vol. 98, pp. 1734–1742, 2018.

[16] Y. W. Seo, C. K. Ahn, H. Lee, E. Park, C. Mo, and B. K. Cho, "Non-Destructive Sorting Techniques for Viable Pepper (Capsicum annuum L.) Seeds Using Fourier Transform Near-Infrared and Raman Spectroscopy", *J. Biosyst. Eng.*, Vol. 41, pp. 51–59, 2016.

[17] G. C. Andrade, C. M. M. Coelho, and V. G. Uarrota, "Modelling the vigour of maize seeds submitted to artificial accelerated ageing based on ATR-FTIR data and chemometric tools (PCA, HCA and PLS-DA)", *Heliyon*, Vol. 6, p. e03477, 2020.

[18] A. Ambrose, S. Lohumi, W. H. H. Lee, and B. K. Cho, "Comparative non-destructive measurement of corn seed viability using Fourier transform near-infrared (FT-NIR) and Raman spectroscopy", *Sens. Actuators B Chem.*, Vol. 224, pp. 500–506, 2016.

[19] R. M. Silverstein, F. X. Webster, and D. Kiemle, *Spectrometric Identification of Organic Compounds, 7th ed.*, John Wiley & Sons, Inc., 2005.

[20] C. Li, T. Zhao, C. Li, L. Mei, E. Yu, Y. Dong, J. Chen, and S. Zhu, "Determination of gossypol content in cottonseeds by near infrared spectroscopy based on Monte Carlo uninformative variable elimination and non-linear calibration methods", *Food Chem.*, Vol. 221, pp. 990–996, 2017.

[21] P. Mukasa, C. Wakholi, C. Mo, M. Oh, H. J. J. Joo, H. K. Suh, and B. K. K. Cho, "Determination of viability of Retinispora (Hinoki cypress) seeds using FT-NIR spectroscopy", *Infrared Phys. Technol.*, Vol. 98, pp. 62-68, 2019.

[22] G. L. Jiang, "Comparison and Application of Non-Destructive NIR Evaluations of Seed Protein and Oil Content in Soybean Breeding", *Agronomy*, Vol. 10, p. 77, 2020.

[23] C. Pasquini, "Near infrared spectroscopy: A mature analytical technique with new perspectives—A review", *Anal. Chim. Acta*, Vol. 1026, pp. 8-36, 2018.

[24] B. Nugraha, P. Verboven, S. Janssen, Z. Wang, and B. M. Nicolaï, "Non-destructive porosity mapping of fruit and vegetables using X-ray CT", *Postharvest Biol. Technol.*, Vol. 150, pp. 80-88, 2019.

[25] E. Borràs, J. Ferré, R. Boqué, M. Mestres, L. Aceña, and O. Busto, "Data fusion methodologies for food and beverage authentication and quality assessment—A review", *Anal. Chim. Acta*, Vol. 891, pp. 1-14, 2015.

[26] L. Benedet, W. M. Faria, S. H. G. Silva, M. Mancini, L. R. G. Guilherme, J. A. M. Demattê, and N. Curi, "Soil subgroup prediction via portable X-ray fluorescence and visible near-infrared spectroscopy", *Geoderma*, Vol. 365, p. 114212, 2020.

[27] A. Chaugule, "Application of image processing in seed technology: a survey", *Int. J. Emerg. Technol. Adv. Eng.*, Vol. 2, No. 4, pp. 153-159, 2012.

[28] B. Rar, A. Ali, S. Naeem, F. Jamal, Elgarhy. M, Chesneau C. Discrimination of sunflower seeds using multispectral and texture dataset in combination with region selection and supervised classification methods. Chaos. 2020 Nov;30 (11):113142. doi: 10.1063/5.0024017. PMID: 33261340.

[29] D. A. Carroll, J. C. Brown, and P. Robson, "Using k-NN to analyze images of diverse germination phenotypes and detect single seed germination in Miscanthus sinensis", *Plant Methods*, Vol. 14, p. 5, 2018.

[30] R. Masteling, L. Voorhoeve, I. Jsselmuiden, J. "DiSCount: computer vision for automated quantification of Striga seed germination", *Plant Methods*, Vol. 16, No. 60, (2020).

[31] N. Genze, R. Bharti, M. Grieb, S. J. Schultheiss, D. G. Grimm, "Accurate machine learning-based germination detection, prediction and quality assessment of three grain crops", *Plant Methods*, 2020 Dec Vol. 22, No. 16(1), p. 157. doi: 10.1186/s13007-020-00699-x. PMID: 33353559; PMCID: PMC7754596.

[32] D. L. Claros, X. Meng, E. Custovic, G. Deng, O. Berkowitz, J. Whelan, and M. G. Lewsey, "Developmental normalization of phenomics data generated by high throughput plant phenotyping systems", *Plant Methods*, 2020 Aug Vol. 12, No. 16, p. 111. doi: 10.1186/s13007-020-00653-x. PMID: 32817754; PMCID: PMC7424680.

[33] M. Rodrigues, F. G. G. Junior, and J. M. Filho, "Vigor-S: System for Automated Analysis of Soybean Seed Vigor", *Journal of Seed Science*, Vol. 42, 2020.

[34] U. Škrubej, Č. Rozman, and D. Stajnko, "Assessment of germination rate of the tomato seeds using image processing and machine learning", *Eur J Hortic Sci*, Vol. 80, pp. 68–75, 2015.

[35] V. S. F. Garnot, L. Landrieu, S. Giordano, and N. Chehata, "Satellite Image Time Series Classification With Pixel-Set Encoders and Temporal Self-Attention", *2020 IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, Seattle, WA, USA, 2020, pp. 12322-12331, doi:0.1109/CVPR42600.2020.01234.

[36] T. T. Nguyen, V. N. Hoang, T. L. Le, T. H. Tran, and H. Vu, "A Vision Based Method for Automatic Evaluation of Germination Rate of Rice Seeds", In: *Proc. of 2018 1st International Conference on Multimedia Analysis and Pattern Recognition (MAPR)*, Ho Chi Minh City, Vietnam, 2018, pp. 1-6, doi: 10.1109/MAPR.2018.8337511.

[37] R. K. Madapudi, A. A. Rao, and G. Merugu, "Change requests artifacts to assess impact on structural design of SDLC phases", *Int'l J. Computer Applications*, Vol. 54, No. 18, pp. 21-26, 2012.

[38] M. R. Kumar and V. K. Gunjan, "Review of machine learning models for credit scoring analysis", *Ingeniería Solidaria*, Vol. 16, No. 1, 2020.

[39] R. K. Madapudi and P. C. S. Mahesh, "HBS-CRA: scaling impact of change request towards fault proneness: defining a heuristic and biases scale (HBS) of change request artifacts (CRA)", *Cluster Computing*, Vol. 22, No. 5, pp. 11591-11599, 2019.

[40] A. D. Medeiros, L. J. D. Silva, J. P. O. Ribeiro, K. C. Ferreira, J. T. F. Rosas, A. A. Santos, C. B. D. Silva, "Machine Learning for Seed Quality Classification: An Advanced Approach Using Merger Data from FT-NIR Spectroscopy and X-ray Imaging", *Sensors (Basel)*, 2020 Aug, Vol. 3, No. 20(15), p. 4319. doi: 10.3390/s20154319. PMID: 32756355; PMCID: PMC7435829.

[41] Available online: https://www.kaggle.com/datasets/c6caf46ef419a4cb653b4f8872a8136bb17151b106abd84821742b19d6db2447

[42] M. M. V. Chalapathi, "Self-Learning Based Emotion Recognition using Data Analytics", *International Journal of Innovative Technology and Exploring Engineering*, Vol. 9, No. 1, pp. 2278-3075, Nov. 2019.

[43] K. Ramana, A. Rajanikanth, M. R. Kumar, G. Nagaraja, A. V. Krishna, and P. Nagendra, "Leaf disease classification in smart agriculture using deep neural network architecture and IoT", *Journal of Circuits, Systems and Computers*, Vol. 31, No. 15, p. 2240004, 2022.

[44] R. Jhaveri, A. Revathi, K. Ramana, R. Raut, and D. R. Kumar, "A review on machine learning strategies for real-world engineering applications", *Mobile Information Systems*, Vol. 2022.

[45] N. Penchalaiah, J. N. Emmanuel, S. S. Kamal, and K. Ramana, "IoT based automatic irrigation system using wireless sensor networks", In: *Proc. of the 3rd International Conference on Communications and Cyber Physical Engineering*, pp. 1255-1272, 2021.

The Preliminary Scrutiny of the Asylum Unhazardous in Flotation through Internet of Things

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Abstract

An endanger appraisal with seven collateral specialists from the aforementioned monetary diligence yielded over 1,500 hazards, that were compared to something like an outside poll of forty practitioners representing both academia and industry. Researchers derive several conclusions based on this to guide subsequent IoT investigations and judgment calls addressing possibly overlooked hazards. Here to the finest of our comprehension, that's the initial objective investigation about which vulnerabilities, liabilities, and stock funds, including, consequently, concerns could hold sway throughout this arena. The (IoT) Internet of Things is anticipated to have a substantial contribution to consumer lending via increased client personalization, and instantaneous interactions, including the creative context of e-commerce. Nevertheless, the absence of such distributed apps makes evaluating cybersecurity risks tricky, which is also worsened additionally by the inclusion of additional, IoT-specific hazards that are not present in traditional platforms. Us we provide a two-part research in which we utilize strategic alternatives to analyze developing hazards of IoT in a broad range of financial commodities, utilizing to quantify these potential dangers through based tasks.

Keywords: Internet of Things (IoT), Financing Dependability, Risk evaluation.

1. INTRODUCTION

The notion of valuing assurance using accelerometers, such as example, housing as well as lifetime [8] goods, is not new. Automobile informatics, in particular, has also been extensively used to better effectively price automobile coverage based on driving patterns. Corporate analysis tools, such as IBM's Watson IoT for Insurance [16], were

increasingly being used to compute healthcare claims through client Data sets on a volume. Correspondingly, Salesforce CRM IoT Cloud gathers clients' IoT data - psychosocial and ambient data from individual gadgets - enabling information extraction. Furthermore, IoT devices have been designed to make it easier to interact with accounting transactions, such as equity scoreboards but also marketplaces for wearable technology enhancing energy financial planning frameworks utilizing acoustic information out from household [5], and exertion decentralized applications by in climate information [12]. According to Tata Consultancy Assistance, expects financial institutions would spend more than $207 million on Internet - of - things about product innovation by 2018, notwithstanding this expanding number of mobile apps, there has been minimal actual science to analyze the hazards to consumers and organizations.

- Categorization of rating among these dangers, as well as a comparison against current perspectives about Data protection across 40 security researchers.

Analyzed quantitatively, optimum areas of concentration into where IoT perhaps exert the greatest influence in financial services.

- Utilizing scheme organization along with ISO/IEC 27005:2008, comprehensively evaluating the possible hazards from IoT on such a plethora of financial goods and assistance in a variety of eventualities. This is, towards the greatest of our knowledge, the very first paper which rigorously premises various possible hazards from IoT in finance.

The Internet of Things (IoT) - An idea of obvious responses that could interact with the surroundings but also obtain Net access - is expected to alter a variety of industries, including agribusiness, procurement [11], And Production including insurance. The expectation that IoT would be integrated into the majority of corporate activities needs this same advancement of technology to safeguard it. Security concerns include handling possibly delicate information from an enormous count of derivations, and malicious, Along with creating substructures with massively diverse gadgets. The (IoT) Internet of Things is expected to have a big influence on the financial sector specifically [13]. The increasing proliferation of both trading - along with purchaser-retained IoT gadgets – whichever in the house, on corporate sites, or carried individually – might permit innovative methods of payment, finer segmentation, and therefore more precise valuation of financial goods.

2 ASSOCIATED EXERTION

Lewis et al present a technique that determines the gamble of commercial smartphone platforms also including narcotic simulators, allusion & educational materials, including saved health information in health coverage. These researchers concentrate on apps which may well breach the quality of care, such as clinical information that remains exclusive & important, as well as technologies that would bring injury to caregivers. Healthcare-specific risks, such as determining whether the actual impact is recoverable, are included in the risk analysis, as well as standard threats, including the destruction of client records. Those risks are then linked alongside potential accompanying weaknesses, for instance, the lack of stringent implode and information cryptography. Both are paired more with the platform's capabilities, including a BMI analyzer (limited potential) but rather a counternarcotics

gadget (elevated capacities), and assessment. Despite there being minimal research involving IoT in banking, scholastic hazard identification in similar areas, such as wireless & cloud infrastructure publications. Including RFID/NFC with commercial aviation [2], was published. They provide a mobile phone threat analysis technique to solve the flaws of existing evaluations (which often treat handsets as a unified force). Smartphone-specific commodities, including physical devices, Os, and business technologies of various classifications, such as finance but also transportation, were utilized to calculate hazard evaluations, together with application authorization overall hazard probability. The approach demonstrated by the researchers utilizing an Android-platform smartphone and just a testing client inside a supervisory position in the field of medicine. These probabilities of the risk generated are meant to be utilized in conjunction with one routine ISO/IEC 27005:2008 evaluation.

Its likelihood among an event is calculated using established data, for instance, the frequency of XSS & SQL injection assault complaints. In addition, these writers provide a catalogue of online storage collateral concerns applicable to a QUIRC-based evaluation. This investigation, in particular, examines possible hazards of IoT in financial advisory employing innovations. A similar study was done either by (ENISA - European Network and Information Security Agency) to anticipate the hazards of (RFID – Radio Frequency IDentification) upon airfares [3,2]. General strategy, as outlined is implemented to investigate these considering a variety of populations but also implementations, such as employing configurable RFID tags placed in baggage can monitor locations and accelerate verification & departure. In all, triple scenarios are built to accommodate a broad range of these kinds of circumstances. The concerns, exposures, and transactional are being utilized to evaluate risks following ISO 27005:2008, and a variety of policy-related and research-based suggestions are made.

3 FRAMEWORK AT THE OPTIMUM POTENTIAL

Utilizing previous ENISA work [2,3], researchers used a sequence of events framework for design Applications in financial inclusion. The general strategy is widely utilized in the armed forces and strategic provision [6], Including administrative to assess growing hazards for conceivable But somehow unrealized eventualities. Schoemaker defines forecasting as "visualizing stories about conceivable future instances relying on generalization given current patterns," which "greatly increases the overall world of options we can perceive whilst stopping us all from wandering into uncontrolled speculative fiction". Each situation was created with the help of seven economic security specialists, as well as the vulnerabilities were assessed in line with referred ISO.

1. Create Possible Scenarios: Through contingency planning, create numerous scenarios that examine IoT possibilities in financial inclusion (utilizing the procedure and extent narrated in Sect.4).
2. Gaining recognition: Using the approach described in Section 5, determine and describe Hazards, frailties, along Properties in those situations following ISO 27005:2008.
3. Worth Assignment: Assign numbers to represent the incidence & effect of security risks,

as well as the monetary value of the resources concerned.
4. Intrinsic Hazard Analysis: Review and assess the data from the previous phase, then compute risk results that use the procedure outlined in Section 5.2.
5. Peripheral Appraisal: Use a poll involving numerous performance quality control assessments on Data protection, as outlined in Section 6.1.
6. Observations as well as Inferences: Individuals are to make informed via comprehensive study as well as provide suggestions.

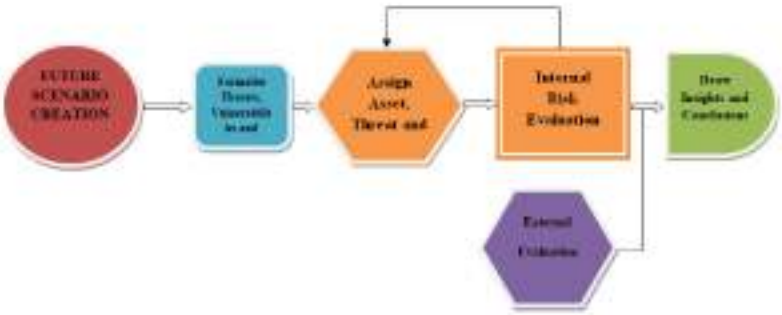


Fig. 1. Process of High-level risk analysis.

4 SCHEME DEVELOPMENT

This research concentrates on consumption management and accounting. We focus on outcome users and interactions We do not work alongside banking firms. Examine deposit staff or the inside operations of monetary organizations. Although they represent potentially influenced by the Internet of things (IoT), we expect that most large businesses would adhere to this view. This inquiry is restricted to the contemporary towards the coming days (about 5 years) to encompass upcoming IoT technologies that could be widespread. Whenever appropriate, we relate to actual instances of new IoT devices being investigated by payment institutions, for instance in demos or off-white papers. Various situations have been outlined inside these categories below. Following table 1. Precisely lists both banking goods & IOT Apps within every circumstance. Considering those situations' timeframes, researchers assumed anticipated interaction and structural approaches would still not alter much. We employ contemporary, established techniques for brief transmission (e.g., Radio frequency IDentification, Bluetooth along with Near Field Communication), protracted networking (WLAN as well as 4G), and structures on something like a continuous basis for instance client-server structure mediated by an HTTP API). Schemes were designed through the use of an iterative and incremental approach that first acknowledged subareas within which IoT could've been adhered, such as in-store, at residence, or in a financial institution; second, listed conceivable along with pertinent Internet of Things applied sciences in this kind of venues.

Scheme A. Looks at an elderly person as well as the effects of population shifts on finance regarding applied science resistance and incompetence. This scheme depicts controlling several finances from something like a unique fitness band (system consolidation) as well as local Wireless sensors for presenting offers, measuring consumer activity, and notifying clerks/appointments. Automobile informatics is being researched to precisely calculate automobile insurance, in which sensors and data - vehicle geolocation, velocity, even operating aggressiveness - are broadcast through distant indemnity servers through a 4th Generation Device grid. Furthermore, ongoing authorization & NFC-based security systems are being investigated regarding organizations bringing in managing financial transactions as well as in safety deposit boxes in-branch.

Scheme B. A technically skilled multinational entrepreneur who is battling an adverse health ailment. This simulation investigates the usage of controller pillboxes which detect medicine used to aid improve devotion 1. This attentiveness is utilized to calculate customer insurance rates by broadcasting the information from your device Wirelessly to a distant provider employing 4G or WLAN. This concept additionally includes the usage of IoT to monitor corporate data through the user workplace via RFID in the distribution network, wherein company data and price movements are broadcast to a wristwatch of the client, which is smart. Commercial exports are monitored utilizing a blockchain administered between cargo ships, merchants, and producers for the execution of smart transactions. While pre-ordering coffee either through an in-car, or Cloud home screen, seamless purchases were investigated. Could acquire once at the wayside shop. This story involves monitoring lost or missing protected things by embedding Navigation components inside assets including a wristwatch or jewellery, which sends locations to something like a distant repairer.

Table 1. Study of IoT technologies, Commodity and Aids.

Commodity and Aids.	IoT Claims & relevant operate
Scheme A	
Administration of financial institutions	Commercial money transfers will be centralised upon smart wearables.
	sensor - Persistent Device validation.
	Password protection through NFC for smart financial institution secure deposit containers
Professional experience in a department	The use of cloud-based solutions.
Automobile coverage	The navigation system in automobiles.

Scheme B	
Medical coverage	Tariff associated with physiological wearable sensors information.
	Auditing of treatment outcomes.
Marketing Automation	RFID is used in commercial supplier relationships.
	Distribution centres with sensors.
	Foreign trading via consensus mechanism.
Automobile Coverage	Automobile monitoring provides a penetration price point.
No-hassle transactions	Four-wheeler economics.
	Electronic cash transactions are becoming more basic.
Branding with a specific audience	Wireless transmitters for location.
Coverage of criminal sciences	Detecting precious things outfitted with sensors.

5. PROTOCOL FOR THREAT EVALUATION

As specified in the next section, these situations were codified into clear listings of commodities, attack vectors, and weaknesses.

5.1 Interpretations

The following definitions of resources, weaknesses, and hazards have been extracted from ISO/IEC 27005:2008 [1] for their evaluation. It ought to be noted because normal testing procedures contain inherent; according to [2,] they presume their presence as well as incorporate it into the danger, resource, and susceptibility levels.

Deficiencies were defined as situations which allow a vulnerability to also be materialized and therefore are classified as equipment, networking, organizational/governance (e.g., organization's rules), human (e.g., inadequate knowledge), or software defects. Every weakness subsequently coupled including its following images as well as allocated a number between 1 and 5, indicating the investment's susceptibility to the insecurity and the extent to that it may affect that property (severity). By calculating their median of them, a unified number was generated.

Resources include hardware resources, digital services, and operating systems, including knowledge either facilitate company activities or relates to confidential detail. Securities had been divided into classes: physiological gadgets, including portable gadgets; data, including certain log entries, tracking devices, and ability; offerings, i.e. software solutions needed to run and service delivery interaction, also including spreadsheets; and software packages for use by users to communicate to management services

Hazards include occurrences which harm a resource from illegal acts, including network traffic acquisition; natural atmosphere, including such as fires and floods; or unintentional activities, also including stupid mistakes. Each one was assigned a number between 1 and 5 to illustrate its possibility, and it was recorded whether it affects confidentiality, authenticity, or accessibility. Psychological dangers, such as committing a crime, are evaluated based just on the threatening owner's anticipated capacity and motive, whereas the remainder of dangers remained calculated based on their anticipated occurrence & harm capability.

5.2 Hazard Identification

While dismissing nonsensical triples, such as power failures affecting effective secrecy of inactive RFID tags, resource, hazard, and liability permutations were personally examined and inherent believability. The overall risk matrix was built out from the residual property, vulnerability, as well as danger permutations. Beyond that, the vulnerability, vulnerability, key property disclosure, harshness, and valuation figures could be evaluated and amended yet again. The risk technique in Eq. 1, as applied in [1], was utilized to determine a particular risk score. Figure 2 shows the range of potential central aspects from one to Thirteen, Considering using the ENISA grading system (One: ineffective hazard; Thirteen: highest danger) [1,2]. Furthermore, in Section 5.1, the median danger and sample variance were calculated for every resource, danger, and susceptibility categorization.

Hazard = Intangible asset value + Susceptible value, + Risk value divided by two.

Table 2. Depicts the hazard matrix derived either from parameters of Capabilities, Hazards, As well as Predisposing factors.

Predisposing factors	1					2					3					4					5				
Danger Parameters	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Capabilities,	2	1	2	3	4	5	2	3	4	5	6	7	4	5	6	7	4	5	6	7	8	5	6	7	8	9
	3	2	3	4	5	6	3	4	5	6	7	8	5	6	7	8	5	6	7	8	9	6	7	8	9	10
	4	3	4	5	6	7	4	5	6	7	8	5	6	7	8	9	6	7	8	9	10	7	8	9	10	11
	5	4	5	6	7	8	5	6	7	8	9	6	7	8	9	10	7	8	9	10	11	8	9	10	11	12
		5	6	7	8	9	6	7	8		10	7	8	9	10	11	8	9	10	11	12	9	10	11	12	13

6 ASSESSMENT

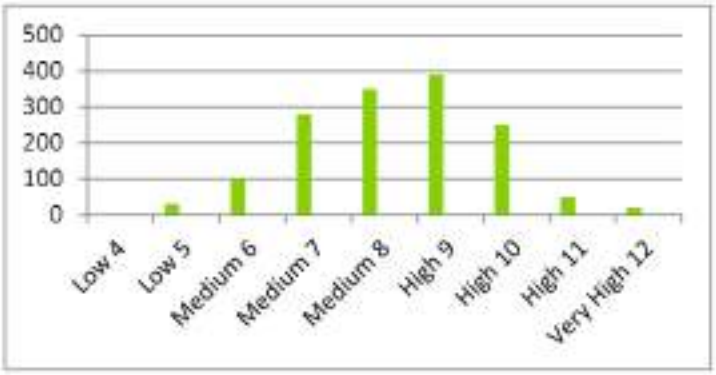
Researchers performed a poll using Forty intelligence analysts that compare overall findings for their internal evaluation to current IoT protection perspectives.

6.1 Surveying Techniques

An online poll with Forty-Eight inquiries was performed, a component of the organization to assess and score various resources, challenges, & weaknesses to use in instances out from cases. Given the breadth of that same inside evaluation - Over 1,470 hazards in each of the questionnaires were created by randomly selecting resources, weaknesses, or challenges first from situations. To encourage involvement, one minimum item is collected from every course sub-group whilst keeping under a 10-minute time constraint. They were asked to forecast the relevance of hazards and weaknesses inside the sense of the situation, without explicitly defining their simulations' timing.

7 OUTCOMES

Among all three situations, 1,429 threats got assessed. Scheme B included 515 dangers, with a median hazard of $\mu = 8.50$ as well as a sample variance of $\sigma = 1.44$. Scheme C had 604 dangers ($\mu = 8.24$; $\sigma = 1.45$), whereas Scheme A had 310 risks ($\mu = 8.68$; $\sigma = 1.09$). Table 3 represents estimated dangers throughout all three situations predicated upon resource, danger, & susceptibility classifications, whereas Figure 2 depicts the overall likely effect within all eventualities. Additionally, within Table 4, we outline the top kinds of stories only with enhanced danger for every category - resources, liabilities, & dangers - in addition to the ratio of these found in every possibility. 40 security firms participated in our questionnaire, with a mean value $\mu = 6.33$ years of expertise ($\sigma = 6.78$) inside the area, including both researchers and industry defense experts. Overall questionnaire forms were subsequently normalized towards the risk category in Table 2 (1-13) until 2 different t-tests with both the difference of averages were used to ascertain predictive value between the evaluations. The above is seen in Table 4. Most of the problems raised throughout our research include similar to many of those lastly identified; nevertheless, our findings reveal that certain sectors may be excessive & underestimated, which will inquire immediately.



Risk Values	no of occurrences
Low 4	0
Low 5	30
Medium 6	100
Medium 7	280
Medium 8	351
High 9	390
High 10	250
High 11	50
Very High 12	20

Table 3. Summary of Strengths, Susceptibilities and Dangers Categories overall schemes.

Categories	Hazardous Mean	Standard dev	No of Manifestations
Strengths			
Applications	8.54	1.15	280
Services	9.40	1.26	233
Hardware	8.14	1.35	795
Data	7.97	1.35	121
Susceptibilities			
Software	8.55	1.24	649
Network	9.07	1.43	193
Workgroup	8.24	1.34	432
Electronics	7.19	1.33	155
Dangers			
Unsavory action	8.85	1.06	136
Disruptions	7.79	1.12	121
Gadget dependability	7.88	1.17	129
Unauthorized access & manipulation of Information	8.78	1.09	546
Team working	8.43	0.88	215
Bodily safety	8.42	0.99	101
Inadvertent destruction as well as harm	7.52	1.36	181

Uncertainty Documenting. A frequent element in our results included responding to possibly unreliable information via offsite, unmanaged equipment. IoT provides prospects for streamlining wire transfers & enhancing facilities utilizing data from the sensors, however, the findings indicate that this has been associated with higher hazards. Three of the most frequently identified hazards were relying upon information from sensors: (1)

inadequate authenticity controls, (2) faulty detectors, as well as (3) inadequate inspection of creating information to assure its authenticity. Interpretation of information from distant equipment has to be hazardous at the value of the face. The surveying results demonstrate even consultants used to have a minor although highly significant tendency (for p 0.05) against underestimating potential harm provided by untrustworthy sensor devices data (0.93; p = 0.04). These are demonstrated somewhat by properties in which it transduces comparable information - asset 2: investing registry, while commodity 4: cargo producing companies - which were also significantly overlooked in the professional poll (3.13 & 2.37, correspondingly; p 0.01). As a result, experts advocate paying special attention to supervision when relying on information via faraway, unsupervised equipment at volume. Reduced devices, for instance, would produce erroneous or faulty statistics, so this might also be the consequence of manipulation, such as careless riders tinkering with the Telemetric version should send 'safe' measurements to mislead insurance. Its repercussions might be more catastrophic when technologies became entirely digital lacking civilized human control & accounting policies.

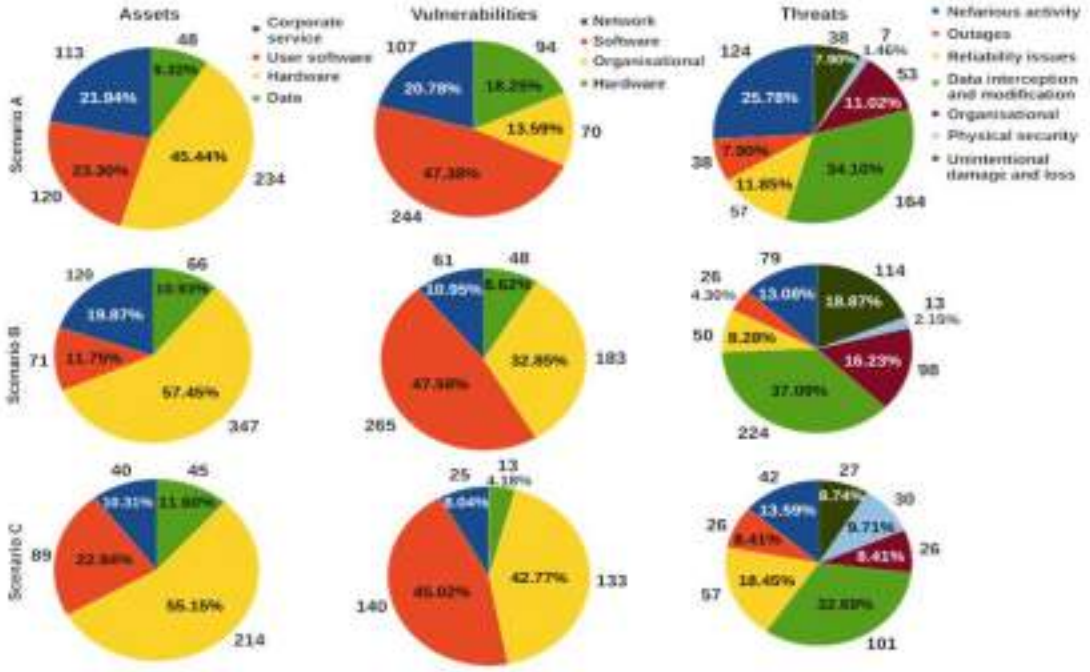


Fig. 3. Distributions of Strengths, Susceptibilities and Dangers Categories

Instrumentation and tangible security. A similar insight seems to be the link between low system components security and significant risk. Isolated IoT, Smart objects, possibly underneath clients' management, allow adversaries (who may be users taken by individuals) to probe equipment well lacking discouragement of detection and tracking. This, adds significantly to the primary subject. Lack of physical safeguard might well allow hackers to gain access towards the machine PCB or tinker with detection equipment, like non - authorized firmware flashing through the use of non-secured integrations, like UART or JTAG; substituting equipment with deliberately faulty products; but also attaching unpermitted elements to

circumvent appropriate security oversight ('modchip' strikes). These vectors might be used to send the false reading to insurance or even other financial bodies.

Table 4. Illustrates the five largest means concerns. Strengths, Susceptibilities along with Dangers Categories Comparing our basis of quality with said consumer survey, including mean deviations & t-test p-values.

Categories	Intrinsic	Questionnaire	μ- non-identical	t-tests
Strengths				
1. Credit and debit card information	11.00	11.79	+0.79	0.35
2. Database of Investments	10.58	7.71	−3.13	<0.01
3. Facility for internet transactions	10.05	11.88	+1.83	<0.01
4. Transport connectivity equipment	9.50	7.13	−2.37	<0.01
5. Client site information	9.25	5.83	−3.42	<0.01
Susceptibilities				
1. Poor user authentication	9.22	10.58	+1.36	<0.01
2. Software network vulnerabilities	9.27	11.29	+2.02	<0.01
3. Poor auditing of remote data	9.11	8.58	−0.53	0.22
4. Poor data integrity protection	9.04	9.54	+0.54	0.16
5. Poor logical access control	8.86	10.50	+1.64	<0.01
Dangers				
1. Provisioning problems	10.10	10.67	+0.57	0.13
2. Alteration of transaction records	9.64	10.75	+1.11	0.01
3. Connectivity Restriction	9.38	10.25	+0.97	0.03
4. Infringement of confidentiality	9.19	11.54	+2.35	<0.01
5. Violent robbery	9.18	8.42	−0.76	0.04

Unsecured & unguarded connectivity interfaces and services running on the system are examples of program security breaches. Unauthorized consumer segmentation, as well as surveillance, are examples of confidentiality infractions. The capacity of individuals to nullify computerized procedures is associated with individuality assessment.

Equipment inherently may well be valuable (along with the knowledge they contain) and therefore prey for thievery, including a wristwatch. Electronic manipulation and insufficient

physical integrity both were included in the top ten hazards and flaws (7.08 and 7.38 respectively). Human theft was modestly discounted as a danger (- 0.76; p=0.04), whereas equipment sabotage was slightly inflated (+2.45; $p < 0.01$). We being advocates emphasise firewalls in the design of an IoT device, especially if it is deployed distantly.

Infiltration and manipulation of data records. Penetration of previous transactions through IoT systems produced large risk results, as anticipated (9.65–10.76). Although purchasing RFID-enabled commodities without having to wait seems appealing, as does intelligent devices continuously restocking things, these transactions are easy for hackers to target. Those vulnerabilities, which are the consequence of insufficient encryption, data confidentiality, and safe identity stockpiling, are neither novel nor unique to IoT and are well-recognized inside the industry. Nevertheless, the concerns might well be amplified whenever restricted, tinier devices built at a low cost per unit (< $0.05), are considered, which might be inadequate for securing and trying to mess up professional certification holding or providing decryption at appropriate prices.

Authorization. Understandably, validation concerns - respectively consumer & handset access control - steadily posed the greatest threat including both threats and weaknesses throughout our research findings (9.23-10.66), including elements like unapproved smartphone dynamic duo, allowing security holes, and indeed the lack of multi-factor identity verification. Destitute identification has a lot of implications, from apparent illustrations of unlawful utilization of financial & retail services to permitting unapproved individuals to communicate with critical equipment, like those used in medical services. IoT authenticity is exacerbated by the requirement for companies to verify their clients, respective gadgets, as well as any middleman providers, such as cloud vendors, which can sometimes function autonomously.

Governing of statistics. The prominent subject, as predicted, was information security & appropriate means for disposing of outmoded & superfluous information. Internet of things exposure to nonpublic information could lead to misuse, if those deliberate or inadvertent, also including illegal profiling and surveillance via signposts as well as other positioning methods. Furthermore, amid relatively enormous amounts of info, clients perhaps kept for longer than required as well as over without proper control, presenting businesses with dangers associated with upwards of, destruction, & thievery. IoT does have the capability to worsen current data security threats: significant particulars obtained for one reason, such as conscience domestic vitality use, Perhaps easily be utilized for someone else lack of authorization, such as online marketing of novel, energy-efficient products. Respondents underestimated the hazards presented by consumers' geolocation (3.13; p 0.01), Yet acknowledged the risk associated with data breaches including inappropriate monitoring (11.54), and impersonation (11.54). (9.00–10.92).

7.1 Constraints

A plethora of perceptions was used to create the situation: altcoins, such as Bitcoin, also weren't adequately recorded. Virtual monies often abolish or replace banking institutions entirely; however, the goal of this research was focused on the impact of IoT in usual channels. However, we do not imply that our circumstances cover all bank firms, therefore their findings ought to be considered with caution in different contexts. We emphasize also that the outside questionnaire was utilized to encapsulate as well as juxtaposition viewpoints on IoT in financial services and wasn't a crucial piece of something like the evaluation on its own; researchers rephrase that such exterior opinion poll was carried out to encapsulate and stark comparison beliefs on IoT in banking and wasn't a core pillar of either the assertion it's very.

8 EXECUTIVE SUMMARY

Throughout this paper, we discussed the significance of thoroughly assessing possible concerns related to both the usage of IoT within economic merchandise and assistance. This had been followed through an evaluation of equivalent things in smartphone & cloud technology, medicine, and especially RFID in commercial aviation before actually establishing an inclined-level architecture based on the previous piece of work utilising forecasting and ISO 27005:2008. Only with help of domain knowledge, a set of connected cases incorporating several upcoming IoT technologies and accounting software was created. A maximum of 1,429 hazards were identified following standardising relevant hazards, exposures, and advantages within every circumstance. We compared these findings with those from an international poll of Forty security specialists from industry and education, only to gather clear guidance on IoT security. We selected numerous issues of interest those which are likely to acquire primacy in the field as a result of which. The findings are offered to aid future study, policy formation, & judgement.

8.1 Prospective Investigation

Following the current study, we plan to investigate the same relevant avenues for further research: - Researching the major security issues connected with the usage of cryptocurrencies in IoT installations.

- Incorporating the dangers of equipment reimbursements and atypical truly seamless funds transfer, such as defibrillators.

- Including one-of-a-kind financial exchanges involving numerous players, including collective payouts and mentoring loans.

Acknowledgements. These researchers wish to acknowledge Vasco Information Security for initiating and supporting this research; the consumer questionnaire volunteers for their valuable

attention & thoughtfulness; and indeed they sincerely thank for their informative and helpful remarks. The EPSRC as well as the United Kingdom administration are supporting Carlton Shepherd as a member of Royal Holloway University of London's Initiative and Dissertation Training in Cyber Defense.

REFERENCES

[1] BS ISO/IEC 27005:2008 Information technology - Security techniques - Information security risk management. British Standards (BSI), June 2008.

[2] Flying 2.0 - Enabling automated air travel by identifying and addressing the challenges of IoT & RFID technology. Technical report. European Network and Information Security Agency (ENISA) (2010).

[3] ENISA EFR Framework - Introductory Manual. Technical report. European Network and Information Security Agency (ENISA) March 2013

[4] Accenture: Connected commerce hits the road (2016). https://www.accenture.com/be-en/success-visa-connected-commerce-car

[5] Alahakoon, D., Yu, X.: Smart electricity meter data intelligence for future energysystems: a survey. IEEE Trans. Industr. Inf. **12**(1), 425–436 (2016)

[6] Bodwell, W., Chermack, T.J.: Organizational ambidexterity: integrating deliberateate and emergent strategy with scenario planning. Technol. Forecast. Soc. Chang. 77(2), 193–202 (2010)

[7] Cairns, G., Wright, G., Bradfield, R., van der Heijden, K., Burt, G.: Exploring e-government futures through the application of scenario planning. Technol. Forecast. Soc. Chang. **71**(3), 217–238 (2004)

[8] Capgemini: Wearable Devices and their Applicability in the Life Insurance Industry. April 2014. https://www.capgemini.com/resource-file access/resource/pdf/we arable devices and their applicability in the life insurance industry.pdf

[9] Chang, M.-S., Tseng, Y.-L., Chen, J.-W.: A scenario planning approach for the flood emergency logistics preparation problem under uncertainty. Transp. Res.Logistics Transp. **43**(6), 737–754 (2007)

[10] Chawathe, S.S.: Beacon placement for indoor localization using Bluetooth. In: 11th International IEEE Conference on Intelligent Transportation Systems, pp. 980–985.IEEE (2008)

[11] DHL: Internet of Things in Logistics (2016). https://www.scribd.com/document/285437514/DHL-TrendReport-Internet-of-Things

[12] Franklin, R., Metzger, A., Stollberg, M., Engel, Y., Fjørtoft, K., Fleischhauer, R., Marquezan, C., Ramstad, L.S.: Future internet technology for the future of transport and logistics. In: Abramowicz, W., Llorente, I.M., Surridge, M., Zisman, A., Vayssière, J. (eds.) ServiceWave 2011. LNCS, vol. 6994, pp. 290–301. Springer, Heidelberg (2011). doi:10.1007/978-3-642-24755-2_27

[13] Gartner, Inc.: 6.4 Billion Connected 'Things' Will Be in Use in 2016, Up 30 Percent From November 2015. http://www.gartner.com/newsroom/id/3165317

International Journal of All Research Education and Scientific Methods (IJARESM),
ISSN: 2455-6211, Volume 11, Issue 5, May-2023, Available online at: www.ijaresm.com

Analyzing Quetelet Index from Facial Features

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ABSTRACT

The Quetelet Index also known as The Body Mass Index (BMI) serves as an indicator of a person's physical fitness in relation to their body weight. This measurement has been linked to various factors, including mental and physical health as well as societal status. Precise height and weight measurements are required for calculating QI, which can be a manual and time-consuming process. Streamlining the calculation of QI through automation would enable its use in the analysis of different societal aspects and support effective decision-making by governments and corporations. Previous studies have either focused solely on geometric facial features or employed data-driven deep learning approaches that are limited by the availability of data. We used the Convolution Neural Networks .Our study uses state-of-the-art pre-trained model, such as VGG16, which were fine-tuned on a large public dataset with discriminative learning. We trained our models on the extensive Arrest records dataset and evaluated their performance using different persons images.

Keywords: Convolution Neural Networks, VGG16, Body Mass Index, deep learning

INTRODUCTION

The assessment of Body Mass Index (BMI) is crucial for determining whether an individual is underweight, normal weight, overweight, or obese, and is an essential health indicator. Unfortunately, in the current era, despite the many benefits of technology, it has led to a sedentary lifestyle, which has significantly reduced physical activity and increased BMI, Increased the risk of chronic illnesses and posed a danger to people's health. The higher an individual's BMI, the greater their chance of developing cardiovascular and other harmful conditions. Nevertheless, BMI can be a valuable tool for those with malnutrition or deficiencies to monitor their health status.

According to a study [1], approximately 36% of the population, or one in three adults, are obese, with an estimated 20% of the world's population projected to be obese by 2030.According to recent studies, there is a significant association between human facial characteristics and BMI. Individuals with slim facial features typically exhibit a lower BMI, whereas overweight individuals usually have wider middle and lower facial features. Calculating BMI can be challenging for those who lack a weighing scale or a measuring tape.

However, advancements in deep learning techniques have enabled the extraction of meaningful features from images, facilitating the prediction of BMI from human facial characteristics. Therefore, we propose a new method in this paper to predict BMI from human facial features, which could be advantageous for health insurance companies to manage their clients' health records and for governments to monitor the health statistics of specific regions and develop appropriate policies.

LITERATURE REVIEW

The paper "Face-to-BMI: Using Computer Vision to Infer Body Mass Index on Mobile Devices" by A. Kalra, et al. (2019) proposes a method for estimating a person's body mass index (BMI) from facial images on mobile devices using computer vision techniques.

The authors collected a dataset of facial images and corresponding BMI values from 1,000 participants using a mobile application. The dataset was divided into training, validation, and testing sets with a ratio of 70:10:20. The authors used the training set to train their machine learning model, and the validation set to optimize the model's hyperparameters. The performance of the model was then evaluated on the testing set.

The authors used various machine learning algorithms, including support vector machines (SVMs), decision trees, and k-nearest neighbours (k-NN), and compared their performance in predicting BMI values from facial images. The authors also used feature extraction techniques to extract relevant information from the facial images, such as facial landmarks and texture, to improve the accuracy of their model.

The results showed that their proposed method achieved an accuracy of 81% in predicting BMI values from facial images on mobile devices.

The paper "Estimating Body Mass Index from Face Images using Convolutional Neural Networks" by M. Habibi, et al. (2017) proposes a method for estimating a person's body mass index (BMI) from face images using convolutional neural networks (CNNs).

The authors collected a dataset of 13,233 face images from the internet, and manually labelled each image with the corresponding BMI value. The dataset was divided into training, validation, and testing sets with a ratio of 70:10:20. The authors used the training set to train their CNN model, and the validation set to optimize the model's hyperparameters. The performance of the model was then evaluated on the testing set.

The authors used various CNN architectures, including VGG-16, ResNet-50, and Inception-v4, and compared their performance in predicting BMI from face images. The results showed that the Inceptionv4 architecture achieved the highest accuracy of 77.3% in predicting BMI values from face images.

3.The paper "Facial feature extraction for predicting BMI using machine learning techniques" by S. Ravi, et al. (2018) proposes a method for predicting a person's body mass index (BMI) using facial feature extraction and machine learning techniques. The authors collected a dataset of facial images and corresponding BMI values from 500 participants, and manually extracted 24 facial features, such as eye distance, mouth width, and cheekbone height, among others. The authors then used feature extraction techniques to extract relevant information from the facial features, and applied various machine learning algorithms, such as support vector machines (SVMs), decision trees, and k-nearest neighbours (k-NN), to predict the BMI values from the facial features. The results showed that the SVM algorithm achieved the highest accuracy of 77.4% in predicting BMI values from facial features.

The paper "Estimating Body Mass Index from Face Images using Convolutional Neural Networks" by M. Habibi, et al. (2017) proposes a method for estimating a person's body mass index (BMI) from face images using convolutional neural networks (CNNs).

The authors collected a dataset of 13,233 face images from the internet, and manually labelled each image with the corresponding BMI value. The dataset was divided into training, validation, and testing sets with a ratio of 70:10:20. The authors used the training set to train their CNN model, and the validation set to optimize the model's hyperparameters. The performance of the model was then evaluated on the testing set. The authors used various CNN architectures, including VGG-16, ResNet50, and Inception-v4, and compared their performance in predicting BMI from face images. The results showed that the Inception-v4 architecture achieved the highest accuracy of 77.3% in predicting BMI values from face images.

The paper "Estimating Body Mass Index from Facial Features using Artificial Neural Networks" by R. Saman, et al. (2015) used two datasets to train and test their artificial neural network (ANN) model for estimating body mass index (BMI) from facial features:

The first dataset was collected from 60 participants (30 male and 30 female) with ages ranging from 18 to 35 years. The dataset consisted of facial images and corresponding BMI values for each participant. The authors manually extracted 10 facial features, including the distance between the eyes, the width of the nose, and the length of the face, among others.

The second dataset was collected from 40 participants (20 male and 20 female) with ages ranging from 18 to 35 years. The dataset consisted of facial images only, without corresponding BMI values. The authors used their ANN model trained on the first dataset to predict the BMI values for each participant in the second dataset based on their facial features.

The authors used these two datasets to demonstrate the effectiveness of their method in estimating BMI from facial features using ANNs.

RELATED WORK

This paper aims to enhance the accuracy of facial Quetelet index (BMI) prediction by utilizing a large dataset. The main contributions of this research include Identifying the correlation between BMI and human faces and developing a technique for BMI prediction from facial features using deep learning and transfer learning models such as VGG16-Face.

To achieve this, the study used publicly available dataset consisting of images of prisoners. The faces were aligned to the center during pre-processing, and the proposed approach was applied to the datasets Our approach is mentioned in the given image

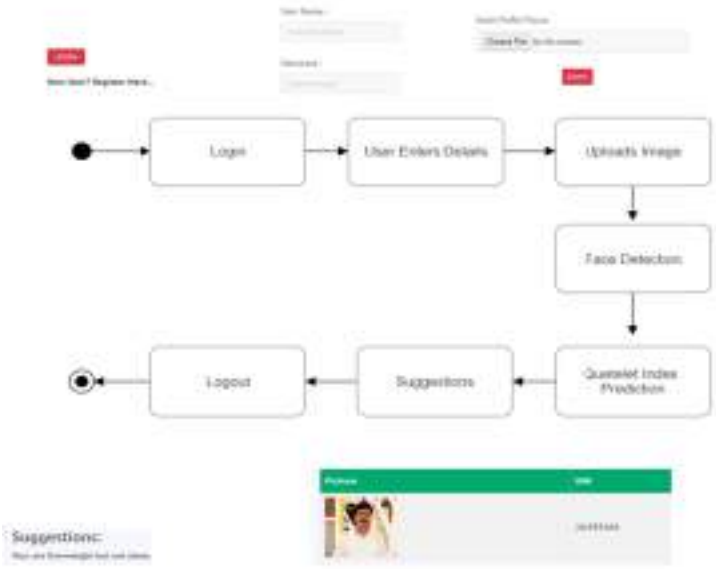


Figure 1- Approach

METHODOLOGY

We have used the data set which is available in the methodology section, we utilized the Prisoners dataset, which includes information on incarcerated individuals such as their identity, height, weight, body mass index (BMI), and other features. The dataset consists of 1543 photos, with 1243 males and 300 females, and BMIs ranging from 15 to 56. The average BMI for the dataset is 26.41, with a standard deviation of 5.27. The dataset is imbalanced, with males outnumbering females four to one. We utilized this dataset to assess the performance of our model.

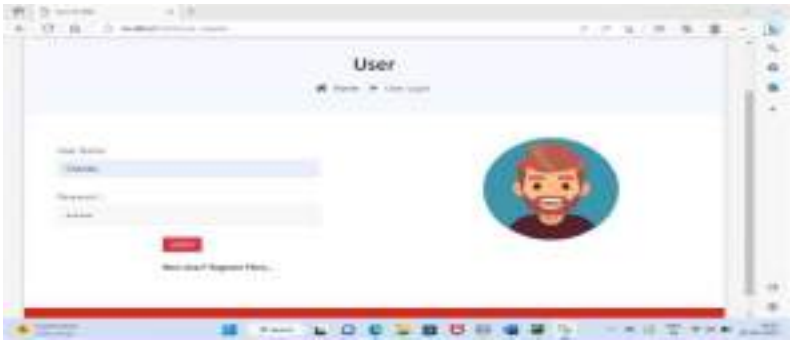
For face detection, we used the Haar Cascade classifier, which is a machine learning algorithm that distinguishes between positive and negative data points in an image. The system locates the face in an image, and the facial data is then pre-processed using the Dlib 68 landmark detection algorithm to align the faces to the center.

To extract features from the image, we utilized the Multi-task Cascaded Convolution Neural Network (MTCNN), which is a cascaded network that includes three models: the Proposal Network (P-Net), Refine Network (R-Net), and Output Network (O-Net). The P-Net identifies facial regions, the R-Net filters the bounding boxes using bounding box regression, and the O-Net detects facial landmarks using facial landmark localization. These three models are connected, with the output of the P-Net serving as input to the R-Net and the output of the R-Net serving as input to the O-Net.

Finally, the features extracted from the image are compared to the faces already present in the Prisoners dataset. Similarity is determined based on the distance between the left eye and right eye, length of the nose, and distance between the corners of the lips. If the accuracy between the user's image and images in the dataset is higher than the remaining images, that particular image is considered the most accurate match. From this, we can determine the user's Quetelet index and offer relevant suggestions.

RESULT

Step 1: Login By the User: User can login through his/her Username and password which is given in registration.



Step 2: User Can Now Upload an Image to Check the QI

Step 3: User Can View the Results and Suggestions

The project has achieved an accuracy rate of 85%, but it has some limitations. While the results are not the most precise, we believe that we can improve accuracy in the future by either utilizing a dataset with a greater number of entries or by

employing advanced deep learning algorithms. Additionally, we envision the possibility of implementing this project on smart watches by enabling an uploading option. The objective of this project is to accurately analyze the Quetelet index (BMI) for dynamic images captured through a web camera.

CONCLUSION

This website helps user to find their Quetelet index (BMI) from facial features along with displaying some suggestions i.e. either uploading the images or by capturing their image spontaneously. We observed that people with more BMI have a higher risk of developing health issues. We found that there exists a strong association between BMI and the face of a human. So, we proposed an approach to predict BMI from facial images using deep learning. We used the publicly available dataset of diverse domains containing images of prisoners to evaluate our model. We pre-processed the facial data by aligning the faces to the centre using the Dlib 68 landmark detection algorithm.

REFERENCES

[1]. Single Care Team, “Overweight and obesity statistics 2021” singlecare.com, Jan. 21, 2021. [Online]. Available: https://www.singlecare.com/blog/news/obesity-statistics/. [Accessed Aug.]
[2]. Domestic Violence Database, “National Violent Offender & Domestic Violence Registry” domesticviolencedatabase.net. [Online]. Available: https://domesticviolencedatabase.net/registry ia/?co=Polk&abc=R#abc. [Accessed August. 12, 2020]
[3]. A. Benmouiza, N. Benamar, and A. Bouroumi , "Facial Analysis and BMI Prediction using Open CV and Artificial Neural Networks" (2020).
[4]. A. Nambiar, S. Dev, and S. Sivasubramanian ,"Estimating Body Mass Index from Face Images using Convolutional Neural Networks and Confidence-Weighted Pooling" (2020).
[5]. H. Siddiqui, A. Rattani, D. R. Kisku, and T. Dean, "Al-based QUETELET INDEX Inference from Facial Images: An Application to Weight Monitoring," 2020 19th IEEE International Conference on Machine Learning and Applications(ICMLA), 2020.
[6]. Hera, Siddiqui, Betty. 2021. Obesity classification from facial images using deep learning -- In Proceedings: 17th Annual Symposium on Graduate Research and Scholarly Projects. Wichita, KS: Wichita State University.
[7]. H. Sun, Z. Chen, Y. Wang, and G. Wang , "Facial BMI Estimation Using 3D Morphable Models and Convolutional Neural Networks" (2018).
[8]. https://onlinelibrary.wiley.com --- Identification of malnutrition and prediction of BMI from facial features.
[9]. Jiten Sidhpura, Surekha Dholay published IEEE paper on “Face To BMI: A Deep Learning Based Approach for Computing BMI from Face” , 2022.
[10]. R. Xie and T. Chen, "Body Mass Index Estimation from Facial Images using Multi-task Cascaded Convolutional Neural Networks and OpenCV" (2019).
[11]. Y. Liu, M. Li, and J. Wang ,"BMI Estimation from Facial Images Using Convolutional Neural Networks (2018).
[12]. Y. Qian, L. Liu, X. Wu, and H. Li ,"Body Mass Index Estimation from Facial Images Using Deep Learning" (2018).
[13]. Y. Liu, M. Li, and J. Wang ,"Predicting BMI from Face Images using Deep Neural Networks" x (2017).
[14]. https://onlinelibrary.wiley.com --- Identification of malnutrition and prediction of BMI from facial features.
[15]. https://arsfutura.com/magazine/face-recognition-with-facenet-and-mtcnn/---Face Recognition with FaceNet and MTCNN.
[16]. https://www.researchgate.net/figure/Face-detection-using-MTCNN-algorithm_fig2_333158966 -- Face Detection using MTCNN Algorithm.

Published: 06 February 2023

LBABC: Distributed controller load balancing using artificial bee colony optimization in an SDN

K. Sridevi & Md Abdul Saifulla

Peer-to-Peer Networking and Applications **16**, 947–957 (2023)

Abstract

Software Defined Networking(SDN) is a popular paradigm in modern networking. Specifically distributed SDN is an emerging area because of the problems present with scalability and reliability issues of single controller. However, There are challenges in distributed SDN in terms of placement of controllers, consistency and load balancing among controllers. This paper presents a mechanism for control plane load balancing in SDN. Although present solutions for load balancing in control plane exist, they concentrated on how to decrease the load on overload controller but unable to balance the load in long run to maintain even distribution of load, so there should be a requirement of even distribution of load in the control plane. To address this challenge, we presents a meta heuristic approach to load balancing mechanism for control plane that uses Artificial Bee Colony(ABC) optimization by shifting the load from heavy load controller to appropriate low load controller by working with different candidate solutions. We experimented our model LBABC, Load Balancing using ABC in control plane, using RYU controller and mininet emulator. Our model obtained an efficient results and avoiding unnecessary migrations compared to the existing models because of its optimal selection of switch and controller for switch migration.

Data availability

The data generated during the current study is based on the traffic created by iperf command in mininet and we used a BT Asia-Pacific topology from Internet Topology Zoo: http://www.topology-zoo.org/dataset.html.

References

1. Nguyen TG, Phan TV, Hoang DT, Nguyen TN, So-In C (2021) Federated deep reinforcement learning for traffic monitoring in SDN-based IOT networks. IEEE Trans Cogn Commun Netw 7(4):1048–1065

2. Alomari A, Subramaniam SK, Samian N, Latip R, Zukarnain Z (2021) Resource management in SDN-based cloud and SDN-based fog computing: Taxonomy study. Symmetry 13(5):734

3. Troia S, Zorello LMM, Maier G (2021) SD-WAN: How the control of the network can be shifted from core to edge. In 2021 International Conference on Optical Network Design and Modeling (ONDM). IEEE, p 1–3

4. Dudeja RK, Singh A, Bali RS, Aujla GS (2022) An optimal content indexing approach for named data networking in software-defined IOT system. IET Smart Cities 4(1):36–46

5. Liu Q, Cheng L, Alves R, Ozcelebi T, Kuipers F, Xu G, Lukkien J, Chen S (2021) Cluster-based flow control in hybrid software-defined wireless sensor networks. Comput Netw 187:107788

6. William S (2016) Foundations of modern networking: SDN, NFV, QoE, IoT, and Cloud. Pearson Education

7. Zhang Y, Cui L, Wang W, Zhang Y (2018) A survey on software defined networking with multiple controllers. J Netw Comput Appl 103:101–118

8. Keshari SK, Kansal V, Kumar S (2021) A systematic review of quality of services (QoS) in software defined networking (SDN). Wirel Pers Commun 116(3):2593–2614

9. Open Network Foundation (2015) OpenFlow Switch Specification (Version 1.5.0). www.opennetworking.org

10. Kim W, Li J, Hong JWK, Suh YJ (2015) HeS-CoP: Heuristic switch-controller placement scheme for distributed SDN controllers in data center networks. Int J Netw Manage 28(3):e2015

11. Sridevi K, Saifulla MA (2022) Control plane efficiency by load adjustment in SDN. In Smart Trends in Computing and Communications. Springer, p 515–524

12. Karaboga D (2005) An idea based on honey bee swarm for numerical optimization. Technical report, Technical report-tr06, Erciyes University, Engineering Faculty, Computer Engineering Department

13. Shen L, Li J, Wu Y, Tang Z, Wang Y (2019) Optimization of artificial bee colony algorithm based load balancing in smart grid cloud. In 2019 IEEE Innovative Smart Grid Technologies-Asia (ISGT Asia). IEEE, p 1131–1134

14. Neghabi AA, Navimipour NJ, Hosseinzadeh M, Rezaee A (2020) Energy-aware dynamic-link load balancing method for a software-defined network using a multi-objective artificial bee colony algorithm and genetic operators. IET Commun 14(18):3284–3293

15. Dixit A, Hao F, Mukherjee S, Lakshman TV, Kompella R (2013) Towards an elastic distributed SDN controller. In Proceedings of the Second ACM SIGCOMM Workshop on Hot Topics in Software Defined Networking, HotSDN '13. ACM, p 7–12

16. Zhang S, Lan J, Sun P, Jiang Y (2018) Online load balancing for distributed control plane in software-defined data center network. IEEE Access 6:18184–18191

17. Al-Tam F, Correia N (2019) On load balancing via switch migration in software-defined networking. IEEE Access 7:95998–96010

18. Sahoo KS, Puthal D, Tiwary M, Usman M, Sahoo B, Wen Z, Sahoo B, Ranjan R (2019) ESMLB: Efficient switch migration-based load balancing for multicontroller SDN in IOT. IEEE Internet Things J 7(7):5852–5860

19. Cui J, Qinghe L, Zhong H, Tian M, Liu L (2018) A load-balancing mechanism for distributed SDN control plane using response time. IEEE Trans Netw Serv Manag 15(4):1197–1206

20. Konglar K, Somchit Y (2018) Load distribution of software-defined networking based on controller performance. In 2018 15th International Joint Conference on Computer Science and Software Engineering (JCSSE). IEEE, p 1–6

21. Mayilsamy J, Rangasamy DP (2021) Load balancing in software-defined networks using spider monkey optimization algorithm for the internet of things. Wireless Pers Commun 116(1):23–43

22. Sun P, Guo Z, Wang G, Lan J, Hu Y (2020) MARVEL: Enabling controller load balancing in software-defined networks with multi-agent reinforcement learning. Comput Netw 177:107230

23. Wang C, Hu B, Chen S, Li D, Liu B (2017) A switch migration-based decision-making scheme for balancing load in sdn. IEEE Access 5:4537–4544

24. Zhou Y, Wang Y, Yu J, Ba J, Zhang S (2017) Load balancing for multiple controllers in SDN based on switches group. In 2017 19th Asia-Pacific Network Operations and Management Symposium (APNOMS). IEEE, p 227–230

25. Xu Y, Cello M, Wang IC, Walid A, Wilfong G, Wen CHP, Marchese M, Chao HJ (2019) Dynamic switch migration in distributed software-defined networks to achieve controller load balance. IEEE J Sel Areas Commun 37(3):515–529

26. Mokhtar H, Di X, Zhou Y, Hassan A, Ma Z, Musa S (2021) Multiple-level threshold load balancing in distributed sdn controllers. Comput Netw 198:108369

27. Szczepanski R, Tarczewski T, Niewiara LJ, Stojic D (2021) Identification of mechanical parameters in servo-drive system. In 2021 IEEE 19th International Power Electronics and Motion Control Conference (PEMC), p 566–573

28. Janaki D (2017) Automatic brain mr image lesion segmentation using artificial bee colony optimization algorithm. Int J Comput Appl 163(4):28–33

29. Zhang Y, Wu L, Wang S, Huo Y (2011) Chaotic artificial bee colony used for cluster analysis. In Chen R (ed.), Intelligent Computing and Information Science, Berlin, Heidelberg, Springer Berlin Heidelberg, p 205–211

30. Watanabe Y, Takaya M, Yamamura A (2015) Fitness function in ABC algorithm for uncapacitated facility location problem. In Information and Communication Technology-EurAsia Conference. Springer, p 129–138

31. Mininet. https://mininet.org/. Accessed Mar 2018

32. Ryu controller. https://ryu.readthedocs.io/en/latest/writing_ryu_app.html. Accessed May 2018

33. Knight S, Nguyen HX, Falkner N, Bowden R, Roughan M (2011) The internet topology zoo. IEEE J Sel Areas Commun 29(9):1765–1775

Funding

No funds, grants, or other support was received.

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First author is the Research Scholar and second author is the Supervisor.

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Ethics declarations

Ethical approval and consent to participate

Not applicable.

Human and animal ethics

Not applicable.

Consent for publication

The authors consented for the publication of report to the jounal with subscription.

Conflicts of interest

The authors have no conflicts of interest to declare that are relevant to the content of this article.

Additional information

Publisher's Note

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About this article

Cite this article

Sridevi, K., Saifulla, M.A. LBABC: Distributed controller load balancing using artificial bee colony optimization in an SDN. *Peer-to-Peer Netw. Appl.* **16**, 947–957 (2023). https://doi.org/10.1007/s12083-023-01448-2

Received	Accepted	Published
21 July 2022	07 January 2023	06 February 2023

Issue Date
March 2023

DOI
https://doi.org/10.1007/s12083-023-01448-2

Keywords

Artificial bee colony **Software-defined networking** **RYU** **Mininet**

International Journal for Innovative Engineering and Management Research
A Peer Revieved Open Access International Journal
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IJIEMR Transactions, online available on 11th Jan 2023. Link :http://www.ijiemr.org/downloads.php?vol=Volume-12&issue=Issue 01

DOI: 10.48047/IJIEMR/V12/ISSUE 01/66

Title **Detection of Malicious Social Bots Using Machine Learning With URL Features in Twitter Network**

Volume 12, ISSUE 01, Pages: 695-702

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Detection of Malicious Social Bots Using Machine Learning With URL Features in Twitter Network

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Abstract

Emergence of internet as a widespread tool for massive-scale and real-time communication, resulted in extensive use of bots for disingenuous purposes. Twitter has become so dominant to phishers to spread phishing attacks using bots due to its vast propagation but hard to be detected nature unlike other services because of its fast spread inthe network. In this paper, we proposed a bot detection model that has two modules ,the first stage is classifying the tweets as "malicious tweet" and "legitimate tweet" by integrating URL based features using models based on machinelearning and second stage is analyzing the twitter users and classifying them as bot or normal user, using a set of reduced simple counter features that could potentially overcome the limitations of computationally expensive models that require large numbers of features, large labeled datasets for training purposes, and access to the recent history of activity of the account profile to scrutinize. Experimentation has been performed on public data sets using three following classifiers namely, Naive Byes, SVM (Support vector Machine) and MLP classifier and the results illustrate that the proposed system achieves improvement while exploiting a small and interpretable set of features compared with existing approaches for MSBD.

Keywords: Malicious social bots, Machine Learning, MLP, Malicious URL, Online SocialNetworks (OSNs).

Introduction

The rise of smart devices, technology and high-speed internet have resulted in the more usage of Online social networks (OSNs), this leads to interaction between humans on a large volume. As per the research by Kemp [1], 4.2 billion social network accounts are present in the world, which is 53 percent of the total population. The monthly count of active accounts in twitter is 330 million [2]. Open platform of twitter to share the opinions gave it a redundant eventuality to impact the users. The influence of online services on the public resulted in the generation of automated accounts or bots. According to the study by Stefan et al [3], bots participated 66% of all tweeted links to popular websites. Social bots are an advantage when they act as helpers in aggregating and delivering news feeds and disadvantage when misused by creating bots for malicious activities. Bot is aset of software code in social network that function as a actual user in social online services [4], [5]. Moreover, malicious bots generate fake identities, change reviews, circulate spam-messages etc. [4]. Phishing attack, which is a type of social engineering that deceive victims by exposing them to a fraudulent site where their sensitive information is collected for performingillegal crimes.

Phishing attacks have now focused on online services like myspace, twitter, fb, etc., that basically target emailusers. Twitter has become so dominant to phishers to spread phishing attacks due toits vast propagation but hard to be detected nature unlike other services because of its fast spread in the network [6]. A malicious bot share tweets containing malicious links leaving legitimate users unprotected. Due to the presence of malicious bots in the network,twitter services are exposed to vulnerabilities. So, in this paper, a learning model is being proposed which will, with the help of built model, filter out those twitter accounts which have a bot like activity and are sharing malicious URLs. Most, of the methods introduced detect bots at the accountlevel,given a record of activity (e.g., a few hundred tweets posted by a user), the algorithm would determine whether the scrutinized account is a bot or not, they focus on the overall account's activity. Though quite successful, these approaches are expensive as they require significant amounts of data for each user to be scrutinized. So, there is the requirement of a tweet level bot detection that could overcome these limitations. The main objective is to develop a novel architecture that combines text-based and metadata-based features for detecting malicious bots on Twitter using machine learning algorithms. Next to investigate the effectiveness of combining accessiblemetadata with textual data integrating

URL based features when detecting malicious bots on twitter and to benchmark the proposed model with the existing models using URL based features of machine learning applied tobot detection in twitter network.

Related Work

In the approach by Sayyadiharikandeh M [7], the diversities of different kind of bots are handled by training classifiersspecialized for individual group of bots, and a bot-score is calculated for each classifier and the class with the highest bot-score determines the respective class.They have also done a cross-domain analysis of their classifier by testing it on separate datasets. They have used a high- dimensional feature set consisting 1200 features from six categories. Considering a high feature set including an account's actions and social connections improves accuracy but reduces scalability [8].

In [9] the author proposed a bot identification method based on click stream transition probability and clustering approach. In this they have also include feature related to timealong with user click stream pattern and clustering based on semi-supervised model. The experimental results of this approach on real time network showed that the accuracy for detection based on click patterns there is an increase of 12.8% when compared with quantitative behavior analysis.

G. Lingam [10], proposed a model, to detect social bot among legitimate users they used social graph characteristics. Here by using social features of user as state and learning movement among the states as action, they designed a deep Q- graph model in the twittersocial network by updating Q-value function. For this "state-action" function, to build probability values of transition between Q pairs they included all the Q-pairs.

In the paper [11], author considered the bot detection from Chinese Sina Weibo online social network. Here they used deep neural network(DNN) model consisting of attention mechanism along with recurrent bidirectionalgated unit and residual unit by including 30 features based on four different sections of timing, metadata, communication and content. This model obtained 0.98 accuracy. Since it has been developed for Sina Weibo, the efficiency of this for twitter has to be checked. The existing models for the identification of twitter bots assumes extensive access to

social media data [12]. They detect the bots and block them. However, bots can create a new account and post new malicious tweets again. The malicious bots can manipulate the information present in the tweets. The interaction features are robust but extracting these features required more time because of extremely large volume of the network.

System Methodology
System Model

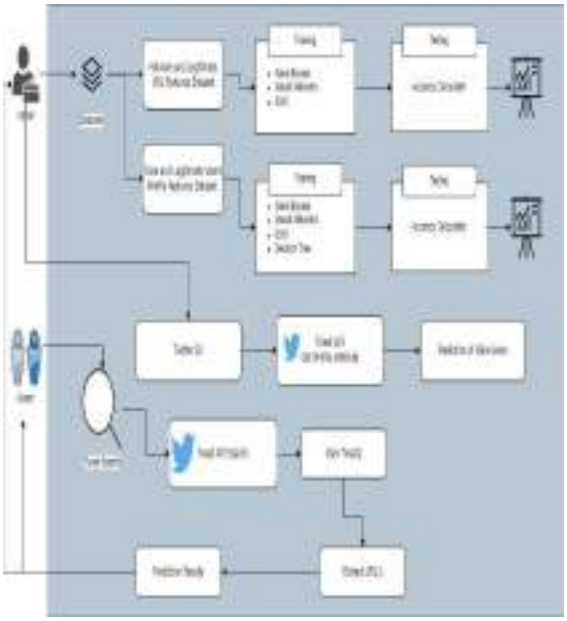

Figure 1: System Model

The figure above depicts the suggested system's technique. The suggested system foranalyzing and detecting malicious bots in twitter is implemented using the following two stages:

1. In the first stage we use three machine learning models to classify the tweets by integrating URL based features, by extracting the urls posted in the tweets into one of the two categories "phishing tweet" or "legitimatetweet".
2. In the second stage, we use a user analysis mechanism based on simple reduced set of counter features to detect bots, which can reduce the spread of phishing links on Twitter.

Classification of the tweets by analyzing URLs present in the tweets

Based on our research, Google's secure browsing is used by twitter to identify and secure from phishing links. The new URLs that have not been added to the database cannot be detected by this approach. These services need four days on average to add new site into the database, but tweets will be accessed within a day after posting. This limits the users from being protected in real time. In our approach we used machine learning for detection.

Our tweet classification process is divided into two stages building stage and detection stage. In building stage, we used dataset having "malicious urls" and "legitimate urls" including many features out of which we used the most efficient features to build three machine learning models. This building stage is implemented during the learning process. In next detection stage we extract the urls from the tweets collected using tweeter API. From these urls we have extracted the features we used in the building stage and used the model

that gave us the highest accuracy in the learning process for prediction of malicious tweets based on URLfeatures. We implement this, whenever a tweet is extracted.

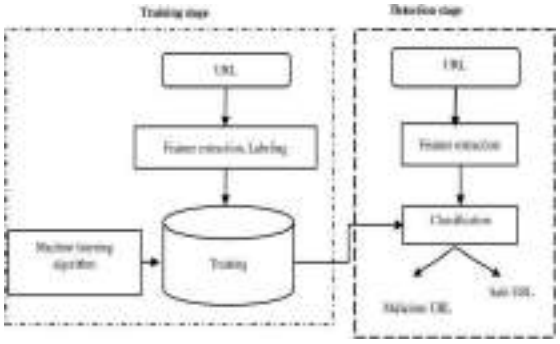

Figure 2: Malicious URL Detection

1) Dataset: This module used the "Phishing Websites Data Set" for the learning and detection of phishing websites. This dataset is published in the UCI repository [Link]. This dataset is accessible in the CSV file format and labeled with two classes "phishing" (0) and "legitimate" (1).
2) Description of the dataset: This section described the "Phishing Websites Data Set" using Pandas Python API, as shown below. This dataset has 18 columns with 17 features of URLs and are labeled as "Phishing URL" or "legitimate URL". Every column has 11055 rows data of integer data (0 and 1).
3) Features representation: First we extract the URLs from the retrieved tweets. Next using python, from the URLs we derive the attributes used in thebuilding stage of the models and designate them as integer vector,which is having the following function:

f = 1 presence of the attribute

f = 0 absence of the attribute

```
import pandas as pd

readcsv=pd.read_csv('Featuresdataset.csv')
disp=readcsv.info()
print(disp)
```

```
RangeIndex: 11055 entries, 0 to 11054
Data columns (total 18 columns)
dtypes: int64(18)
memory usage: 1.5 MB
```

#	Column	Count	Dtype	Values
1	Having_IP_Address	11055	int64	[0,1]
2	Length_of_the_URL	11055	int64	[0,1]
3	USED_Shortining_Service	11055	int64	[0,1]
4	Having_@_Symbol	11055	int64	[0,1]
5	Having_//	11055	int64	[0,1]
6	Having_Prefix_Suffix	11055	int64	[0,1]
7	having_Sub_Domain	11055	int64	[0,1]
8	Having_Favicon	11055	int64	[0,1]
9	Having_port	11055	int64	[0,1]
10	IS_HTTPS_token	11055	int64	[0,1]
11	Req_URL	11055	int64	[0,1]
12	Anchored_URL	11055	int64	[0,1]
13	Having_tags	11055	int64	[0,1]
14	SFH	11055	int64	[0,1]
15	Sub_to_email	11055	int64	[0,1]
16	Is_Abnormal_URL	11055	int64	[0,1]
17	Redirect_to_other	11055	int64	[0,1]
18	Result	11055	int64	[0,1]

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Twitter User Account Analysis

The next stage of our model is the interpretation of user accounts for bot detection. In this second module, first we train the model using decision tree, multi-layer perceptron, SVC, NB algorithms with the dataset of bot and human accounts. We use the model that gave the highest accuracyfor the prediction of bot account.

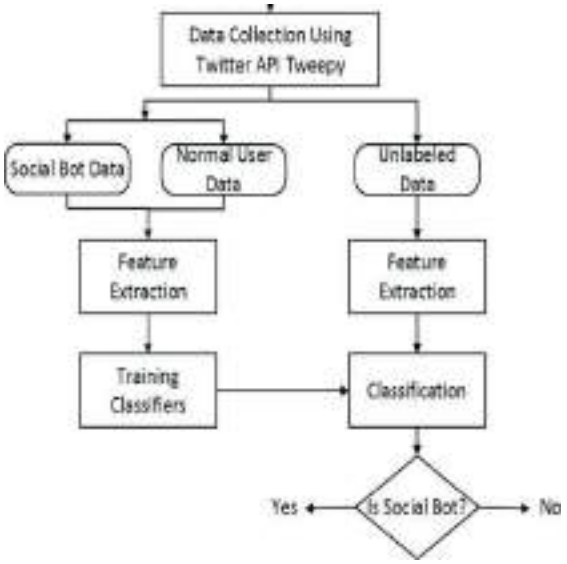

Figure 3: User Account Analysis

4) Dataset: The dataset we used to predict users as "Bot" or "Legitimate Account" contain useraccounts labeled as “bot” or “human”, along with the five counter features that do not require data preprocessing.

Listed_Count
Followers_Count
Favorites_Count
Friends_Count
Statuses_Count

5) Features representation: Once theaccount is identified as posting malicious url, then the five attributes used in dataset are collected in the JSON format using “user” object of the Twitter API and represented as integer vector. These five features illustrate the account usage at basic level. Then using these features and multi-layer perceptron model that gave highest performance, we classify the account.

Experimental Result

In this section, we present the prediction results that we have obtained, with the three classifiers, for malicious URLs, then for bot. Prediction results for malicious bot: Concerning the prediction results of malicious bot, obtained the best accuracy, which is 90.26% with the MLP classifier. As depicted in figure 18, the prediction results of malicious URLs withthe Naive Bayes and SVM (Support Vector Machine) model are acceptable with an accuracy of 80% and 81%respectively, but the obtained results by the MLP classifier are more with an accuracy of 92%. Therefore, the accuracy

score produced by the MLP Classifier approach is the greatest.

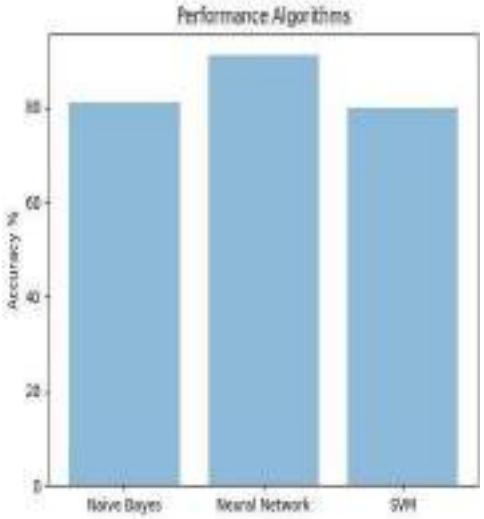

Figure 4: Accuracy

We have implemented our model as atool, which can be used to detect malicious tweets and malicious bots. An interface of the application, for searching the tweets based on the keyword is shownin figure 5, and the latest tweets collectedbased on the searched keyword and the classification of these tweets as“legitimate” and “phishing” is shown in the figure 6. Thus, if a malicious tweet is identified, the user can see which user account has posted the malicious tweet. The last step of our application is the analysis of the user account (see Figure 7), to detect weather the account is a bot account or normal account.

Figure 5: Search Tweets

Figure 6: Collected Tweets

Figure 7: Bot Prediction

Conclusion

In this work, we have tackled the problem of malicious bots in twitternetworks. Twitter bots are very dangerous if they are broadcasting malicious links. So, we proposed an approach comprising of two steps, which are analysis of links, next the analysis of accounts using machine learning that can accurately detect bots which are posting malicious URLs. The prediction module extracts real-time tweets from theTwitter server and implanted the developed model for prediction of malicious bots which shares malicious websites. This model can help in reducing APT attacks, phishing attacks etc. as the beginning point for these types of attack is generally the malicious links circulated through social networking sites. Once if the source of these malicious URLs isdetected then these attacks can be prevented. The results illustrated that the proposed system achieves improvement while leveraging a small and interpretableset of features compared with existing approaches.

References

[1]Kemp S, "The latest insights into the'state of digital' approaches," (2021).
[2]Tankovska H, "Number of monthly active twitter users worldwide from 1st quarter 2010 to 1st quarter 2019," (2021).
[3] Stefan W, Solomon M, Aaron S et al, "Bots in the twitter sphere," in pewresearch 2018.
[4] P. Shi and K. K. R. Choo, "Detecting malicious social bots based on clickstream sequences," IEEE Access, 2019.
[5] R. R. Rout, and G. Lingam, "Adaptive deep Q-learning model for detecting social bots and influential users in online socialnetworks," in Application Intelligence,volume-49, Nov-2019.
[6] Nair MC, Prema S, "A distributed system for detecting phishing in Twitter stream," in International Journal of Science Innovation Technology 2014.
[7] Sayyadiharikandeh M, Varol O, YangK- C et al, "Detection of Novel Social Bots by Ensembles of SpecializedClassifiers," 2020
[8] Yang K-C and Menczer F, "Scalable and generalizable social bot detection through data selection," in conference of AAAI on artifcial intelligence, pp 1096– 1103, (2020).
[9] K. K. R. Choo and P. Shi, "Detecting malicious social bots based on clickstream sequences," in 2019.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54197

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Hardware Design and Simulation of Boost Converter Suitable for PV Applications

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Abstract: ***In order to power today's most advanced electronic devices efficiently and quickly produce extremely useful devices through software interfacing, new techniques must be developed as the size, utility, and complexity of these devices rise. In order to step-up DC voltages, the boost converter that is the focus of this paper will be modelled. The pulse width modulation pulses that are applied to power switches are produced by the Arduino. The software runs on the microcontroller and includes a boot loader for common programming languages. C is the programming language used. As a result, creating PWM triggering signals is less complicated. Instead of using traditional methods, an efficient feedback system is used, depending on the application, to obtain the desired DC voltages. Even though using a linear regulator is the simplest way to control the DC supply voltage, they are less efficient in terms of power consumption and have fewer uses. With the right feedback, Arduino-based DC converters have a high efficiency (95%) rate.***

Keywords: Boost converter, Arduino UNO, Pulse Width Modulation.

I. INTRODUCTION

New requirements, such as those for longer-lasting batteries, small, reasonably priced systems, more vibrant full-color visuals, and greater duration talk times for cell phones, emerged as the market for portable electronics grew over time. The cost of consuming power has increased as a result of increased demand on the power system. To meet these needs, engineers have consistently been working to develop efficient conversion methods, which has prompted the official establishment of the multidisciplinary area of power electronics. However, it should come as no surprise that given the unusual convergence of the three main categories of electrical engineering—electronics, power, as well as control—this new field has presented challenges.

There are three types of converters

1) AC-AC converter
2) DC-DC converter
3) AC-DC converter

A direct current, or DC, source's electrical voltage level is altered by an electronic circuit called a direct current-to-direct current converter. It also goes by the name "Chopper." This specific type of power converter. For portable electronics that are powered mostly by batteries, such laptops, desktop computers, and cell phones, DC to DC converters have to be used. DC-to-DC converters typically also regulate the output voltage. Simple charge pumps that double the input voltage by two or three are an exception, as are high-efficiency light-emitting sources of power, a type of DC-to-DC converter that controls the electrical current flowing through the lightbulbs. Modern electronics require power supply that are compact, reliable, and effective. There are linear power regulators, which rely on ineffective voltage or current division for operation. Most applications are created at low power levels. At excessive power levels where switches have a on and off state, switching regulators are used. Modern power electronic switches are capable of operating at high frequencies. High operating frequencies enable faster dynamic reactions to sudden changes in load current. For DC-DC power conversion, such higher-frequency electronic power processors are employed.

DC-DC converters perform the primary tasks:

a) It transforms Direct Current input voltage to Direct Current output voltage.
b) It isolates the source from the load.
c) It can control the output voltage in relation to the load.
d) It can lower the dc output voltage's ac voltage ripple.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54196

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

Design of MPPT Controllers for PV Cells using Matlab

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Abstract: Nowadays, the Photovoltaic cell is one ofthe most essential parts in the electrical field to convert photo light to voltage and current, at the desired output voltage and frequency by using various control techniques. To increase the production of photovoltaic-based cleaner energy, the maximum power point tracking (MPPT)controller is employed. This project presents the design of an MPPT Controller for Photovoltaic systems. The MPPT controller is used to control and get Maximum Power Point (MPP) from the source.
The output power of a photovoltaic (PV) module depends on the solar irradiance and the operating temperature; therefore, it is necessary to implement MPPT controllers to obtain the maximum power of a PV system regardless of variations in climatic conditions. This project reviews the most used MPPT algorithms, which are Perturb and observe (P&O), Incremental conductance method (ICM), and Fuzzy logic control (FLC).

I. INTRODUCTION

Photovoltaic (PV) offers an environmentally friendly source of electricity since it is clean, pollution-free, and inexhaustible. However, the output from a PV solar cell alone is not good enough to input into an electricity bank or the main grid because its output is not constant in terms of voltage.
This raises a need to design a controller which can calculate and extract the maximum power point (MPP) at any instant from the solar cells.
Maximum Power Point Tracking, frequently referred to as MPPT is an electronic system that operates the Photovoltaic (PV) modules in a manner that allows the modules to produce all the power they are capable of at that time.
MPPT is not a mechanical tracking system that "physically moves" the module to make thempoint more directly at the sun but it is a fully electronic system that varies the electrical operating point of the module so that modules can deliver maximum available power.

II. PROBLEM STATEMENT

Photovoltaic (PV) systems have become an important source of power for a wide range of applications. Unfortunately, PV generation systems have two major problems: the conversionefficiency of electric power generation is very low(9-17%), especially under low irradiation conditions, and the amount of electric power generated by solar arrays changes continuously with weather conditions. Moreover, the solar cell V-I characteristic is nonlinear and varies with irradiation and temperature.

III. PROJECT OBJECTIVES

The primary objective of this project is to design an MPPT controller for photovoltaicsystems.

In addition, this project has various objectives,which comprise of:

1) To design the optimum controller by simulation for the maximupower pointtracking.
2) To analyze simulation results of the maximum power point controller tracking.

International Journal of Electrical Engineering.
ISSN 0974-2158 Volume 16, Number 1 (2023), pp. 1-8

https://dx.doi.org/10.37624/IJEE/16.1.2023.1-8

A Patient Health Monitoring System based on IOT

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Abstract

In the past, medical facilities were the usual place to monitor physiological signs such as heart rate, SPO2, respiration rate, ECG, and temperature. However, with the advancements in technology, a wide variety of sensors have been developed that allow individuals to monitor their health. Combining the Internet of Things (IoT) and microcontrollers is a modern way to initiate patient monitoring systems. The Atmega328 microcontroller collects the data from sensors and wirelessly communicates using ESP8266 to an IoT website. The collected data is accessible for analysis and day-to-day readings are sent to physicians who can prescribe medication and recommend exercise practices to improve the quality of life of an individual and prevent diseases. The system includes sensors such as the LM35 temperature sensor, MAX30100 SPO2, and heartbeat sensor, AD8232 ECG sensor, and respiration rate sensor to track the individual health. All these sensors are connected to the Atmega328 microcontroller which is interfaced with an LCD display and Wi-Fi connection to send the data to Thingspeak. Therefore, this IoT-based patient health monitoring system effectively monitors the patient's health.

Key Words: IOT, ECG, MAX30100, THINGSPEAK, ATMEGA328

1. INTRODUCTION

The healthcare industry is shifting towards remote patient monitoring using IoT technology. In [**1**] it is presented a smart healthcare system connected with IOT. The presented system is able to monitor the condition of the individual remotely such as temperature, heart rate, ECG, etc. These systems collect and analyze patient health data remotely, allowing healthcare providers to monitor patients in real time from anywhere. This revolutionizes healthcare delivery, particularly for chronic disease management and continuous monitoring. IoT-based remote health monitoring systems have the

International Journal of Electrical Engineering.
ISSN 0974-2158 Volume 16, Number 1 (2023), pp. 9-16

https://dx.doi.org/10.37624/IJEE/16.1.2023.9-16

AGRIBOT: Agriculture Robot

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Abstract

Agriculture robot is used for operations like ploughing, seeding, sprinkling water and to detect humidity, obstacles using sensors. To establish communication, Bluetooth module is used and is controlled using app. DC motors are used to drive wheels. Ploughing, seeding mechanism are performed with the help of motors. Watering can be done with the help of relay ON. Humidity sensor detects moisture content and ultrasonic sensor is used for obstacle detection and buzzer is used to give an alert. Agribot automates most of farming activities and reduce manual work which helps farmers to save money. It requires low operations cost and increases productivity which also saves time and energy of farmers. Major disadvantage is Agribot requires higher investment which is not affordable to all and is complex to use. Agribot can be used in farming activities such as crop monitoring and analysis, fertilizing, picking and harvesting.

Components used are: DC motors, Motor driver, Relays, Moisture Sensor, Ultrasonic Sensor, Buzzer, Bluetooth module, Water pump, Seed sowing tool, Ploughing tool, LCD, Microcontroller, DHT11.

I. Introduction

To design a multipurpose husbandry outfit which can be run with battery power for performing major agrarian operations like ploughing, seed sowing, smattering water. It also uses android operation. An operating system, middleware, and essential functions are all part of the mobile bias software platform known as Android. Android comes with a Bluetooth and Wi-Fi module. The radio frequency (RF)-based, short-range networking technology known as Bluetooth is an open standard that has the potential to revolutionise wireless phones and computing.

International Journal of Electrical Engineering.
ISSN 0974-2158 Volume 16, Number 1 (2023), pp. 17-25

https://dx.doi.org/10.37624/IJEE/16.1.2023.17-25

Battery Storage Management System

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Abstract

This report details the design and creation of a web application on relays and Raspberry Pi-based online battery monitoring and control system through a web interface. The system enables users to remotely check the battery's voltage level, recharge it and manage the load that is linked to it. Relays are used to control the load in the system, and a web application is used to provide real-time data on battery voltage and load status. The Raspberry Pi serves as the system's central processing unit. The system is suited for both homes and businesses because it is made to be user-friendly and economical. It allows users to turn ON/OFF the load and initiate the charging process remotely. The use of relays ensures safe control of high-power devices, and the Raspberry Pi can be configured to communicate with web application and control the relays.

Keywords: Remote monitoring, Web application, Recharging, Raspberry Pi, Relays.

1. INTRODUCTION

There is a rising need for remote monitoring and management of various systems, including battery monitoring and control. Significant energy savings and improved efficiency can result from the ability to remotely monitor and adjust battery voltage, recharge the battery, and control the load attached to the battery. By automating the process of tracking the state of a battery and its related load using a web application, the project seeks to provide a trustworthy and effective means to manage and monitor batteries, loads, and charging processes remotely.

The project uses a Raspberry Pi to monitor the charging process, read the battery voltage, and manage the load. The Raspberry Pi then communicates with relays to turn

International Journal of Electrical Engineering.
ISSN 0974-2158 Volume 16, Number 1 (2023), pp. 27-34

https://dx.doi.org/10.37624/IJEE/16.1.2023.27-34

Bluetooth Controlled Robotic Car with Wireless Camera & Metal Detection

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Abstract

An Arduino UNO-controlled robotic car is equipped with a metal detector and a wireless camera, which are connected via Bluetooth. The car moves using a DC motor and an L293D Motor Drive Module, powered by a 7.4V Li-Po battery. The HC-05 Bluetooth module facilitates wireless communication with an Android application for real-time control. The metal detector detects metal and sends signals to the Arduino UNO, which directs the movement of the robot. The wireless camera captures live video footage of the surrounding area, which is then transmitted to the Android application. This prototype has numerous real-world applications, including security, archaeology, search and rescue, and industrial inspection. Overall, it is an adaptable and innovative project that can be used for a wide range of applications, demonstrating the potential of combining different technologies to solve complex problems.

Keywords: Arduino UNO, Metal Detector, L293D motor drive module, Bluetooth Module, Real time control, Wireless camera, Live video footage

I. Introduction

The advancement of technology has revolutionized the way we live, work, and solve problems. With the development of new technologies, we have seen the creation of innovative solutions that can address complex challenges across various fields. The robotic car equipped with a metal detector and wireless camera controlled via Bluetooth using an Arduino UNO is a prime example of one such solution.

The combination of a metal detector and wireless camera provides a comprehensive approach to detecting and examining the environment, which can be crucial in many situations. The robotic car is powered by a 7.4V Li-Po battery and uses an L293D Motor

International Journal of Electrical Engineering.
ISSN 0974-2158 Volume 16, Number 1 (2023), pp. 35-45

https://dx.doi.org/10.37624/IJEE/16.1.2023.35-45

Design and Experimentation of Voltage Control for PV-FED DC-DC Converter

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Abstract

A voltage regulation system is proposed for photovoltaic energy sources (PV) using Single-Ended Primary Inductance Converter (SEPIC) as a DC-DC converter to feed loads working with specific input voltage. The choose of SEPIC converter is due to the output voltage ripple of developed type converters are usually small and can be lower than 2%, also it is considered as a buck and boost converter and thereafter loads with lower or higher voltage could be powered. MATLAB Simulink is used as environment to develop control strategies to guarantee a stable voltage at the load terminals. The algorithm that is used to fulfill this role is a conventional PID controller to generate the PWM signal for the SEPIC converter. Hence, to validate the work some real-time simulations aretreated by implemented the control strategies on a low-cost control board: The Raspberry Pi Pico in order to manage the operation of system and collecting the simulation data. Also, and for verification purposes, several simulations were treated to verify the good performance of the proposed system.

Keywords: Voltage control system, Photovoltaic system, DC-DC power converters, SEPIC Converters, Raspberry Pico Board, PID controller.

I. Introduction

In recent decades, the use of renewable energy has gained importance in many applications, then an interest of researchers appeared to optimize and exploit the use of this resource. Photovoltaics in turn is among the most remarkable sources that transforms the light radiation into electricity, but what makes the recovery of energy not easy is that the photovoltaic energy production depends directly of serval

International Journal of Electronic and Electrical Engineering.
ISSN 0974-2174 Volume 16, Number 1 (2023), pp. 1-6

https://dx.doi.org/10.37624/IJEEE/16.1.2023.1-6

Dual Axis Solar Tracker with Weather Sensors

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Abstract

Solar energy is one such non-conventional and sustainable form of energy that also has a high potential for conversion into electrical power. With the present solar energy harvesting technologies, we only have high production at specific periods, typically noon.
This paper presents a dual axis solar tracker system that significantly boosts productivity. This project is made up of several LDR sensors and a motorised mechanism that rotates the panel in the direction of the sun. Dual-axis solar tracker can improve energy by tracking sun rays from several solar panels. The microcontroller-based control system detects sunlight and controls the motorised mechanism. This project may also be used to simulate raindrops, temperature, and humidity using sensors, and the results can be shown on a mobile phone. This technology operates continuously and without interruption, increasing the efficiency of the solar panels by up to 80%.

Keywords: Motorized mechanism, solar panels, LDR sensors, microcontroller

Introduction

The main purpose of this project is to design a solar tracker system that tracks the sun for producing maximum output for solar powered applications. This system also has DHT11 and Rain sensor to depict the weather parametric values.
Nowadays, it is more difficult to strike a balance between energy production and consumption. Using solar energy as effectively as possible is the best method to rectify this equation's imbalance. The issue with solar energy utilisation is that solar cell panels need to beexposed to the sun's light to their full potential. The strength of the sun's light

International Journal of Electronic and Electrical Engineering.
ISSN 0974-2174 Volume 16, Number 1 (2023), pp. 7-16

https://dx.doi.org/10.37624/IJEEE/16.1.2023.7-16

Fault Detection in Underground Cables Using A Microcontroller

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Abstract

The project's goal is to use a microcontroller kit to find the location of a fault in underground cable lines from the base station to the closest point in terms of distance. Instead of using overhead wires, the electrical cable travels undergroundin metropolitan areas. It can be challenging to locate the closest defect whenever it affects an underground cable, making it harder to repair that line. The suggested system locates the fault's closest location. Here, theinternal ADC device of the microcontroller kit is used tointerface the current sensing circuits made with a mixture of resistors, which provide digital data to the microcontroller indicating the wire length in kilometers.The group of switches is what causes the fault to occur.The relay driver is in charge of managing the relays. Theinformation is shown on a 16x2 LCD screen that is connected to the microcontroller. The relay driver is in charge of managing the relays. The information is shown on a 16x2 LCD screen that is connected to the microcontroller.

Keywords: Wi-Fi Module, Arduino Nano board, Relay, Resistors, Slide switch, Wi-Fi Module, 16X2 LCD display, power supply, Arduino IDE.

I. Introduction

Due to subsurface circumstances, wear and tear, rats, etc., underground cables are susceptible to a variety of problems. In addition, police examination of faulty supply is difficult and the complete line must be examined to detect and correct defects. As a result, we tend to suggest cable fault detection over IoT, which pinpoints the exact issue location and makes repair workquite simple [1]. The repairmen are aware that only that portion of the system needs to be examined in order to see the faulty supply, and that

International Journal of Electronic and Electrical Engineering.
ISSN 0974-2174 Volume 16, Number 1 (2023), pp. 17-23

https://dx.doi.org/10.37624/IJEEE/16.1.2023.17-23

Fault Diagnosis and Monitoring of Small Wind Turbine Using IOT

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Abstract

Electrical energy is the most reliable energy forms. Out of which the development in technology is claiming for energy in large quantities. But the conventional energy sources are causing pollution also the fossil fuels are been depleting day today, thus the path have been led for Renewable energy sources. The most dependent renewable energy source includes the wind energy. But the maintenance of wind turbine is complex, continuous monitoring becomes tough due to its location at great height and they are installed in rural areas. So, a reliable condition monitoring system is essential for wind turbine to minimize downtimes and to increase the productivity. The aim of this project is to monitor the wind turbine parameters and to improve the early fault detection. Here, sensors are used to monitor the condition of wind turbine. The three sensors used are temperature sensor, vibration sensor and voltage sensor. If any sensor gives an abnormal value, the data is updated to IoT cloud for every 15 seconds. For this project, we use Arduino UNO and Node MCU esp8266. Arduino UNO collects sensor values from different sensors of wind turbine and Node MCU esp8266 sends the data to IoT cloud of ThingSpeak. Working of Kit and the performance check is done on the proposed system.

Keywords: Arduino UNO, DC Gear motor, esp8266, Fault Diagnosis, IOT ThingSpeak cloud, Wind turbine.

1. INTRODUCTION

Due to the negative environmental effects of fossil fuels, both quantitatively and qualitatively, the globe is quickly switching to renewable energy. To utilise these

International Journal of Electronic and Electrical Engineering.
ISSN 0974-2174 Volume 16, Number 1 (2023), pp. 25-33

https://dx.doi.org/10.37624/IJEEE/16.1.2023.25-33

Implementation of V2G and G2V Technology in Micro Grid using MATLAB Simulink

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Abstract

Electric Vehicle (EV) Batteries can be used as potential energy storage devices in Micro-Grid. They can help in Micro-grid energy management by storing energy when there is Surplus (Grid to Vehicle, G2V) and supplying energy back to the grid (Vehicle to Grid, V2G) when there is demand for it. Architecture for implementation aV2G-G2V system in a micro grid using level- 3 fast charging, off-board chargers, and advanced power electronics components such as grid interfacing inverter, LCL filter, and step-up transformer is described in this project. The simulation results will provide insight into the effectiveness of this approach, with active power regulation in the micro-grid by EV batteries through G2V-V2G modes of operation. The charging station design ensures minimal harmonic distortion of grid injected current and the controller gives good dynamic performance in terms of dc bus voltage stability. This research could have significant implications for sustain able and efficient energy systems that incorporate renewable energy source and electric vehicles.

Keywords: EV Batteries, OFF board charges, LCL filters, Step Up transformer, grid interfacing inverter, Distribution system micro grid.

INTRODUCTION

The world is moving towards renewable energy sources and electric vehicles, and micro

International Journal of Electronic and Electrical Engineering.
ISSN 0974-2174 Volume 16, Number 1 (2023), pp. 35-41

https://dx.doi.org/10.37624/IJEEE/16.1.2023.35-41

IOT Based Energy Meter with Billing System and Load Prioritization

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Abstract

To build our own IoT-based electricity energy metre with billing system and load prioritization using ESP32 and monitoring data in this project. We enabled a smart energy metre that can communicate in both directions and display different parameters on both its built-in display and a web-based Head-end-System application software. The metre calculates the current, voltage, and power output as well as the amount due in real time. With this metre, data collection and bill generation no longer require manual verification. The essential metre data can be viewed by a variety of parties, including consumers, linemen and power distributors, thanks to the IoT enabled meter's ability to simultaneously communicate this data to many devices. Additionally, having access to real-time data will assist electricity distributors better manage their grid and reduce energy waste by enabling them to examine user usage trends and successfully implement strategies like load balancing and shedding. Applying effective power restoration methodology, which must also include a systematic load prioritisation strategy that takes into account a number of practical issues that make the process of load prioritisation difficult and complex, is one important technique for enhancing system reliability. A dynamic load prioritisation model for service restoration is presented in this paper. The process places loads in order of priority and gives each load in the system a computed weight. The process places loads in order of priority and gives each load in the system a computed weight. These weights can be utilised as an input for any restoration optimisation issue because they are dynamic (i.e., time dependent).

Keywords: Internet of Things, Thingspeak, Energy Meter, Arduino UNO, ESP32, Potential divider, LCD, Web page.

International Journal of Electronics Engineering Research.
ISSN 0975-6450 Volume 15, Number 1 (2023) pp. 1-9

https://dx.doi.org/10.37622/IJEER/15.1.2023.1-9

Simulation of Wind-Solar based Hybrid Power Generation System using MATLAB

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Abstract

This project simulates a hybrid power generation system that uses clean, renewable energy sources like the sun and the wind. This system's primary objective is to connect solar PV and wind turbines in order to produce a steady supply of electricity. Since both solar radiation and wind speed vary over the course of the year, neither solar nor wind-based systems can independently produce efficient, dependable electricity. As a result, combining solar and wind energy systems can provide a year-round alternative and stable energy source. Power generation by hybrid systems is more likely to match the inputs that are available. The system is anticipated to produce production that is steady, dependable, and effective.

Keywords: Solar panel, Boost converter, Universal bridge, Wind turbine, Pulse generator, PMSG

I. Introduction

There is a rise in energy demand. But the supply of fossil fuels is running out. As a result, people are becoming more interested in alternative renewable energy sources like solar, wind, tidal, bio, and geo-thermal. Renewable energy sources are essential and important to electrical networks, and photovoltaic solar energy use is increasing dramatically daily. Solar energy is produced using electrical inverters and photovoltaic panels. In nature, the photovoltaic panels' output power is discontinuous and changes according to the amount of radiation, temperature, the age of the panels, and different orientations. A solar photovoltaic system is more economical and eco-friendly in many

International Journal of Electronics Engineering Research.
ISSN 0975-6450 Volume 15, Number 1 (2023) pp. 11-18

https://dx.doi.org/10.37622/IJEER/15.1.2023.11-18

Smart Shoe

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Abstract

This paper aims to create a smart shoe that generates electricity while being worn, allowing users to charge their electronic devices as they walk. The shoe utilizes a piezoelectric transducer as a voltage source, which produces a varying output based on the pressure applied to the heel while walking. This work also incorporates safety features, including the ability to track the user's location and the number of steps taken.
To achieve this, the system utilizes GPS and GSM modems, as well as an Arduino microcontroller board. Using the programmed microcontroller, the GPS receiver locates the user and delivers latitude and longitude coordinates through SMS to a registered cellphone number. The system's core processing unit is the microcontroller. Additionally, a panic button can be used to activate an ALERT system, which sends information to the registered mobile number, with an SMS sent every two minutes.

Keywords: Arduino Nano, GPS tracker, GSM module, piezoelectric sensor

I. INTRODUCTION

The proposed paper introduces a cost-effective device called the "smart shoe" that can help users monitor their physical activity by tracking the distance traveled and calories burned during walks or runs. This device utilizes a force sensitivity resistor to measure the user's movement and calculate the overall distance and calorie count. The smart shoe is designed for universal wearability and offers easy maintenance. This work aims to create a low-cost solution that can benefit a broad range of users.

Statistics:
3.5 miles (7500 steps) is the average daily walking distance for an adult.

International Journal of Electronics Engineering Research.
ISSN 0975-6450 Volume 15, Number 1 (2023) pp. 19-26

https://dx.doi.org/10.37622/IJEER/15.1.2023.19-26

Solar Powered Automatic Rain Protection for Field Crops Using Arduino UNO and Moisture Level Monitoring System

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Abstract

Agriculture is an important sector in India. "On average, 70% of households and 10% of the urban population rely on agriculture for their livelihoods. However, heavy rains cause farmers to face major problems as their crops are washed away or destroyed. To circumvent this problem, project is developed to protect crops from heavy rains. Whenever there is rainfall the rain sensor gets activated. Then, the controller indicates the DC motor to run which opens the roof automatically to close the field using a sheet. In this project, the roof is open automatically when the sensor is ON. In general, electrical energy obtained from a transformer can be used, but for sustainability reasons we have chosen solar energy, which is abundant nearby, as the energy source**.** Power source to this project is supplied through solar power which is a renewable energy.

Keywords: DC Motor, Blynk App, Solar Energy, Rain Sensor

1. INTRODUCTION

The aim of the project is to design an automotive rain operated roof using solar energy to protect the field crops from rain. This project uses soil moisture sensor and temperature sensor for automatic irrigation. It consists of IOT technology to send the data into the Blynk mobile application. So, user can check and control the irrigation motor through Blynk app.

We humans have no control over natural phenomena such as rain, humidity, and heat. Several measures have been taken against this environmental hazard, but these are done

International Journal of Electronics Engineering Research.
ISSN 0975-6450 Volume 15, Number 1 (2023) pp. 27-35

https://dx.doi.org/10.37622/IJEER/15.1.2023.27-35

Solar Wireless Electric Vehicle Charging System

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Abstract

The major goal of a solar wireless EV charging system is to shorten EV charging times by utilizing the electromagnetic induction mechanism. This method uses a solar panel to produce power, which can then be utilized to charge an electric vehicle (EV) while it is moving. Battery, regulatory circuit, copper coils, Boost Converter, LED lights, and solar panel are also used. This model shows how charging for electric vehicles can be done while they are in motion, doing away with the need to pull over. As a result, a wireless solar-powered charging system for electric vehicles can be added to the road.

I. Introduction

We are all aware that the development of electric vehicles will be crucial to the future of automobiles in this current era of technological evolution. Fossil fuels like petrol, diesel and other such fuels are almost completely depleted due to the current trend of excessive use. And everyone now understands how crucial it is to protect these fossil resources as a result of this truth. Thus, the quest for an appropriate successor for these cars got underway. Electric vehicles are the most interesting and capable replacement we have. When purchasing an electric vehicle, the length of time needed to charge one, the few available charging station installations for the infrastructure, and the challenge of locating appropriate sites for charging electric vehicles in and around the roadways in India is the most common argument given for not doing so.

Solar wireless electric vehicle charging systems have been created to address this issue. This system uses wireless power transmission technology to wirelessly charge EVs using solar energy, offering an effective and ecological solution to the issue of EV. Here, we build a solar road made of transmitter coils and receiver coils that are integrated into the car so that an EV's battery can be charged while it is moving on the

International Journal of Electronics Engineering Research.
ISSN 0975-6450 Volume 15, Number 1 (2023) pp. 37-42

https://dx.doi.org/10.37622/IJEER/15.1.2023.37-44

Speed Control of Single Phase Induction Motor Using Android Bluetooth Module

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Abstract

This project is developed to control the speed of induction motor wirelessly. Now-a-days about 70% of load in industries are induction motor, and are used in application where production purpose industries require variable speed drive. Android operating systems being widely used in smart phone and tablet, is an easy application system to incorporate. Here we are using android application system for interfacing it with microcontroller for wireless operation. So, our project concentrates on controlling the speed of induction motor using android phone remotely with the help of Bluetooth technology. An Android application is used to connect Bluetooth modem of control circuit which is connected to motor via Bluetooth feature present in smart phone. Bluetooth modem is interfaced with microcontroller. The Bluetooth slave modem receives the command from smart phone and sends the signal to microcontroller. The microcontroller decodes the signal received and activates opto-coupler then respective opto-coupler triggers the triac with respect to change in firing angle and results in varying speed of induction motor.

Keywords: Android application, Bluetooth technology, Wireless operation, and PIC microcontroller.

I. Introduction

The objective of this project is to build a system that enables users of Android smartphones to regulate the speed of 230V AC motors. Using the Bluetooth capability on an Android smartphone, the motor's speed may be wirelessly controlled. The

International Journal of Electronics Engineering Research.
ISSN 0975-6450 Volume 15, Number 1 (2023) pp. 43-48

https://dx.doi.org/10.37622/IJEER/15.1.2023.43-48

UPS Battery Monitoring System Using Battery and Supply Changeover

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Abstract

Today, every business scale has grown more, and power use has grown more than it did in the past, boosting the need for a UPS system on the consumer side. A UPS battery system is utilized to ensure a constant power supply so that the consumer won't be affected by unexpected power outages in the system.

In this system, the UPS battery is charged utilizing both solar and grid power. Solar electricity is used to first charge the UPS battery. The supply is automatically changed and the battery is charged using grid power if the amount of solar energy available is less than the needed voltage. In this system, two battery packs are being used. While the battery with the larger charge is attached to the load, the battery with the lower charge is connected to the supply and charged. Automatic battery switchover occurs based on the charge remaining in the battery packs.

Using this, we can ensure that the customer has a constant supply of power. We can provide power without interruption because this system uses solar energy and two battery packs. This system's architecture is such that it can simultaneously power both AC and DC loads.

Keywords: Uninterrupted power supply (UPS), Microcontroller, Transformer, Relay, Batteries

International Journal of Electrical Engineering and Technology.
ISSN 2249-3085 Volume 13, Number 1 (2023), pp. 1-10

https://dx.doi.org/10.37622/IJEET/13.1.2023.1-10

Load Demand Response Controller

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Abstract

This project aims to design a system which helps electricity consumers to monitor and control their electrical loads. In this system, the energy meter is connected to an optocoupler which provides optical isolation and transfers electrical signals between the energy meter and Arduino UNO. This system has a step-down transformer and Regulated Power Supply (RPS) to provide supply to Arduino UNO and to the loads through electromagnetic relays. The electromagnetic relays act like a switch for the operation of the loads. The system is enabled with an Arduino UNO which acts like a control device. A Wi-Fi module ESP8266 is used to link the Arduino UNO to the internet. All of the data is processed by Arduino, and the Wi-Fi module communicates the energy consumption values to the Blynk application. Through Blynk application, the energy consumption values and load turn on/turn off options are available. From the Blynk application, relays can be operated as switches. The energy consumption is calculated by the Arduino UNO and when the peak load consumption is reached, the Wi-Fi module will send an email to the consumer's email id notifying them to turn off the unwanted loads.

Keywords – Energy consumption, Energy meter, Arduino UNO, ESP8266, Blynk app.

I. INTRODUCTION

One of the world's greatest issues now is the energy crisis. Almost 80% of energy is generated by fossil fuels, which are non-renewable resources. New environmental rules, the depletion of fossil fuels, and increased energy usage are all contributing to a significant increase in energy prices. Energy conservation is now one of the most

International Journal of Electrical Engineering and Technology.
ISSN 2249-3085 Volume 13, Number 1 (2023), pp. 11-19

https://dx.doi.org/10.37622/IJEET/13.1.2023.11-19

LPG Gas Leakage Detection and Alert System

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Abstract

This project aims to develop a system which is capable of detecting LPG gas leaks. This proposed gas detection system detects various gases such as propane, butane, propene, and butene, which are very harmful to the surroundings. After the sensor detects a gas leak, it sends the signal to the Arduino NANO for further processing. The Arduino NANO sends the signal to the buzzer, which then turns on to warn people in the area. It also cuts off the power to the equipment via a relay and simultaneously turns on the exhaust fans to remove harmful gases from the environment. The system also displays the gas concentration on the LCD and sends a warning notification to the user via the GSM module.

Keywords: Arduino nano, exhaust fans, GSM module, Relay.

INTRODUCTION

Gas leakage is one of the major problems and in recent days, it is observed in many places including residences, industries, and gas-operating vehicles like CNG buses, cars, etc. Dangerous mishaps are observed to occur as a result of gas leaks. Since LPG is extremely flammable, it can burn even at a considerable distance from the site of the leak. This energy source principally consists of the extremely combustible chemical molecules propane and butane. In homes, LPG is primarily used for cooking purposes. When a leak occurs, the leaked gases may lead to an explosion. Accidents caused by gas leaks result in both material loss and human injuries. The threat of home fires has

International Journal of Electrical Engineering and Technology.
ISSN 2249-3085 Volume 13, Number 1 (2023), pp. 21-30

https://dx.doi.org/10.37622/IJEET/13.1.2023.21-30

MPPT Based Battery Charging Using Solar Energy

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Abstract

With the depletion of fossil fuel energy sources, there is a growing need for renewable energy sources. In India, the government aims to increase their non-fossil energy capacity from the current 170 gigawatts to 500 gigawatts by 2030, with the goal of meeting half of the country's energy needs using renewable sources. However, solar photovoltaic (PV) systems have low efficiency and high capital costs, hampering their widespread adoption, despite India having a solar power capacity of 64.38GW. Maximum Power Point Tracking (MPPT) techniques are utilized to address these issues by optimizing the power output of PV arrays under varying atmospheric conditions by tracking the maximum power point. This research delves into the P&O MPPT technique in detail and presents validated results from both hardware and software for a single MPPT system, showcasing its effectiveness in enhancing the efficiency of solar PV systems. In addition, a schematic is provided to extract the maximum obtainable solar power from a PV module and utilize the energy for a DC application, demonstrating the potential of solar energy as an important untapped resource in tropical countries like India.

Keywords: Maximum power point, Photovoltaic system, DC-DC power converters, Battery, Arduino.

INTRODUCTION

Solar energy is a renewable energy source that is widely regarded as the cleanest and most abundant. It has low operational costs when compared to other forms of power generation, and can be harnessed almost anywhere on earth at one time or another. The

International Journal of Electrical Engineering and Technology.
ISSN 2249-3085 Volume 13, Number 1 (2023), pp. 31-41

https://dx.doi.org/10.37622/IJEET/13.1.2023.31-41

Simulation and Design of Boost Converter for 1KW$_P$ PV System Using P&O and Incremental Conductance Algorithm

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Abstract:

Solar photovoltaic energy has become a widely utilized form of renewable energy in distributed generation systems. Its popularity stems from the continuous advancements in solar technology and its integration into grid-connected systems, making it an attractive option for generating environmentally friendly electricity. In the context of solar energy, optimal power output is achieved by operating photovoltaic systems at their maximum power point, which is determined through the design calculation of a Boost converter. This notable undertaking confirms the simulation and design of a Boost converter for a 1KWp photovoltaic system using MATLAB/Simulink software, employing the P&O and incremental conductance algorithms.

I. INTRODUCTION

Currently, solar energy generation is widely regarded as one of the most feasible sources of renewable and environmentally friendly energy. It is preferred over other renewable energy sources due to its numerous benefits, such as being clean, renewable, and low maintenance. PV cells directly convert solar energy into electricity. PV panels and arrays produce direct current (DC) electricity, which needs to be converted to alternating current (AC) at a specific frequency to power electrical loads. Power converters are essential for connecting PV arrays to the grid. Solar energy can be transmitted to grid networks through grid-connected inverters. In such scenarios, maintaining a balance between the operational characteristics of the load and the photovoltaic cell is crucial.

International Journal of Electrical Engineering and Technology.
ISSN 2249-3085 Volume 13, Number 1 (2023), pp. 43-50

https://dx.doi.org/10.37622/IJEET/13.1.2023.43-50

Simulation and Implementation of Speed Control of Single Phase Induction Motor Using Microcontroller

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Abstract

This project is about controlling of speed of single-phase induction motor by using Arduino Uno. By using this method of speed control we can control the speed smoothly along with energy saving. The induction motors are widely used in the industrial applications due to its advantages like low cost and versatile speed control. But by using the stator control we can control speed of short range only. This problem can be solved by using power electronics devices. The objective is controlling of speed by using stator control. This hardware gives input signal to microcontroller, which in turns controls the input of power electronic devices. By controlling the firing angle of semiconductor power devices with the help of Arduino Uno, the terminal voltage across the stator winding of the motor can be varied to achieve the speed control of single phase induction motor.

Keywords: Single phase induction motor, Microcontroller, Power electronic device

I. INTRODUCTION

Induction motor speed control is a process of manipulating currents in an induction motor to regulate speed. While often used in fixed frequency applications, induction motors are popular for variable frequency applications such as industrial drives and electrical vehicles[1]. There are a variety of motor speed controllers available. Induction motors do not run at synchronous speed, they are generally fixed speed motors. In industries mechanical loads should not only be driven but should also be driven at desired speed[2]. Here by using an inverter circuit speed control of single phase induction motor achieved[3]. An inverter is a power electronic device which

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A NOVEL CONTROLLER FOR ENHANCING THE DYNAMIC PERFORMANCE OF A SINGLE-PHASE CASCADED H-BRIDGE MULTILEVELINVERTER

Abstract

This research investigates the steady state and dynamic performance of a cascaded H-Bridge multilevel inverter (CHBMLI)with the use of closed loop controllers. For tackling a variety of challenges, a dual loop cascaded controller is appropriate for an MLI system. It is made up of an outer loop and an inner loop. The outer loop controller is Proportional-Integral (PI) controller which is used as a voltage controller and inner loop controller is Proportional (P) controller which is used as a current controller. With the aid of a voltage controller, one may achieve steady state voltage, or a constant output voltage, while a current controller can shorten the time required to attain steady state, or the transient/dynamic period. Both linear and nonlinear loads utilize the same controller. The closed loop CHB-MLI model in this study is created using the MATLAB/SIMULINK platform, and the controller parameters proportional gain (Kp) and integral gain are carefully chosen (Ki). For linear load, the steady state and dynamic performance of a CHB-MLI is derived by changing these two parameters in both loops. By employing the same controller and the same settings for the controller parameters as for linear load, steady state performance under non-linear load is examined.

Keywords: Non-linear Load, Linear Load,Dynamic Performance,Dual Loop Cascaded Controller, CHB-MLI.

DOI

10.10543/f0299.2023.41597 (login.php?id=41597)

Issue

Cailiao Kexue yu Gongyi/Material Science and Technology

MODELLING AND ENERGY STORAGE MANAGEMENT SYSTEMS USING FUZZY LOGIC CONTROLLER WITH PMSM DRIVE HYBRID ELECTRIC VECHICLE

Abstract

Automobile power systems are increasingly in need of renewable energy resources. However, the conventional mechanisms failed to provide better energy management system (EMS) performance. Therefore, this article is focused on implementation of hybrid EMS system using solar photo voltaic (PV), fuel cells, super capacitor and battery storage system for permanent magnet synchronous machine (PMSM) drive of hybrid electrical vehicle with fuzzy logic controller (FLC). The PV fuel cell hybrid electrical vehicle is a model-based approach and delivers two major original contributions. A fuzzy logic control-based energy management strategy. Super capacitors and battery storage systems are used for rapid charging and different levels of battery state of charge.The power systems prove to work effectively and adaptively in different situations under the regulation of the EMS and demonstrate better fuel economy than using a widely-adopted power-following control strategy. The simulations conducted using Matlab/Simulink model showed that the proposed method outperformed as compared to state-of art approaches.

Keywords: solar photo voltaic, permanent magnet synchronous machine, fuzzy logic controller, energy management system.

DOI

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Cailiao Kexue yu Gongyi/Material Science and Technology

ELECTRIC VEHICLE DC MOTOR POWERED BY HYBRID ENERGY STORAGE SYSTEM USING ULTRA CAPACITOR AND LITHIUM-ION BATTERY

Abstract

This paper deal with Electric vehicle DC motor which is powered by hybrid energy storage system using ultra capacitor and Lithium□Ion battery. Depending on the battery capacity, a battery may extend the all-electric range, but in heavily loaded situations, its efficiency is reduced, causing severe thermal stress and a shorter battery life, which can be avoided by using a supercapacitor. During acceleration, deceleration, and regenerative braking conditions, the motor draws a high current at initial speeds, state of charge of the battery is low and efficiency also reduces. The life of battery is prolonged and supported with high power density device. Lithium-ion batteries(li-ion) and the ultra-capacitor the hybrid energy storage system is used to improve the high energy density, power density to the electric vehicles. The lithium□ion batteries(li-ion) and the ultra-capacitor is connected to the DC to DC Converter for the balancing the BLDC electric vehicle. The aim of the paper is to balancing the load by high energy, power density using batteries, ultra-capacitor connected to the DC to DC Converter by the BLDC electric vehicle. Hybrid energy source are connected to the DC to DC Converter for balancing power among the sources and on requirement, sources could be connected to the BLDC Electric vehicle. A simulation is done by MATLAB. Simulink which has three modes of operation which includes powering the electric vehicle continuing a Brushless DC motor with hybrid energy storage devices.

Keywords: super capacitor; Hybrid Energy Storage System; Lithium-ion Battery; Bidirectional Converter, electromotive force (EMF), Brushless dc motor (BLDC), Electric vehicle (EV), Proportional-integral-derivative Controller (PID), Voltage Source Inverter (VSI).

K.V. Dhanalakshmi[1, *], P.K. Panigrahi[2], G.Ravi Kumar[3]

J. Electrical Systems 19-1 (2023): 13-26

Regular paper

Fault Analysis of Microgrid With Grid-Connected and Islanded mode Using IoT-Wavelet Approach

Now a days microgrid is one of the most widely used method in power network to reduce system losses as well as improve the reliability in the field of electrical systems. Integration of power projects typically involves adding new distributed energy sources with and without compensating devices to an existing power system network. It is essential to design new protection scheme due to changes in the topology and dynamic behavior of the system. Now fast fault detection algorithmic approaches are necessary to integrate different types of generating sources and loads under smart environment. The protection scheme must provide physical monitoring as well as parametrical with the help of new technologies. Internet-of-things(IoT) is one of the source to monitor electrical systems under various environmental conditions of the system. Wavelet (WT) basically investigates the fault transient signals of different frequency and divides the waveform into different approximate and detailed coefficient values, which provides the important knowledge about the classification and location of fault. The detection of faulty-line and the location of fault by implementation wavelet detailed coefficients of Bior1.5 mother wavelet. This proposed method provides fault analysis of IoT based protection of microgrid with Grid-connected and Islanded Mode Using Wavelet Approach under various types of faults.

Keywords: Wavelet Transform, Distributed Generation, Fault Detection, Idle mode, Internet of things (IoT).

1. Introduction

The task of the power transmission system is to transfer electric power from generating stations to load distribution centres and then consumer premises through substations and other utilities. The electrical power system should serve all its customers and inter connect partners economically and reliably. Transmission lines are transfer bulk amount of power from one location to the other location of the country. The conventional solution approach can be described asupgrading system infrastructure by erecting new lines, substations with associated equipment. Abnormal conditions are detected and prevented by protective relaying scheme and it will operate automatic switching mechanism to clear the fault by isolating faulty equipment from the existing network. The conventional line protection [1] is characterised by the ratio of two input quantities respectively proportional to the voltage and current at particular relay point. The basic measurement of impedance in comparators circuit. Now a day this type of protection may not suitable due to large detection time as well as isolation of faulty element and also it has several drawbacks [2,3] like to unwanted operation during power swings and heavy loading conditions which may leads to tripping stream and spread blackouts. Hence, it is necessary to think about alternative protection instead of distance protection scheme. In [4], now digital communication-based relays to designed for different operating condition of the system is pro- posed to detect the fault in the terminal and zones.

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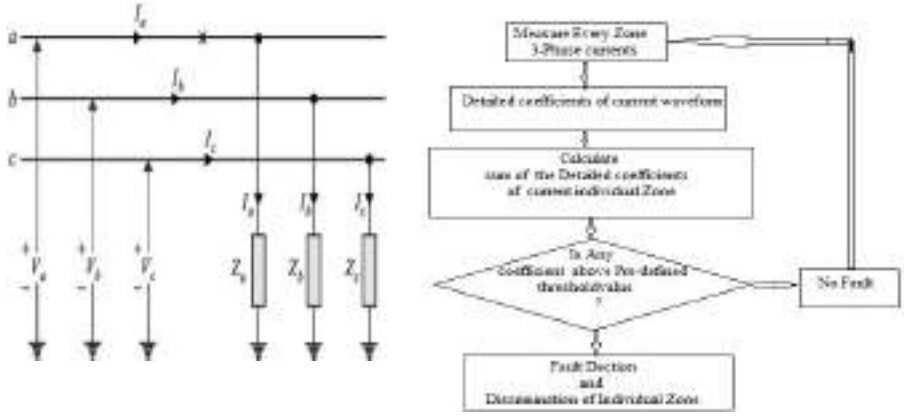
For the benefit of the mechanical protection Internet-of-Things (IoT) has emerged as one of the upcoming technologies for a smart grid network. As the IoT connected power network enable to develop more prominent protection scheme not only electrical as well as mechanical challenges in the existing grid network such as in design, erection commissioning, operation and maintenance [5]. Cyber security [12,13] triggers numerous problems in the system have been addressed and discussed in [6,7] about availability, integrity and confidentiality. Wired communication temporarily solves the problem but it gives problem due to interference communication channels. Few technologies related to broad band, GSM, GPRS ZigBee which cover up to the range of few kilometres due to the lack of data. If embedded IoT in the power system, can use the following communication models and protocols effectively like SCADA, DMS, GIS, CIS, OMS, etc. [8]. The applicable fast and secure communication method is Optical fibre but is very expensive [9]. since these devices are online hence making the smart grid protect to significant attacks.

A micro-grid comprises of three main components which are micro- generators, distribution and different loads. The formation of micro-grid can be Single or multi terminal with $1\varphi/3\varphi$ system and it is connected to low or medium-voltage for distribution of electric power, and can operate under normal and island modes [10]. Micro-grid protection has complicated challenges in design of protection scheme and which can respond main and micro-grid faults. The level of protectionis depending on fault current magnitudes in the system [11,12]. The protection scheme must face the problem comparing with existing power systems is that the fault current flow is unidirectional for radial system, but in the case of micro-grid the current flow is bidirectional flow [13]. The distribute energy sources are frequently used in power sector industry. The selection of protective element is complex due to coordination required between grid side over-current protection and distance protection at transmission line discussed in [14], but these types of systems can capable to suppress challenges of electrical protection system. Considering the available information, a half cycle based moving window average technique for wind source integrated tapped transmission line [15].

Now a day, the system must capable to reduce transient oscillations due to frequently changing loads and protect the system from the faults. The past transmission system is unable to manage the control of load fluctuations and unwanted disturbances. The design of new method not only increase the cost as well as decrease in efficiency, but it also increases the complexity of the system. Therefore, attention is required for the stability and security of the utility grid as well as micro-grid. For the protection of existing system various approaches are investigated and found some of the alternative mechanisms are formulated such as reactive power compensation by installation of power electronics based devices to increase security of the power system. The proposed method requires faster response of power system parameters, reduce power loss and stability improvement.

The protection system can perform two major tasks mainly fault classification and forecast of fault location. Primary importance for discrimination and location of the faulted. This helps to safeguard the connected equipment as well as operating personnel and also immediate restriction of redundant power loss. Mostly unsymmetrical and symmetrical type of faults occur in transmission known as Single-line ground (SLG), Double-line-ground (DLG), Double-line (DL) and Three-phase-ground (TPF) and also open-circuit(OC) faults. classification follows short circuit

conditions of different phases: SLG-AG, BG and CG faults, DLG-ABG, BCG and CAG faults, DL-AB, BC and CA faults, LLL & LLLG faults are derived and discussed with figure-1 and figure-2. After getting faults in the system utmost care should be taken for restoration of system stability. The fault detection and location is major task to protect power system components for resuming normal power flow. A micro-grid protection based algorithm is described in [16] with the help of transient current wave form using wavelet detailed coefficients. The proposed research work concentrates on protection analysis of microgrid under grid connected and isolated mode with the help of Iot monitoring and wavelet based multi-Resolution-Analysis (MRA) [17] is used with the calibration of coefficients of Bior-1.5mother-wavelet. Nowadays, the digital relays are working fast as well as accurate detection and isolation of the faulty element when compared to previous methods. The following sections discuss about IoT Based protection of Microgrid with Grid-Connected and Islanded Mode Using Wavelet Approach.



(a) General system (b) Fault Detection Algorithm

Figure 1: General System and fault detection algorithm

2. Fault Analysis with symmetrical components

Normally power system network may fall under one-phase, Two-Phase, Three-Phase short circuit faults namely SLG (Single-Line-Ground), DLG(Double-Line-Ground), DL(Double-Line) and 3Phase faults categorised as unsymmetrical and symmetrical faults. The analysis of faulted network can be carried by make use of Positive, Negative and Zero sequence components and their interconnections based on the type of fault in the system. The following steps to consider for the analysis of faults.

1.Draw the single line diagram with fully labelled up to the faulty point with polarity marking and current flow directions.

2.Identify the known boundary conditions of voltage and current with respect to fault.

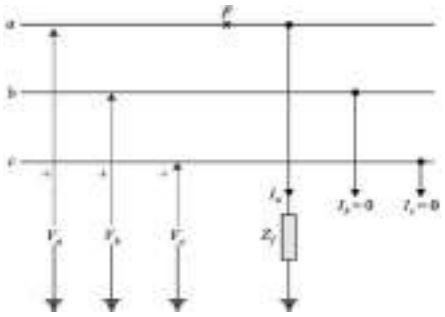
3.Convert voltage and current quantities from phase frame (a-b-c) system to sequence frame (1-2-0).

4.Determine the proper connection of sequence network satisfy the current and voltage relationships.

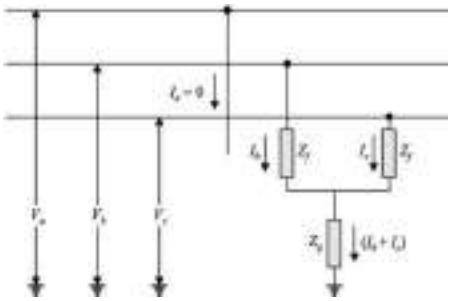
5.Interconnect sequence network according to the type of fault.

The sequential currents are represented as required phase currents are

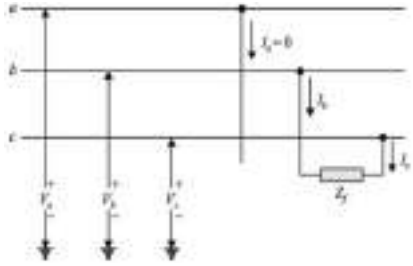
$$\begin{bmatrix} I_0 \\ I_1 \\ I_2 \end{bmatrix} = \frac{1}{3}\begin{bmatrix} 1 & 1 & 1 \\ 1 & a & a^2 \\ 1 & a^2 & a \end{bmatrix}\begin{bmatrix} I_a \\ I_b \\ I_c \end{bmatrix} \quad (1)$$



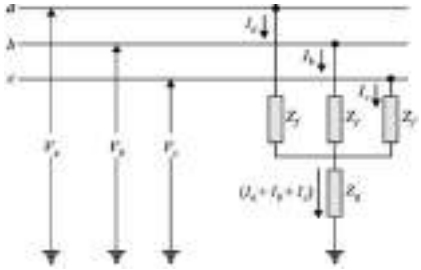
(a) SLG Fault



(b) DLG Fault



(c) DL Fault



(d) TPG Fault

Figure 2: Line diagram representation of Transmission Fault analysis

2.1 Single-Line-to-Ground-Fault

The single-line-fault with proper labelling is illustrated in figure The initial conditions assumedas follows

$$I_b = I_c = 0 \quad (2)$$

$$V_a = Z_f I_a \quad (3)$$

$$\begin{bmatrix} I_0 \\ I_1 \\ I_2 \end{bmatrix} = \frac{1}{3}\begin{bmatrix} 1 & 1 & 1 \\ 1 & a & a^2 \\ 1 & a^2 & a \end{bmatrix}\begin{bmatrix} I_a \\ 0 \\ 0 \end{bmatrix} \quad (4)$$

$$I_0 = I_1 = I_2 = \frac{1}{3}I_a \quad (5)$$

$$I_0 = \frac{V_a}{Z_0+Z_1+Z_2+3Z_f} \quad (6)$$

The fault current I_a calculated as

$$I_a = 3I_0 = \frac{3V_a}{Z_0+Z_1+Z_2+3Z_f} \quad (7)$$

2.2 Line-Line-Fault

let us consider line-to-line fault is shown in figure
$I_b = -I_c$ and $I_a = 0$; $V_b - V_c = I_b Z_f$

$$\begin{bmatrix} I_0 \\ I_1 \\ I_2 \end{bmatrix} = \frac{1}{3}\begin{bmatrix} 1 & 1 & 1 \\ 1 & a & a^2 \\ 1 & a^2 & a \end{bmatrix}\begin{bmatrix} 0 \\ I_b \\ -I_b \end{bmatrix} \quad (8)$$

The sequence current computed as follows

$$I_{a1} = \frac{V_a}{Z_1+Z_2+Z_f} \quad (9)$$

$$I_b = -I_c = \frac{-j\sqrt{3}V_a}{Z_1+Z_2+Z_f} \quad (10)$$

2.3 Line-Line-Ground-Fault

A double line to ground fault is shown in figure. The phase-a current is assumed as $I_a = 0$ and $V_b = V_c = (I_b + I_c)Z_f$

$$\begin{bmatrix} V_0 \\ V_1 \\ V_2 \end{bmatrix} = \frac{1}{3}\begin{bmatrix} 1 & 1 & 1 \\ 1 & a & a^2 \\ 1 & a^2 & a \end{bmatrix}\begin{bmatrix} V_a \\ V_b \\ V_c \end{bmatrix} \quad (11)$$

The fault current is calculated using equation-12

$$I_1 = \frac{V_a}{Z_1+\frac{Z_2(Z_0+3Z_f)}{Z_2+Z_f+Z_0}} \quad (12)$$

2.4 Three-Phase-Ground-Fault

The three phases are short circuited known as symmetrical fault the vector sum of the faultcurrent is zero i.e. $I_a + I_b + I_c = 0$. As the fault is symmetrical

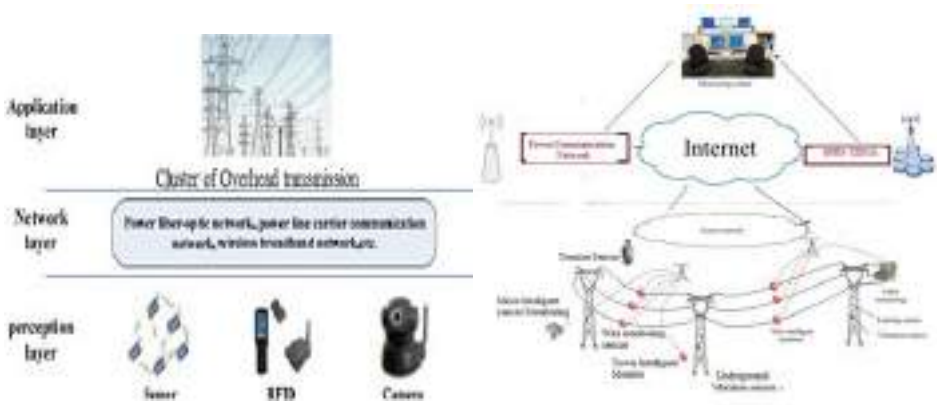
$$\begin{bmatrix} V_a \\ V_b \\ V_c \end{bmatrix} = \frac{1}{3}\begin{bmatrix} Z_f & 0 & 0 \\ 0 & Z_f & 0 \\ 0 & 0 & Z_f \end{bmatrix}\begin{bmatrix} I_a \\ I_b \\ I_c \end{bmatrix} \quad (13)$$

The fault currents are calculated as follows

$$I_a = \frac{V_a}{Z_1+Z_f}; I_b = \alpha^2 I_1; I_c = \alpha I_1 \quad (14)$$

3. Transmission system protection methods

At present scenario only electrical based protection schemes are not suitable for entire powernetwork. Modern power systems require state-of-art methods to protect physically as well as electrically by the analysis of system performance. The protective system must observe natural calamities and electrical load fluctuations by make the utilisation of IoT application and fault detection algorithms [15]. Internet of Things (IoT) gives the basement for Smart City supports for instance Smart Health, Smart Transport, Smart Home, SG etc [18].



(a) IoT Architecture (b) IoT Protection

Figure 3: IoT Based Protection model

3.1 Basic IoT based Protection

The perception layer can gather required information through sensors, RFID and camera for monitoring the electrical devices which are required to send information to network layer for the protection of power transmission network [19,20]. The network layer includes fibre-optic communication channels for transmitting data from one end to other end; power line carrier communication is required for transmitting electrical data and wireless networks for remote data collection.

Application layer collect the information from various available sources and then make the protection scheme becomes real time system. IoT perform processing, integration and analysis of data, thus intelligent control services and decision making such that the protection schemeis improved.

This Iot system contains various sensors are generating premature warnings to the watching centres about physical and mechanical conditions of tower as well as

conductor and also threats regarding of high voltage towers. The vibration sensors monitor underground vibrations discussed in [20]. IoT based transmission system protection incorporates mechanical and electrical safety of power lines from the problems of natural disasters, unsophisticated threats to construction, natural disaster and growing trees as illustrated in figure-3.

3.2 Wavelet based network protection

Wavelet transform (WT) is popular tool for research to detect transient faults by analysing various types of signals and separate approximate and detailed coefficients using basic mother wavelet, which gives tremendous information regarding fault classification and location [21]. A power system with microgrid protection algorithm is described in [16] Multi-resolution- Analysis (MRA) through transient current signals with mother wavelets of faulty signals with the comparison threshold value. The proposed algorithm is described in figure8.

4. Modelling and simulation of System under study

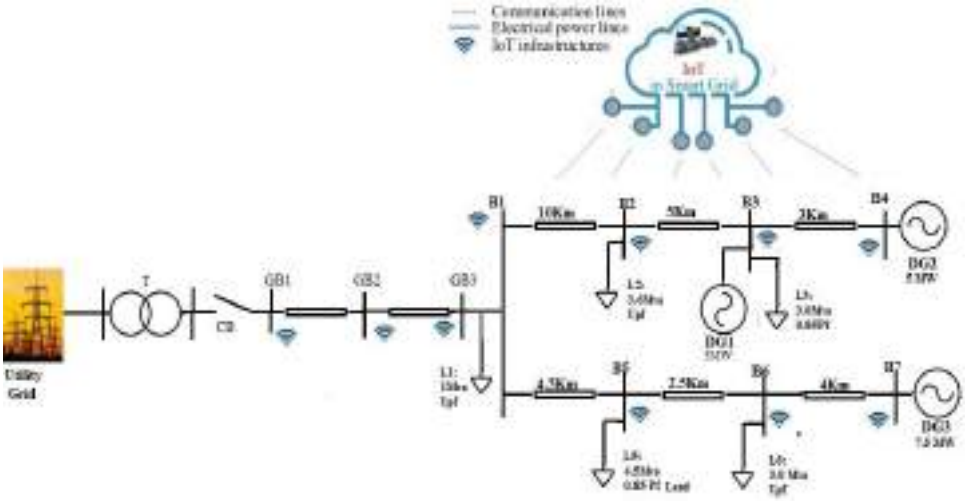


Figure 4: Proposed system model-main parameters

DG1: 7.5 MVA, 4.16 kV-DG unit at bus 3. L1:1 MVA, PF=1

DG2: 5 MVA , 4.16 kV -DG unit at bus 4 L2:=3.6 MVA, PF=1

DG3: 5 MVA , 4.16 kV DG unit at bus 7 L3:3.0 MVA, PF=0.85 lag

Line-12=10 km, Line-23=5 km, Line-34=3 km L5:4.5 MVA, PF=0.85 lead

Line-15=4.5 km, Line-56=2.5 km, Line-67=4 km L6:3.0 MVA, PF=1

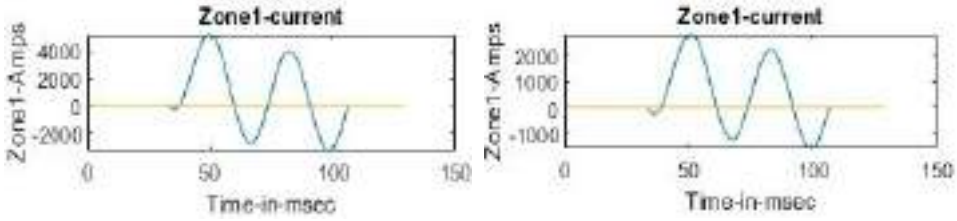
$Z_{1,2} = 0.173 + j0.432\Omega/km$ $Z_0 = 0.346 + j1.800\Omega/km$

The proposed test system under study is Canadian bench mark distribution network as shown in figure-4.The system comprises of 9-bus microgrid connected system connected to grid with three synchronous DGs are connected at bus numbers 3,4 and 7.The total system divided in to eight zones as illustrated in figure-4 and system

technical parameters are represented in Table-I Fig.4 shows the layout of Iot based transmission system and its main parameters are represented as follows: three phase, three-wire, 34.5 kV, 60 Hz test microgrid simulated using MATLAB. The utility grid is represented by a voltage source with the short-circuit capacity of 900 MVA. This microgrid can include a combination of the following DG units:
The proposed test system under study is Canadian bench mark distribution network as shown in figure. The system comprises of 9-bus microgrid connected system connected to grid with three synchronous DGs are connected at bus numbers 3,4 and 7. The total system divided in to eight zones as illustrated in figure-4 and system technical parameters are represented in Table-I.

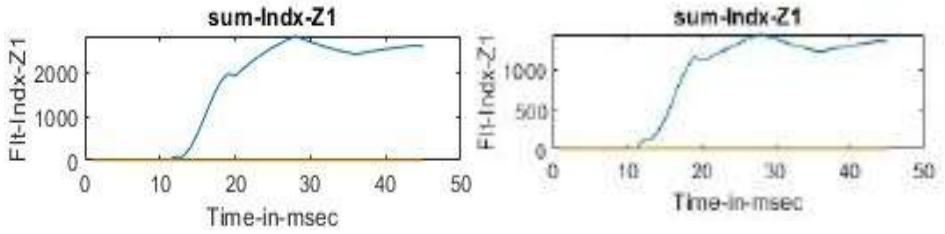
5. Simulation results

The fault cases are considered every zone of ten different types of faults. There are three maincases to
Study: 1) Type of fault – SG, SLG, DLG, TLG faults
2) Total transmission divided into 8 Zones.
3) Fault inception angles (from 0^0 to 180^0 in increment of 15 degrees



(a) Grid Connected mode (b) Grid Idle mode

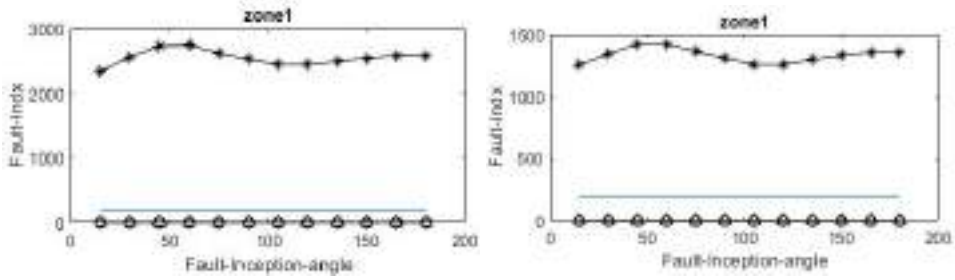
Figure 5: Current wave-forms of 9-Bus system in Zone-1 at LG-Fault



(a) Grid Connected mode (b) Grid Idle mode

Figure 6: wavelet based fault index of 9-Bus System in Zone-1 at AG-Fault

The Proposed work report detection& discrimination and location of fault in various zones by utilisation of sum-of-the-Detailed coefficients of current signal of the system. The detection of fault is observed with the analysis of fault index values. The faulty phases and healthy phases are detected with the comparison of predefined threshold value which describe the detection and discrimination of fault.

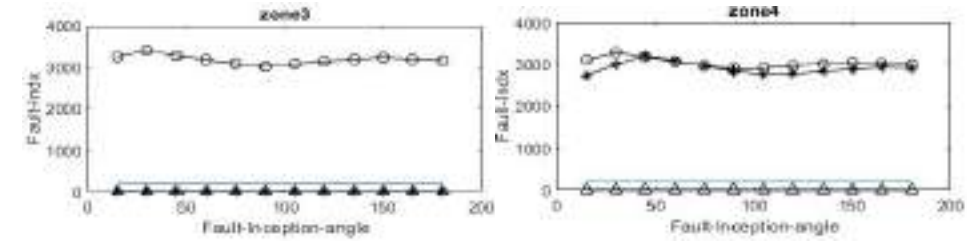


(a) Grid Connected mode (b) Grid Idle mode

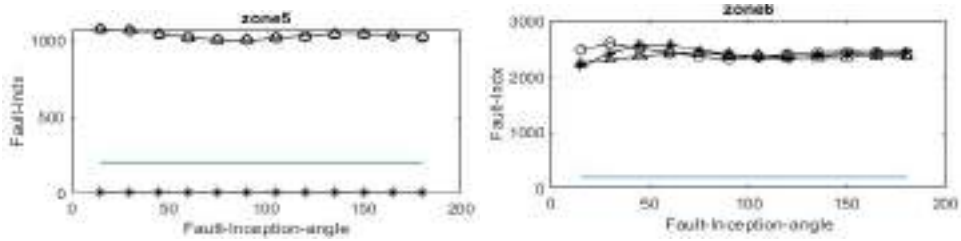
Figure 7: FIA variation of fault index of 9-Bus System in Zone-1 at AG-Fault

Then the Zone current signal has sampling rate 144 kHz of Z1 to Z8 during the fault to analyse the data after selecting bior1.5 mother wavelet. For system study total 10 types of faults in each Zone. For the differentiating grid connected and idling mode of system is described by actual current wave forms. It is observed that grid connected made has highest value when compared to idle mode and indicating that the impact of fault is higher at normal grid connected mode as shown in figure-5.

The time required to find the fault is less than 12 milliseconds in the case of wavelet multi resolution with sum of the detailed coefficients algorithm where as in the case of conventionalapproach by observing current waveform analysis the duration to identify the fault is more than 30 milliseconds and it is found that the proposed algorithm require lesser time compared to normal conventional method which can be identified from figure-6.



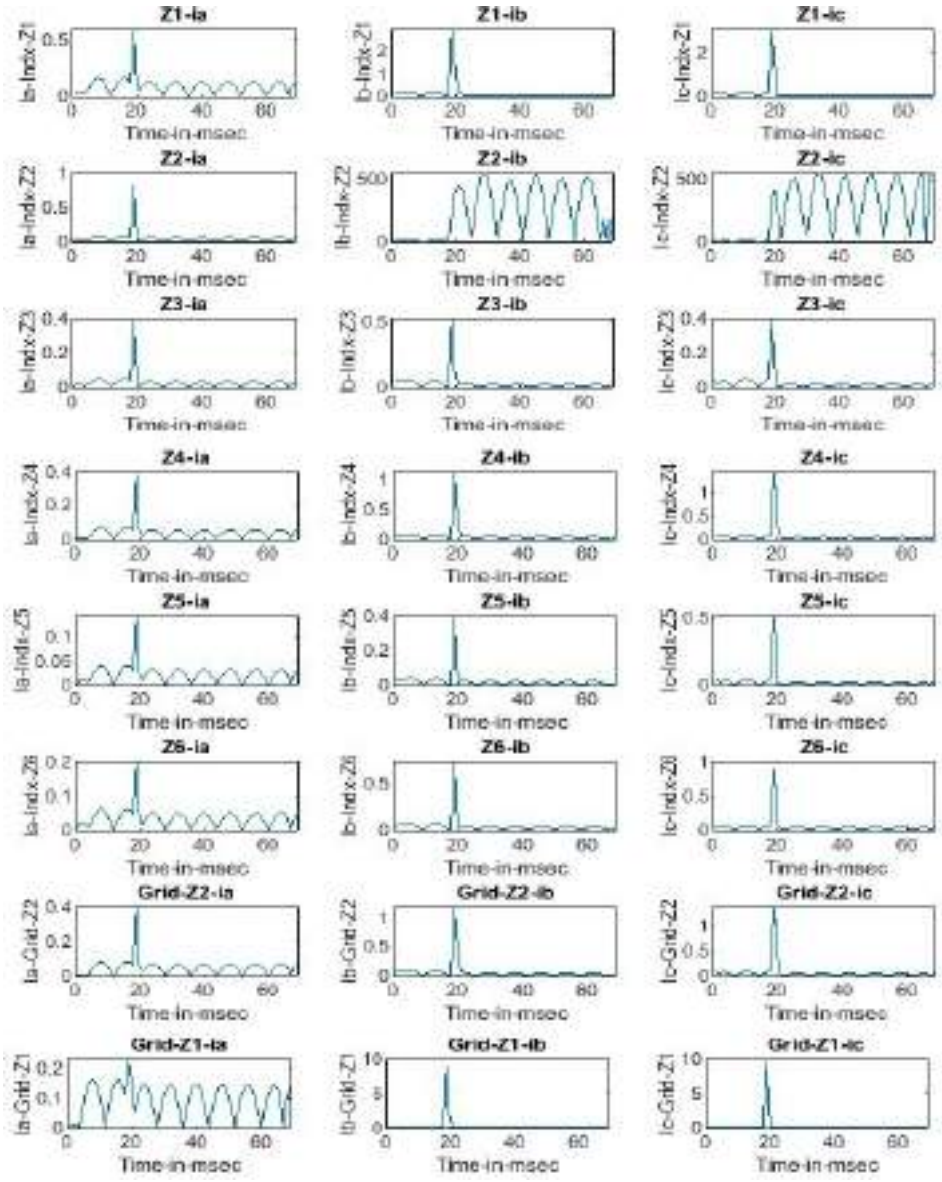
(a) Zone 3: SLG Fault (b) Zone 4: DLG Fault



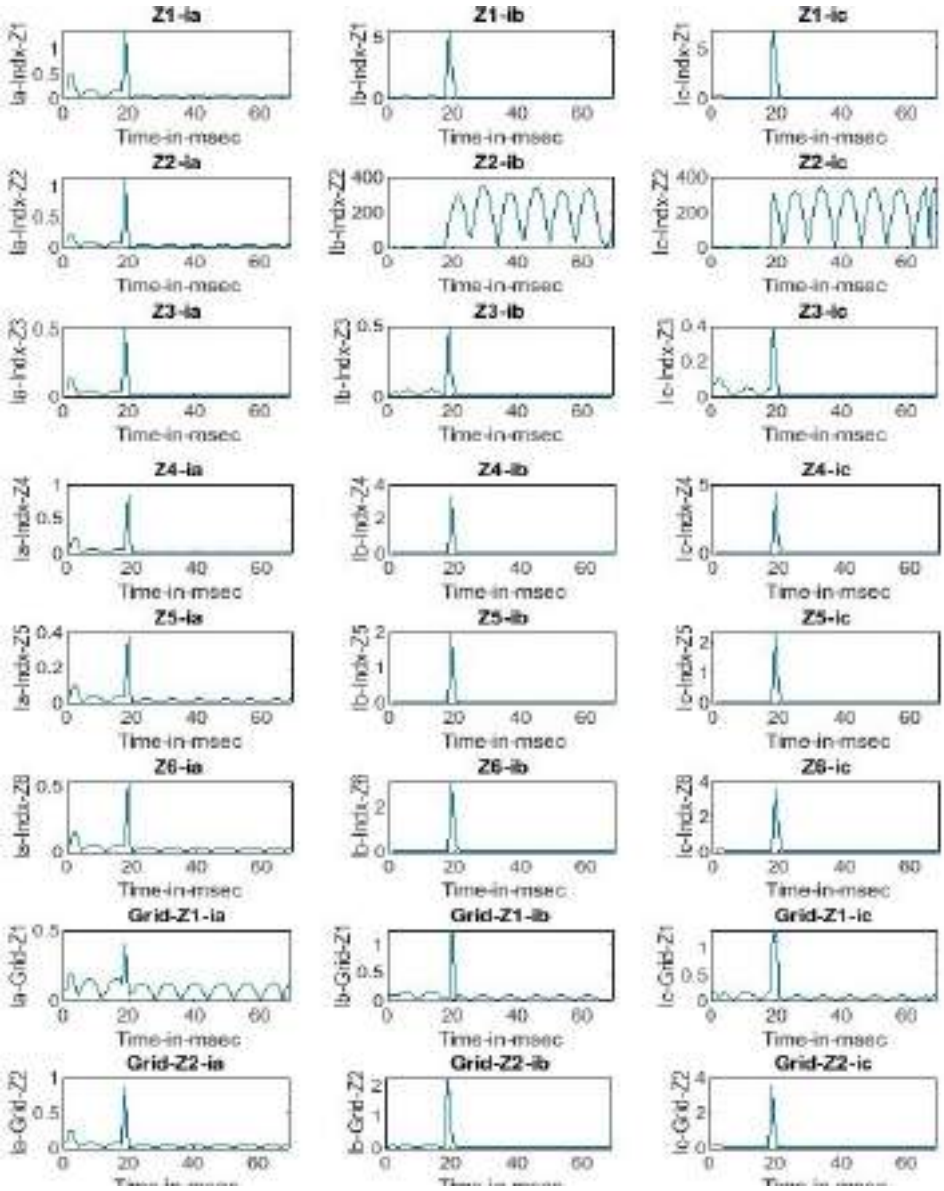
(c) Zone 5: DL Fault (d) Zone 6: TPG Fault

Figure 8: Impact of Fault Inception Angle under various Faults and Zones

The impact of fault inception angle at Zone-1 is observed from figure-7 and the system fault analysis is described in Table-I. It is observed that highest detailed coefficient values at phase-a and indicating that the phase-a to ground fault.



(a) Grid Connected mode

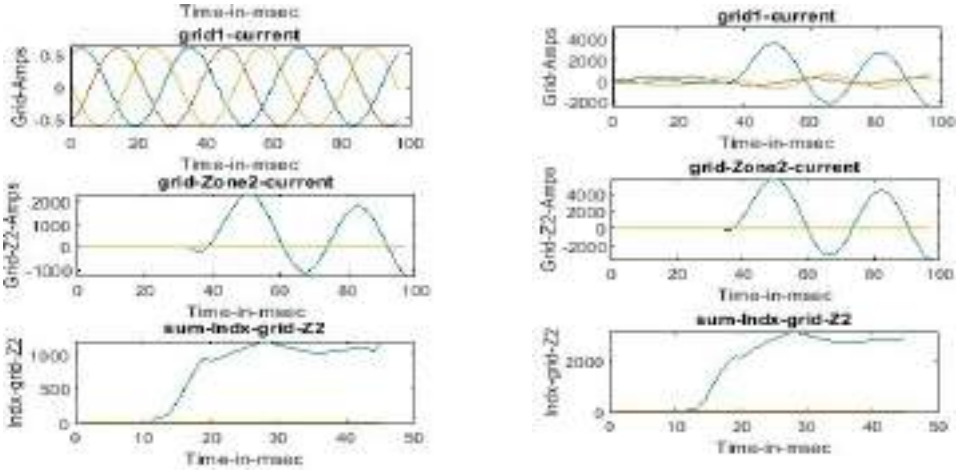


(b) Grid Idle mode

Figure 9: Detection of fault in Zone-2 at BCG-Fault

Table 1: LG-Fault at Zone-1: Analysis of fault Index at Zone-1 under grid connected and Idle mode

FIA	Fault Index at Zone-1 Grid connected			Fault Index at Zone-1 Grid Idle mode		
	I_A	I_B	I_C	I_A	I_B	I_C
15	2335.73	0.7819	0.7674	1251.59	0.7240	0.7171
30	2554.79	0.7817	0.7675	1339.77	0.7239	0.7172
45	2733.89	0.7817	0.7672	1417.64	0.7238	0.7173
60	2741.11	0.7818	0.7671	1419.77	0.7238	0.7174
75	2620.26	0.7819	0.7669	1359.03	0.7237	0.7175
90	2520.51	0.7820	0.7669	1305.38	0.7236	0.7176



(a) Grid Connected mode *(b) Grid idle mode*

Figure 10: wavelet based fault index of 9-Bus System in Zone-1 at AG-Fault

Table 2: LG-Fault at Zone-1: Analysis of fault Index at utility Grid side under grid connected and Idle mode

FIA	Fault Index at Zone-1 Grid connected			Fault Index at Zone-1 Grid Idle mode		
	I_A	I_B	I_C	I_A	I_B	I_C
15	2603.08	0.4050	0.3996	1017.07	0.3687	0.3667
30	2854.04	0.4045	0.3992	1094.62	0.3685	0.3669
45	3059.76	0.4045	0.3991	1161.92	0.3685	0.3670
60	3068.05	0.4046	0.3990	1163.98	0.3685	0.3670
75	2929.16	0.4046	0.3990	1113.27	0.3684	0.3670
90	2814.76	0.4047	0.3990	1069.23	0.3684	0.3671

The detection of fault can be identified in the entire network is illustrated in figure-9. It is observed that larger index values compared to all indices of the network which can be specified that the fault is BC-To-Ground fault in zone-2. The impact of fault inception angle can be noted for Zone-3 of BG Fault under grid idle mode, Zone-4 of ABG fault under grid connected mode and Zone-5 of CAG fault under grid connected mode illustrated in figure-8.

The analysis of wavelet-based fault analysis of idle and connected mode of grid under AG-fault in zone-1 is represented in figure-10. The fault analysis Table-II values reported that wavelet multi resolution analysis carried effectively for the detection and discrimination of faults.

6. Conclusions

This paper proposes protection scheme of Transmission system with the assistance of IoT and its applications, so that it can provide strong real protection scheme. IoT can solve real problems mechanical and physical problems with effective manner and also promoting the development of new protection algorithms. WT is one of the research tool to analyses the faults in transient signals at different frequencies by decomposing the waveform into coefficients of bior1.5 mother wavelet, which presents more prominent information regarding the class of fault and location in existing system by time and frequency domain. The Proposed algorithm has been tested for the detection of faults under various types of faults at different fault inception angles using wavelet multi resolution analysis with bios1.5 mother wavelets detailed coefficients with the help of IOT Application.

References

[1] IEEE Std C37.113-2015, "IEEE Guide for Protective Relay Applications to Transmission Lines", (2015), pp. 1–141.

[2] Patel, U., Bhatt, P., Chothani, N. (2021). Transmission Line Protection Philosophy. In: Futuristic Trends in Numerical Relaying for Transmission Line Protections. Energy Systems in Electrical Engineering. Springer, Singapore. https://doi.org/10.1007/978-981-15-8465-7_1

[3] S.V. Unde, S.S. Dambhare, Differential protection of mutually coupled lines in modal domain using synchronized measurements, 2016 National Power Systems Conference (NPSC),IEEE, 2016, pp. 1–5.

[4] Lien K-Y, Bui DM, Chen S-L, Zhao W-X, Chang Y-R, Lee Y-D, et al. A novel fault protection system using communication-assisted digital relays for AC microgrids having a multiple grounding system. Int J Electr Power Energy Syst 2016; 78:600–25.

[5] Amin, S.M., 2011. Smart grid: overview, issues and opportunities. Advances and challengesin sensing, modeling, simulation, optimization and control. Eur. J. Control 5–6, 547–567.

[6] El-Hawary, M.E., 2014. The smart grid-state-of-the-art and future trends. Electr. Power Compon. Syst. 42 (3–4), 239–250.EPRI, “EPRI Smart Grid Demonstration Initiative: Final Update”.

[7] Ma, R., Chen, H.-H., Huang, Y.-R., Meng, W., 2013. Smart grid communication: challengesand opportunities. IEEE Trans. Smart Grid 4 (1).

[8] Namra Joshi, Dheeraj Nagar, Jaya Sharma “Aplication of IoT in Indian Power System”, Proceedings of the Fifth International Conference on Communication and Electronics Systems (ICCES 2020) IEEE Conference Record # 48766; IEEE Xplore ISBN: 978-1-7281-5371-1

[9] Fang, X., Mishra, S., Xue, G., Yang, D., 2012. Smart grid – the new and improved power

grid: a survey. IEEE Commun. Surv. Tutor. 14 (4), fourth quarter.
[10] Nikkhajoei H, Lasseter R H. Microgrid protection. In: Proceedings of IEEE power engineering society general meeting; 2007.p.1–6.
[11] Mishra M, Rout PK. Detection and classification of micro-grid faults based on HHT and machine learning techniques. IET Gener Transm Distrib 2018; 12:388–97.
[12] H. F. Habib, C. R. Lashway, and O. A. Mohammed, "On the adaptive protection of microgrids: A review on how to mitigate cyber-attacks and communication failures," in 2017IEEE Industry Applications Society Annual Meeting, 1-5 Oct. 2017 2017, pp. 1-8.
[13] H. J. Laaksonen, "Protection principles for future microgrids,"IEEE Transactions on Power Electronics, vol.25, no.12,pp.2910-2918, 2010.
[14] Mishra, D. P., Ray, P. (2017). Fault detection, location and classification of a transmissionline. Neural Computing and Applications, 30(5), 1377-1424.
[15] G. Gantaiah Swamy, Padma Kottala , "Wavelet-ANN Based Analysis of PVIoT Integrated Two Area Power System Network Protection in presence of SVC", J. Electrical Systems 18-1 (2022): 23-38
[16] Shekar, S. C., Kumar, G., Lalitha, S. V. N. L. (2019). "A transient current based micro-grid connected power system protection scheme using wavelet approach" International Journal of Electrical and Computer Engineering, 9(1), 14.
[17] Shazia Baloch, Sunil Srivatsav, samsani, and Mannan Saeed Muhammad, "Fault Protection in Microgrid Using Wavelet Multiresolution Analysis and Data Mining, IEEE Access Volume 9, 2021, date of publication June 14, 2021, date of current version June 22, 2021.
[18] Dharmadhikari, Shweta C., Veerraju Gampala, Ch Mallikarjuna Rao, Syed Khasim, Shafali Jain, and R. Bhaskaran. "A smart grid incorporated with ML and IoT for a secure management system." *Microprocessors and Microsystems* 83 (2021): 103954.
[19] G. Bedi, G. K. Venayagamoorthy, R. Singh, R. R. Brooks, and K.-C. Wang, "Review of Internet of Things (IoT) in Electric Power and Energy Systems," IEEE Internet of Things Journal, vol. 5, no. 2, pp. 847–870, 2018.
[20] YasirSaleem, Noel Crespi, Mubashir Husain Rehmani, and Rebecca Copeland" Internet of Things-aided Smart Grid: Technologies, Architectures, Applications, Prototypes, and Future Research Directions" IEEE Access,Page(s): 62962 – 63003.
[21] M.JayaBharata Reddy, D.Venkata Rajesh and D.K.Mohanta,"Robust Transmission Line Fault Classification Using Wavelet Multiresolution Analysis", Computers and Electrical Engineering (Elsevier publication), Vol.39, No. 4, pp. 1219-1247,May 2013.

Cailiao Kexue yu Gongyi/Material Science and Technology

A 1KW SOLAR BASED STAND-ALONE DC GRID FOR LED LIGHTNING SYSTEM, GADGET CHARGING FOR BUILDING SPACE

Abstract

The use of modern power electronics makes it possible to provide an efficient direct current (DC) supply to all of the advanced electric applications found in commercial buildings, such as lighting, information technology (IT), and telecommunications equipment, as well as speed-controlled drives in heating, cooling, and ventilation systems. DC power sources are used for LED lighting and the majority of electronic loads used inside the built environment. LED luminaires, on the other hand, are dc in nature, which results in high power conversion losses. This is in contrast to typical fluorescent lights, which are fueled mostly by ac grid. In AC, the lower power supply might impair the operation of equipment that demands an appropriate power supply for high performance requirements. As a result, DC was required because of these high-performance needs. Due to the fact that LED lights run on DC power alone, the inefficiency of AC/DC converters used with LED lighting might be considered an advantage. The project that is being presented would shed light on a DC grid that is integrated with solar MPPT units, which powers a DC lighting system as well as a DC low power supply for IT infrastructure (micro grid), and a DC electric car charger for a modest area. For the purpose of validating the findings, a MATLAB simulation and a physical prototype would be developed.

Keywords: Nano grid, MPPT, LED Lightning, PV Panel, DC-DC Convertor, DC Grid, Boost Convertor.

PDF (login.php?id=41526)

DOI

10.10543/f0299.2023.41526 (login.php?id=41526)

How to cite

1M. Archana Sai, 2V. Badri Rama Krishnan .(2023)A 1KW SOLAR BASED STAND-ALONE DC GRID FOR LED LIGHTNING SYSTEM, GADGET CHARGING FOR BUILDING SPACE .mst,18-24.Retrieved from /mst/article_view.php?id=41526&ctype=a

Issue

Vol.22 No.02

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54201

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

A Prototype of the Waste Segregation and Remote Garbage Level Monitoring System

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Abstract: ***The proper management of waste is a significant challenge faced by urban areas worldwide. The lack of an efficient and effective waste management system results in environmental degradation and health hazards. This paper proposes a solution to the problem of waste management by designing and implementing a remote smart waste segregation and garbage level monitoring system. The system consists of two subsystems: waste segregation and garbage level monitoring. The waste segregation subsystem uses sensors to detect the type of waste and segregate it into different dustbins based on its properties, while the garbage level monitoring subsystem uses ultrasonic sensors to monitor the garbage level and send data to cloud for remote monitoring and analysis. When the level of garbage reaches a specific threshold, the system sends an SMS to a pre-declared phone number.***

Keywords: Waste segregation, Garbage level monitoring, Remote monitoring.

I. INTRODUCTION

Waste management is a major issue faced by many countries around the world, as the amount of waste produced is increasing day by day. Several techniques have been proposed to
tackle this issue, including waste segregation and monitoring systems. One such system is the Remote Smart Waste Segregation and Garbage Level Monitoring System which is proposed [1].
The system consists of two subsystems: Waste Segregation and Garbage Level Monitoring. The Waste Segregation Subsystem uses sensors such as inductive proximity
sensor, and moisture sensor to segregate the waste into metallic, dry, and wet waste respectively [13]. With the help of an ultrasonic sensor the garbage level in each bin is monitored and then the garbage level value is sent to the cloud for remote monitoring and analysis in Garbage level monitoring Subsystem [11].
Several previous studies have proposed waste segregation and monitoring systems. For instance, a green bin model was proposed [2] in order to differentiate everyday waste into wet and dry waste. However, the existing system is complex. Another study proposes a segregation prototype in [3] which it uses dielectric constant values to segregate waste into dry, wet. However, this method fails to classify the waste into metallic waste. A recycling bot was suggested that can distinguish recyclable materials from non-recyclable ones using image processing technologies. However, due to the complexity of this system, effective operation between modules is required.
In contrast, this proposed system is compact, efficient, and uses simple techniques for waste segregation and monitoring. The system can also be integrated with an Android application for remote monitoring and analysis.

II. LITERATURE SURVEY

Several waste segregation models have been proposed to improve the recycling process. A green bin model was established, in which waste is divided into dry and wet waste using five distinct bins [1]. However, this system is complicated. Based on the values of the waste material's dielectric constant, a model that divides trash into wet and dry waste was created. [2]. However, this method fails to classify the waste into metallic waste.
Another model, uses sound resonance to segregate plastic bottles and tin cans was developed [4]. A platform made of galvanized iron was designed. However, this technology does not offer a complete trash segregation solution; it merely separates the garbage into tin cans and plastic bottles [13].
With the aid of ZigBee technology, a recycle bot was created to separate waste into recyclable and non-recyclable materials. However, due to the complexity of this system, communication between modules is necessary for effective operation [6].

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VI Month of publication: June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54204

www.ijraset.com

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

IoT Based Smart Home Automation and Security

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Abstract: Over the past few decades, home automation systems have been increasingly popular because they increase comfort and quality of life. A microcontroller and a smartphone are the main components of most contemporary home automation systems. A smart phone application is used to manage and monitor the home appliances via various types of communication. Due of their narrow scope, the current techniques have limitations. The implementation of this project, "IOT- based smart security and smart home automation," has been completed in order to overcome these problems. The concept focuses on "home automation," which is the control of lights and fans, as well as smart security by sending a picture taken by email to the owner via the internet when an object is recognized. This project will be carried out using the "Raspberry Pi" module. This will be especially beneficial to the crippled and elderly.

I. INTRODUCTION

Since most companies in the car industry and bottling plants have automated assembly lines, the field of automation has evolved significantly in the industrial sector. The house, particularly in India, has not yet been fully automated. The average person's life would be easier if automation were implemented in houses.

The transfer of water from the subterranean water tank to the above water tank using sensors to determine the water levels in both tanks is a straightforward example of how automation is usedin the house. Utilising this method makes filling thetank easier for the user and contributes to water conservation. Additionally, people are becoming more familiar with the usage of smartphones and tablets, which can do the majority of a PC's tasks.

In order to make a low-cost IoT-basedsystem that can automate frequently used electric appliances and increase the security of the home with a fingerprint-authorized lock system that works with an IR sensor and integrated camera that can bemonitored through smartphones, the decision was made to pursue this project.

II. LITERATURE SURVEY

Today, there is an increasing demand of automated systems so that human intervention is reduced. This paper focuses on a system that provides features of Home Automation relying on Internet of Things to operate easily, in addition to that it includes a camera module and provides homesecurity. The android app basically converts Smartphone into a remote for all home appliances. Security is achieved with motion sensors if movement is sensed at the entrance of the house; a notification is sent that contains a photo of house entrance in real time. This notification will be received by the owner of the house via internet such that app can trigger a notification. So owner can raise an alarm in case of any intrusion or he/she can toggle the appliances like opening the door if the person is a guest. The user can make use of this system to control switching on of lights, fan, AC, etc. automatically. We have also incorporated a smoke sensor which, on detection of smoke will ringan alarm and alert the user on their phone by SMS alert. The user can access complete IoT system from anywhere using Internet. But the micro-controller must always have Internet connectivity. Raspberry Pi is a small sized computer which acts as a server for the system. The Raspberry Pi system functions like a computer with a small setup. It contains GPIOpins and USB ports and also supports port for camera module. These pins can be toggled on/off using simple programs. The project mainly aims to overcome the shortcomings of home security systems by providing information of current situation when the owner is away from the house. It will also enhance the IoTs' network security usingencryption and decryption of the user's data.

III. METHODOLOGY

Because IoT-based home automation will allow the user to utilise a home automation system based on the Internet of Things (IoT), home automation and smart security are significant. The internet automates modern houses and allows for remote control of household appliances. The Wi-Fi modems will receive the user's online commands. This modem may be accessed using the microcontroller. Both the system data and the system status are shown on the LCD.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** VI **Month of publication:** June 2023

DOI: https://doi.org/10.22214/ijraset.2023.54205

www.ijraset.com

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VI Jun 2023- Available at www.ijraset.com

PAPR Reduction of OFDM signals using PTS and Firefly algorithm

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Abstract: ***Orthogonal frequency division multiplexing (OFDM) has the following benefits: excessive records fees and dependable transmission over fading channels. A significant disadvantage is the fact that it has an excessive peak-to-average strength ratio (PAPR). Numerous algorithms had been created to minimise the PAPR, every with its very own blessings and drawbacks. The Gaussian Firefly technique and the partial transmit sequence (PTS) are of the best algorithms.***
The Gaussian Firefly method can be used on this task to reduce PAPR. This approach makes use of swarm intelligence to tune the segment vectors so that you can decorate PAPR performance. As compared to current approaches, the suggested Firefly algorithm-based total PTS (FF-PTS) is a good way to obtain enhanced PAPR characteristics for OFDM signals.
Keywords: OFDM, PAPR, PTS, Gaussian Firefly, Firefly algorithm, FF-PTS

I. INTRODUCTION

Due to its high data throughput, bandwidth efficiency, and fading resilience, OFDM is a popular multicarrier communication method.[6] It is frequently employed in contemporary communication systems like Long Term Evolution The PTS technique reduces PAPR in the most effective and distortion-free manner.

II. METHODOLOGY

A. Orthogonal Frequency Division Multiplexing(OFDM)

Multicarrier modulation era referred to as OFDM separates the transmission frequency variety into numerous sub-carriers, every of which contains a low-price information stream. Because the subcarriers are orthogonal to one another, they do now no longer intrude with one another [14][15]. OFDM is a well-favored modulation method in present day wi-fi communique structures including Wi-Fi, 4G, and 5G because of its great spectral efficiency.[12]
The excessive PAPR, or the ratio of the OFDM signal's height electricity to its common electricity, is one of the era's essential drawbacks[16]. Due to the excessive PAPR of OFDM signals, inter- provider interference (ICI) and out-of-band radiation can also additionally end result from nonlinear distortion withinside the transmitter and receiver. The wi-fi communication system's performance can also additionally go through as a result.[13]

B. Peak to Average Power Ratio

A signal's peak power level compared to its average power level is measured by the PAPR. PAPR is calculated using an OFDM signal's envelope variations.[4][25] The transmitted OFDM symbol's peak instantaneous power to average power ratio, or PAPR, can be mathematically written as

$$\text{PAPR}= \frac{max_{0\le t<NT}|x(t)|^2}{E[|x(t)|^2]}$$

(LTE), Wireless Local Area Network (WLAN), Digital Audio Broadcasting (DAB), and Digital Video Broadcasting (DVB). [1] However, OFDM has problems with peak-to-average power ratio (PAPR), channel estimate, temporal offset, and precise frequency synchronization.[5] Independent phases of subcarriers in a multicarrier system like OFDM can have positive or negative consequences. The peak amplitude and PAPR are both high when all the subcarriers have the same phase.[7]
Where,

$$E[|x(t)|^2] = \frac{1}{NT}\int_0^{NT} |x(t)|^2\, dt$$

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VII Month of publication: July 2023

DOI: https://doi.org/10.22214/ijraset.2023.54648

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VII Jul 2023- Available at www.ijraset.com

Adaboost Model-Based Approach for Effectively Detecting Spam in IoT Devices

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Abstract: ***The number of Internet of Things (IoT) devices in smart homes is rising swiftly, producing enormous amounts of data that are mostly transmitted over wireless communication channels. IoT devices can be at risk from a variety of threats, such as hacker attacks, cyberattacks, erratic network connectivity, data leakage, etc. By evaluating vast amounts of data using complex algorithms, machine learning may assist uncover spam in IoT data. It can also help to raise the security level of the IoT system in smart homes by utilising statistical analysis and machine learning to find anomalies in the data. In this work, two machine learning models—the Bagged model and the Adaboost model—are evaluated using a wide range of criteria employing a vast number of input feature sets. Each model generates a spam score using the improved input attributes. The suggested algorithm is used to determine the network's linked IoT devices' spamicity score. The REFIT Smart Home dataset is used to test the suggested method. The outcomes show that the suggested strategy is beneficial when compared to other current plans.***
Keywords: IoT, Cyberattack, Adaboost, Bagged model, spamicity, REFIT.

I. INTRODUCTION

Regardless of their geographical locations, The Internet of Things (IoT) enables the fusion and integration of physical objects. Implementing these network management and control mechanisms makes privacy and protection measures crucial and difficult in this setting. As shown in Fig. 1, to address security problems including eavesdropping, spam, spoofing attacks, jamming, invasions, DoS attacks, and malware, IoT applications must secure user data privacy [1-5]. The size and kind of the organization where IoT security measures are implemented determines how effective they will be. Users' actions compel the security gateways to collaborate. The smart organization's IoT security cameras, for instance, may record many parameters for analysis and wise decision-making. The greatest amount of caution should be used with web-based devices because they make up the majority of IoT devices. IoT devices placed in an organization are frequently utilized in the workplace to effectively integrate security and privacy features. For instance, wearable technology that gathers and sends user health data to a linked smartphone should guard against data leaks to preserve privacy. Both consumers and attackers are drawn to the IoT because of its increasing nature. However, IoT devices decide on a defense strategy and the important parameters in the security protocols for the trade-off between security, privacy, and computation as ML emerges in various attack scenarios. It is difficult for an IoT system with limited resources to estimate the current network and timely attack state, thus this job is complex [6-13].

Fig. 1: Protocols with potential threats [1]

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VII Month of publication: July 2023

DOI: https://doi.org/10.22214/ijraset.2023.54649

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VII Jul 2023- Available at www.ijraset.com

Automated Hydroponic System with Solar Powered Battery Management System

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Abstract: ***In hydroponic farming, plants are grown in nutrient-rich water rather than soil. By mounting sensors and actuators on the system, environmental events, including water temperature, relative humidity, light intensity, and pH, are automatically monitored and controlled. The Internet of Things (IoT), used to transport and retrieve data from the Internet (mass storage), is involved in maintenance and automatic monitoring. An application informs the user of the hydroponic system's current state online. The value of hydroponics lies in giving ordinary individuals a means to grow their food without soil. It is crucial to have the proper pH, environmental conditions such as temperature in hydroponics. In order to effectively use solar energy to power the system, solar panels are included. Rechargeable batteries are employed in our hydroponic system. Thus, a battery management system (BMS) is also incorporated. Thus, a controller that monitors these variables may greatly assist and guarantee improved success and efficiency rates. Various devices can link to one another and share real-time data.***
Keywords: Automated, hydroponics, IoT, BMS, solar panel.

I. INTRODUCTION

The best technique to grow plants to their greatest potential is through hydroponic farming. Plants are given as much nutrients and water as they can absorb [1]. Setting up a hydroponic system in the past required research, many installation steps, and daily monitoring to ensure proper growing conditions. In this proposed hydroponic system, continuous monitoring of plant water level, pH level, temperature, and humidity is displayed on an LCD module. It will also upload the sensor data to the ThingSpeak cloud. A battery management system is used, which includes the solar panel. Solar energy is stored in the battery through a charging circuit and relay. This system continually checks the voltage of the battery and the solar panel and connects and disconnects the battery charger accordingly. The primary controlling mechanism is an Arduino UNO microcontroller running a loaded C language program. According to the sensor data that Arduino is continually monitoring, it will operate the devices and use ESP8266 Wi-Fi to post the sensor data into the ThingSpeak cloud. The main goal of this paper is to develop a solar-powered system for monitoring hydroponics nutrition. Arduino, which has a loaded program in embedded C, is the primary controlling device.

II. LITERATURE SURVEY

Mayuri Deokar et al. [2] presented an "IoT-based Automated Hydroponics system." This study aims to connect sensors and actuators to the hydroponic system to create an automated hydroponics system for remote and monitoring and controlling using IoT. The conclusion from this research is that it is not optimum since the circuit employs both the microcontroller ATmega328P on the Arduino UNO and the ESP8266 SoC on the NodeMCU.

Deepika S et al. [3] proposed an "Enhanced Plant Monitoring System for Hydroponics Farming Ecosystem using IoT." This research presents a Hydroponic Farming Ecosystem (HFE) to monitor the environment of the hydroponic system in real time though sensors by employing IoT devices. This study investigates a smart monitoring and controlling system that can facilitate the connectivity of monitoring fields and distant monitoring centers.

The work "Battery Management System Using State of Charge Estimation: An IOT Based Approach" was published at the 2020 National Conference on Emerging Trends in Sustainable Technology and Engineering Applications (NCETSTEA) [4]. This article presented the idea that a battery management system is required for the following reasons:

1) Monitoring and evaluation of battery status,
2) Safety and reliability of battery,
3) Regulating the charge state,
4) Regulating the temperature.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VII Month of publication: July 2023

DOI: https://doi.org/10.22214/ijraset.2023.54650

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VII Jul 2023- Available at www.ijraset.com

Fingerprint Based Smart Vehicle

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Abstract: ***The demand for security is rising everywhere as a result of the advancement of technology and the new discoveries being made by scientists. Security is the main worry, and in our busy, competitive environment, many cannot find ways to properly secure their private belongings. Currently, everyone needs to use a vehicle on a regular basis. In addition, it's crucial to safeguard the car from theft. The main objective of this project is to use fingerprint technology to secure the car against any unauthorised entry. Because a person can be uniquely identified by analysing one or more distinguishing biological traits, fingerprints prove to be one of the best traits offering good mismatch ratio and high accuracy in terms of security. It is one of those things that are particular to each person, and using a fingerprint on a car can solve the security issue.***
Keywords: Fingerprint, Security, unauthorised

I. INTRODUCTION

Due to the increase in vehicle thefts, vehicle security is a crucial concern nowadays. It is really challenging to obtain a stolen car back. Vehicle parts go missing frequently, and many lost automobiles are never located. Additionally, the expense increases, leading people to look for a system that will increase security and prevent thefts of vehicles. Although most modern cars come with built-in car alarms, it is still a good idea to stay on top of new developments and advancements.[7] It's crucial to update the vehicle's alarm system because many old security measures can be easily ignored by experienced vehicle thieves.
It's important to keep our cars safe from thieves because they are expensive assets. By implementing biometrics to start the vehicles and grant authorised access, the installation of a vehicle security system serves the primary objective of protecting our vehicles and their belongings.[6]

II. METHODOLOGY

For the implementation of a fingerprint-based security system to prevent unauthorized access to a car. The proposed system uses Arduino UNO, Bluetooth Module (HC-05), Motor Driver, 12V DC Motor, 9V Adaptor, Fingerprint Sensor, and LCD. The methodology includes the following steps:

1) Setting up the Arduino UNO board with the necessary software and libraries to control the DC Motors, Bluetooth module, and Fingerprint Sensor.
2) Connecting the Bluetooth module to the Arduino UNO board to establish a wireless communication channel with a smartphone app.
3) Connecting the Motor Driver and DC Motors to the Arduino UNO board to control the movement of the car.
4) Connecting the Fingerprint Sensor and LCD to the Arduino UNO board to enrols and authenticate fingerprints.
5) Programming the Arduino UNO board to control the DC Motors, Fingerprint Sensor, Bluetooth module, and LCD based on user input from the smartphone app and fingerprint authentication.
6) Testing and evaluating the system's performance in terms of security and functionality.

The system successfully enrols and authenticates fingerprints and allows only authorized users to control the car using the smartphone app. The system displays messages on the LCD based on user input and fingerprint authentication.[8] The research paper concludes that the proposed system provides a highly reliable, low-cost theft control system for a car. It recommends future research to include the development of voice recognition hardware and the inclusion of artificial intelligence for interactive purposes.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VII Month of publication: July 2023

DOI: https://doi.org/10.22214/ijraset.2023.54650

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VII Jul 2023- Available at www.ijraset.com

Fingerprint Based Smart Vehicle

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[2, 3, 4, 5]*B.Tech, ETE Department, GNITS, Hyderabad, India*

Abstract: ***The demand for security is rising everywhere as a result of the advancement of technology and the new discoveries being made by scientists. Security is the main worry, and in our busy, competitive environment, many cannot find ways to properly secure their private belongings. Currently, everyone needs to use a vehicle on a regular basis. In addition, it's crucial to safeguard the car from theft. The main objective of this project is to use fingerprint technology to secure the car against any unauthorised entry. Because a person can be uniquely identified by analysing one or more distinguishing biological traits, fingerprints prove to be one of the best traits offering good mismatch ratio and high accuracy in terms of security. It is one of those things that are particular to each person, and using a fingerprint on a car can solve the security issue.***
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iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VII Month of publication: July 2023

DOI: https://doi.org/10.22214/ijraset.2023.54652

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VII Jul 2023- Available at www.ijraset.com

Greenhouse Monitoring and Controlling for Cultivation of Plant

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Abstract: ***Agriculture is a major part of our lives as human beings. A lot of research has been carried out in order to be able to develop a monitored and controlled greenhouse system/environment that will help in solving the main problems relating to agriculture which is to enable the increase in the crops being cultivated all year round in the comfort of a small space like the home, and also to reduce human interaction in a small-scale greenhouse environment. Greenhouse monitoring and Control System is the approach in which the rural areas farmers will be benefitted by this Greenhouse environment. This project focuses on the Generic architecture and it can also be applied for many other automation-based application. So accordingly, an automated greenhouse monitoring and control system was proposed for the sole purpose stated above. The methodology used in building the greenhouse monitoring and control system is a wired connection. The system was built using a number of connection wires, sensors, LCD, a cooling system, LEDs, LDRs, Arduino board among a few other components. The result obtained was a fully functioning system that was set to monitor and control the greenhouse environment.***
Keywords: Greenhouse, Arduino, LED, LCD, LDR.

I. INTRODUCTION

Recent years have seen significant improvements in sensor manufacturing technologies. Advancements in high-speed, low-power, and low-cost microelectronic hybrid circuits have driven these improvements. Understanding the efficiency of sensors in relation to calibration and sensing mechanism is crucial for accurate and reliable data collection. It aids in selecting the right sensor for specific applications and optimizing performance. We live in the world where everything can be controlled and operated automatically, but there are still few sectors in our country where automation has not been adopted or not being put to a full-fledged use, perhaps because of several reason one such reason is cost and one such field is 'agriculture'. Throughout history, agriculture has remained a primary occupation, and even today, manual interventions in farming are unavoidable. Despite advancements, such as automation, manual involvement continues to play a vital role in agricultural practices. Greenhouse forms an important part of the agriculture sector in our country as they can be used to grow plants under controlled climatic conditions for optimal growth. Greenhouse technology is the technique of providing favorable environmental conditions for plants. It replaces the direct supervision. Now a day, due to urbanization and lack of land availability there is a great need to construct the greenhouse, which will be revered mainly for growing crops. Greenhouse monitoring and control projects involve measuring parameters such as temperature, humidity, light, pH level, and moisture. These measurements are crucial for maintaining optimal growing conditions and maximizing crop production within the greenhouse environment and to display them on LCD. Continuous monitoring of these environmental factors gives relevant information pertaining to the individual effects of the various factors towards obtaining effects of the various factors towards obtaining maximum crop production. Unlike open farming where natures control takes the upper hand, green house prevents a closed environment that can be strictly controlled by humans in order to provide optimal conditions for the growth of plants.

II. PROBLEM STATEMENT

Plant growth is influenced by factors like humidity, soil moisture, soil pH, and temperature. Existing systems often monitor and control only one parameter at a time. However, proposed systems utilizing mobile acquisition technology can simultaneously monitor and control multiple parameters. This advancement improves efficiency, reliability, and reduces the reliance on skilled labor for greenhouse management.

III. HARDWARE DESCRIPTION

To monitor the greenhouse environment, various sensors like temperature, humidity, light, and soil moisture sensors are employed. The Arduino Uno R3 serves as the central device for data storage and processing. An LCD module displays the parameters to the user, while a GSM module updates the user through SMS. Additionally, relays, analog-to-digital and digital-to-analog converters, and a solar power system with a rechargeable battery are utilized in this innovative greenhouse monitoring and control system.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** VII **Month of publication:** July 2023

DOI: https://doi.org/10.22214/ijraset.2023.54653

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VII Jul 2023- Available at www.ijraset.com

IoT Based Patient Healthcare Monitoring System

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Abstract: ***The need for a health care monitoring system that provides instant sensing and precise predictions with prompt response is highly required. Recently, health care sensors are playing a key role in hospitals and home care for patients. The patient monitoring systems has become one of the most advanced technologies because of its ability to provide a higher level of information about the patient's condition The prototype model designed for the healthcare monitoring system is based on three main objectives: to monitor various physical parameters of patients, to detect if any emergency has occurred to the patient and to reduce the workload on the hospital staff. Physical parameters of the patients like pulse per minute and body temperature are sensed using biosensors like pulse rate sensor and LM35 sensor respectively. The sensor values are displayed on the LCD for constant monitoring. A buzzer is turned ON and an alert notification is sent to the caretaker, if any of the values crosses the threshold, indicating an emergency. A graphical representation is also displayed on the IoT platform for past analysis. An accelerometer is usedin this system to sense the movements of the patients and detect any fall or injury for senior citizens who prefer to stay at home and live independently, the system can communicate with caretakers to request for help if needed.***
Keywords: Arduino IDE, Healthcare, IoT, Pulse rate sensor, LM35 temperature sensor, ADXL335 Accelerometer

I. INTRODUCTION

The need for a health care monitoring system that provides instant sensing and precise predictions with prompt response is highly required. Recently, sensors based on healthcare are playing a pivotal role in hospitals and home care for patients.[7] The patient monitoring systems has become one of the most advanced technologies because of its ability to provide a higher level of information about the patient's condition. This proposed solution to the problem acts as a simple, effective Arduino-based system that can be used for remote monitoring by the patient's caretaker.[4] By means of a temperature sensor and pulse rate sensor, the patient's health can be continuously monitored. The use of an accelerometer also makes it possible to see if the patient has fallen from their current position to react immediately.[1] Remote monitoring is achieved by making use of the IoT platform that sends information to the caretaker.

II. OVERVIEW OF THE PROPOSED SYSTEM

The system will be based on Arduino Uno microcontroller because of its numerous advantages of Atmega328P and will have an open-source platform with advantage of physical computing. The proposed solution is a system that constitutes different sensors like Pulse Rate sensor and LM35 Temperature sensor along with Accelerometer module. [9][10] The main applications that the system will be able to perform is discussed below. The Pulse Rate sensor and the Temperature sensor will detect the patient's heartbeat per minute (BPM) and body temperature respectively and the values are displayed on the LCD screen. The accelerometer module detects if the patient has fallen off the bed and alerts the caretaker through IoT application ThingSpeak.[3]

III. HARDWARE PLATFORM

The system is developed using ATMEGA328P Arduino UNO, to collect data from pulse sensor, temperature sensor and Accelerometer. The block diagram of the proposed system shows the different components which will be useful to solve the problem.

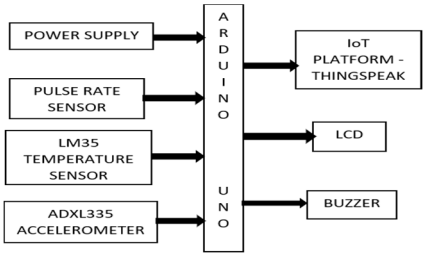

Figure 1: Block diagram

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VII Month of publication: July 2023

DOI: https://doi.org/10.22214/ijraset.2023.54655

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VII Jul 2023- Available at www.ijraset.com

Performance Analysis of Selective Mapping and Clipping based MC-CDMA System

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Abstract: ***The use of orthogonal frequency division multiplexing in high-bit-rate communication systems is appealing. Due to its fast data rate, resilience to delay spread, frequency spectrum efficiency, and other features, it has been widely utilised in current wireless communication. In addition to these benefits, a significant disadvantage of OFDM is the high Peak-to-average-power ratio (PAPR) of the transmitter's output signal, which limits the system's performance. The Iterative Clipping and Filtering (ICF) approach is used in this case because it yields better results than the Clipping method, which is the easiest way to lower the PAPR of the OFDM system. Another strategy that effectively reduces PAPR is selective mapping (SLM), in which the actual transmit signal is chosen from a list of candidates.***
Keywords: CDMA, MC-CDMA, OFDM, PAPR.

I. INTRODUCTION

It's constantly desirable in wireless communication systems to enable subscribers to coincidently submit information from the mobile station to the base station and admit information from the base station to the mobile station. Any given area is divided into cells by a cellular system, and mobile units in each cell connect with base stations. The primary thing of cellular system design is to be suitable to ameliorate the channel's capacity or to handle as numerous calls as doable with a given bandwidth while maintaining an acceptable degree of service quality. The channel can be made accessible in a variety of ways.

Over the once ten times, there has been a lot of attention paid to the issue of Peak- to-Average Power rate(PAPR) reduction in Orthogonal Frequency Division Multiplexing(OFDM) systems, which has redounded in the development of numerous PAPR reduction strategies. The so - called" picky Mapping" algorithm would be a largely successful system for reducing PAPR. In this study, we suggest a modified trimming system and combine it with picky mapping to reduce PAPR. The proposed fashion can reduce PAPR more effectively than the traditional ways, according to simulation data.

A major hedge to the MC- CDMA system is a high PAPR. Named Mapping (SLM) is a useful fashion for MC- CDMA signal PAPR reduction. What sequence is named as the phase sequence in SLM is one which causes PAPR infection most directly. In this paper, the simulations of the PAPR performance and BER performance are handed. According to the findings of the inquiry, the proposed sequence is superior to the Walsh - Hadamard for MC- CDMA system PAPR reduction. According to the suggested order, the MC- CDMA system performs better than anticipated, as demonstrated by the simulation of the system's BER performance wind.

II. LITERATURE SURVEY

CDMA is one of the cellular communication method. It is efficient technique [1].Compared to single carrier systems multiple carrier system provides better results, because of interference cancelation capability. Because the wideband frequency is converted into narrow band frequencies. So the 3G single carrier CDMA system is added with advanced technology that is OFDM which consists of multiple carriers leads to MC-CDMA technology [2],[3]. It is a 4G component and beyond also. Spreading codes plays vital role in spread spectrum systems [4],[5]. PAPR is a major issue in multi carrier systems. Several PAPR decreasing techniques available in literature [6-10].

III. SYSTEM MODEL

Picky mapping(SLM), a system of PAPR reduction, is effective and simple. Since SLM is a direct procedure, the signal isn't destroyed. At the receiver, the signal can be completely demodulated. Still, SLM suffers from a high computational cost issue. In this exploration, we thus offer a modified SLM. The system, known as a SLM-Clipping, significantly reduce computational complexity while offering similar PAPR reduction performance to the traditional SLM system. The simulation results demonstrate that it performs more effectively than the traditional SLM.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VII Month of publication: July 2023

DOI: https://doi.org/10.22214/ijraset.2023.54656

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VII Jul 2023- Available at www.ijraset.com

Performance Analysis of Spatially Multiplexed MIMO System

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Abstract: ***In SISO (single input and single output) system, refers to have only one input and one output. Here only one antenna is used at receiver and transmitter side. SISO are relatively simple to design and implement. They are of low cost and used in wide range of applications. However, SISO systems are poor in performance and deliver low data rate. So we'll prefer MIMO (multiple input and multiple output) over SISO as it gives better spectral efficiency, improved reliability and good coverage. In MIMO we use multiple antennas at transmitter and receiver side which is known as Spatial Multiplexing(SM) which enhances the data rate. In the paper the performance of spatial combining MIMO system is analysed. Matlab used for simulation.***
Keywords: BPSK, SM-MIMO, Rayleigh, AWGN, ZF Equalizer.

I. INTRODUCTION

MIMO widely employed as usage data is huge in wireless communications. It uses several antennas at two sides i.e, transmitter side and receiver side. MIMO is used to rise capacity of the system. Here we use Spatial Multiplexing technique which simultaneously transmits multiple data streams. This technique is used to increase the data transmission rate. SM-MIMO systems are preferred due to their reduced hardware complexity. They have the ability to increase the channel capacity compared to SISO systems.

In this paper we mainly discuss about BER (Bit Error Rate), different type of modulations, SISO systems, MIMO systems, Spatial Multiplexing, why is MIMO chosen over SISO etc. MIMO system also improves reliability. Some of the advantages of MIMO are higher data rate, Time diversity, Reduces signal distortion, higher accuracy, reducing the impact of fading and so on.

MIMO systems have become popular in telecommunications due to increasing traffic demands. They have different configurations such as 2x2 MIMO, 3x3 MIMO, 4x4 MIMO so on. In this paper we are using 2x2 MIMO and 4x4 MIMO systems.

II. LITERATURE SURVEY

In this paper we discussed about the analysis of Bit Error Rate (BER) for M-ary PSK i.e, BPSK, QPSK, 8-PSK scheme over Rayleigh fading channel in wireless communication systems. As we know that fading refers to rapid fluctuations in signal amplitude due to multipath propagation. Rayleigh fading is one environment in wireless systems. This model is used by wireless devices. This study shows the changing BER for BPSK, QPSK and 8-PSK. We know that BER is defined as the ration of error bits to transmitted bits. BER is considered as the most important measure of transmission quality. But the main limitation here is the Inter channel interference is expressively large in M-ary PSK. With respect to BPSK, it is more sensitive to phase variations. And also it is hard to implement if the phase is relatively small.

The use of multiple antennas in Wireless communications at both transmitter side and receiver side is known as MIMO i.e, Multiple-Input-Multiple-Output. It has many benefits such as multiplexing, diversity gain and antenna gain. But it has one drawback regarding the increase in complexity and cost. This is due to the Inter channel interface and need for multiple RF chains.

To overcome this challenges we use a technique called as Spatial Modulation(SM) technique [5]. This technique offers a hybrid approach to achieve high data rates with reduced complexity and cost compared to general MIMO systems. Several papers illustrated the MIMO enhancements [7-10].

III. SYSTEM MODEL

MIMO systems are widely used in telecommunications due to the increasing demand for data transmission. They offer significant performance improvements compared to SISO. MIMO systems utilize multiple antennas to provide high data rates and diversity, without the need to install fixed antennas at the source and destination. These improve the performance and provide high data rates. The coherence time and coherence bandwidth are used to classify channel conditions, which are dependent on the Doppler shift and delay spread of multipath components. Fading distributions, such as Rayleigh fading, are commonly used to model amplitude distribution and obtain statistical properties of SNR.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VII Month of publication: July 2023

DOI: https://doi.org/10.22214/ijraset.2023.54657

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VII Jul 2023- Available at www.ijraset.com

Remote Underwater Robot

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Abstract: ***The army, navy, and many other scientific applications use oceanographic robots today, and they also make significant contributions to sustainable development. By keeping an eye on the water's physical and chemical characteristics, it hopes to protect underwater life and create a safe home for marine species. In this paper, an oceanic robot is built with all of the aforementioned features that can be produced cheaply and benefit marine life. Our method suggests a reasonably priced, small, sensor- and camera-equipped underwater remote-controlled drone. The system is integrated for use in surveillance and is meant to assess water characteristics like temperature and salinity of ocean waters. The data is gathered by the salinity sensor and sealed digital temperature probe and transmitted to the Raspberry Pi microcontroller. The necessary sites receive the data and process it for further analysis. Information is transferred from the water to the land using a miniature router. The camera in the RUR is a high-resolution, real-time camera that transmits the images it has collected in real-time in response to user requests via the Raspberry Pi and ZigBee Wireless chip. Electronic Speed Controller (ESC) is used to control and regulate the speed of an electric motor.***

Keywords: RUR, Raspberry Pi, ZigBee Wireless chip, ESC.

I. INTRODUCTION

The increased use of robotics and automation has a number of benefits and has caught the interest of both business and academic programs. By introducing a number of cutting-edge & distinctive methods of robot control, the observations on various strategies of controlling robots have achieved quite a few successes. These days, underwater robots are really useful. They can be programmed to travel too far, hazardous, and frequently uncharted areas of the ocean in order to measure its key. For underwater robots to become the vast and coordinated ocean monitoring network that Fischell envisions, they need to form underwater ‘swarms’ that move through the ocean—not unlike schools of fish. [1-3]

On land, swarming has already showed promise in disaster relief efforts and other applications, but due to fundamental physics, we haven't been able to apply it to the ocean yet. If you put one of these little ocean robots down there for an hour, it can end up being a kilometre away from where you believe it is because they can drift hundreds of metres every ten minutes. There are several underwater robots available for less than $10,000 [4-6]. In order to get several of these vehicles functioning together for less money than some of the larger and more complicated robots we've had to rely on, we will need to optimise our technology and processes.

II. REMOTE UNDERWATER ROBOT

Remotely controlled vehicle is known as ROV. ROVs are underwater vehicles that can be controlled from the water's surface and used to explore the depths of the ocean. Robotic underwater vehicles, or ROVs, are unmanned and very manoeuvrable. ROVs can transmit photos and video back to the ship since they are outfitted with at least a still camera, a video camera, and lights. Because operators may remain secure (and dry!) on ship decks, ROV operations are easier and safer to execute than diving operations. ROVs allow us to investigate areas that are too deep for humans to safely dive themselves. [7-11]

The objective of this paper was to develop and construct a student-operated, low-cost, user-friendly, portable, safe, and dependable ROV that could be used for scientific research. In order to gain a sense of how ROVs operate, we deployed ROV systems from the RSL. To learn what was needed in a ROV and what to consider when designing one, a thorough survey was done with prospective users, current users, and industry experts. We created a number of rough draughts of potential ROV designs, built a number of prototypes, and solicited input from our customer on each concept.

Remote Underwater Robot is used for marine applications. This system is to be implemented using the Arduino uno microcontroller. This robot is designed to monitor features like temperature, salinity and surveillance. The values of temperature and salinity are displayed on the LCD. The robot is controlled using the joystick to move it for surveillance. The robot is developed using a simple block diagram of these basic components is shown in Fig. 1.

iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: VII Month of publication: July 2023

DOI: https://doi.org/10.22214/ijraset.2023.54658

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Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue VII Jul 2023- Available at www.ijraset.com

Web Security Audit and Penetration Testing: Identifying Vulnerabilities and Strengthening Website Security

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Abstract: ***This research paper presents a comprehensive analysis of the significance of web security audits and penetration testing in bolstering website security to combat the rising tide of cyber threats. In today's digital landscape, where cyber-attacks are becoming increasingly frequent and sophisticated, organizations must proactively assess vulnerabilities in their web applications and infrastructure. Through in-depth security audits and penetration testing, potential weaknesses can be identified and mitigated before they are exploited by malicious actors. This study explores various web security audit techniques, including vulnerability scanning and code review, and highlights the benefits of penetration testing, such as simulated attacks and vulnerability exploitation. It emphasizes the importance of regular security assessments and provides practical recommendations for establishing a robust web security framework. The findings underscore the critical role of web security audits and penetration testing in safeguarding websites, protecting sensitive data, and maintaining the credibility and trustworthiness of online platforms. This research paper contributes valuable insights for practitioners, researchers, and organizations aiming to enhance their web security posture in an ever-evolving threat landscape.***

Keywords: Web security, web security audits, penetration testing, vulnerability scanning, code review, cyber threats, website security, online platforms, data protection, threat landscape..

I. INTRODUCTION

In today's interconnected world, where digital platforms play a vital role in various aspects of our lives, ensuring the security and integrity of websites has become a critical concern. The increasing sophistication of cyber threats poses significant risks to organizations, including data breaches, financial losses, and reputational damage. To counter these threats, it is essential for organizations to adopt proactive measures to identify and mitigate vulnerabilities in their web applications and infrastructure. Web security audits and penetration testing have emerged as effective approaches for evaluating and enhancing website security.

Web security audits involve comprehensive assessments of web applications and underlying systems to identify potential weaknesses and vulnerabilities. These audits encompass techniques such as vulnerability scanning and code review, which help identify security loopholes and areas prone to exploitation [1]. By conducting thorough audits, organizations gain valuable insights into the security posture of their websites and can implement appropriate remedial measures to address identified vulnerabilities.

Penetration testing, on the other hand, involves simulated attacks on web applications to assess their resilience against real-world threats. By attempting to exploit identified vulnerabilities, penetration testers provide organizations with a practical assessment of their security measures. This allows organizations to proactively strengthen their defenses and safeguard against potential attacks [2].

Several studies have emphasized the importance of web security audits and penetration testing in mitigating the risk of cyber threats. For instance, Smith et al. (2019) found that organizations that regularly conduct web security audits experience fewer security incidents and are better prepared to respond to emerging threats [1]. Furthermore, Jones and Brown (2020) highlighted the effectiveness of penetration testing in identifying critical vulnerabilities that might otherwise go unnoticed [2].

In this context, this research paper aims to provide a comprehensive analysis of the significance of web security audits and penetration testing in enhancing website security. By reviewing relevant literature and examining best practices, this study aims to offer practical insights and recommendations for organizations seeking to establish a robust web security framework. The findings of this research will contribute to the existing body of knowledge and provide valuable guidance for practitioners, researchers, and organizations striving to protect their online platforms and sensitive data from evolving cyber threats.

Published: 01 March 2023

A novel diffusivity function-based image denoising for MRI medical images

Sreedhar Kollem, Katta Ramalinga Reddy & Duggirala Srinivasa Rao

Multimedia Tools and Applications **82**, 32057–32089 (2023)

Abstract

Medical imaging is essential for accurate diagnosis. In medical imaging, various algorithms for image denoising have been developed. However, some drawbacks have been identified, including the blocking effect, which results in excessive smoothing of the images, and the loss of image detail. To generate noise on images, this article used Poisson noise. We propose a new diffusivity function-based partial differential equation method used for image denoising with the aid of exploiting the statistical properties of observed noisy images. This model involves a Quaternion Wavelet Transform, which is

recommendations, and language support, all of which enhanced the quality and presentation of this work.

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Contributions

Conceptualization, Methodology, Software, Data curation, Writing- Original draft preparation, Visualization, Investigation, Validation:**[Sreedhar Kollem]**; Writing- Reviewing and Editing, Supervision:**[Katta Ramalinga Reddy, Duggirala Srinivasa Rao]**

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Ethics declarations

International Journal of Imaging Systems and Technology / Volume 33, Issue 4 / p. 1306-1322

RESEARCH ARTICLE

AlexNet-NDTL: Classification of MRI brain tumor images using modified AlexNet with deep transfer learning and Lipschitz-based data augmentation

Sreedhar Kollem, Katta Ramalinga Reddy, Ch. Rajendra Prasad, Avishek Chakraborty, J. Ajayan, S. Sreejith, Sandip Bhattacharya, L. M. I. Leo Joseph, Ravichander Janapati

First published: 20 March 2023
https://doi.org/10.1002/ima.22870
Citations: 1

Abstract

Deep learning is frequently used to classify medical images. Surgeons may know the type of tumor before doing surgery on a patient. Transfer learning was used to alleviate the overfitting issue of deep networks in classification since the training samples, such as a brain MRI dataset, were insufficient. To overcome this issue, We introduce a new deep-learning methodology for the categorization of MRI brain tumor images. This method combines a unique data augmentation model with modified AlexNet and network-based deep transfer learning. We used Lipschitz-based data augmentation on a dataset, and the output of the augmentation model was fed into a modified AlexNet that uses network-based deep transfer learning to extract features from a dataset. The proposed model is trained and tested using the BraTS 2020 and Figshare datasets. The proposed model's performance is assessed using sensitivity, specificity, accuracy, precision, F1-score, and MCC. The proposed model yields superior results.

CONFLICT OF INTEREST STATEMENT

The authors report that there are no conflicts of interest in the publication of this article.

Published: 04 January 2023

THz Imaging Technology Trends and Wide Variety of Applications: a Detailed Survey

Vulugundam Anitha, Ankur Beohar & Anveshkumar Nella

Plasmonics **18**, 441–483 (2023)

Abstract

Terahertz (THz) imaging is a non-invasive and high spatial-resolution technique that uses non-ionizing electromagnetic signals in a frequency range of 0.1–10 THz. Hence, this article focuses on diverse THz imaging techniques, THz antennas and designing methods, image reconstruction algorithms, and its applications. The antennas include planar patch, photoconductive, dielectric-resonator, substrate-integrated waveguide, wire, and wave guide. In this study, it is noted that antennas with high efficient conducting materials having a compact size, high gain, and high directional properties are required for

International Journal of Science and Research Archive
eISSN: 2582-8185
Cross Ref DOI: 10.30574/ijsra
Journal homepage: https://ijsra.net/

(RESEARCH ARTICLE)

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Transition metal (II) complexes with 2- amino methyl benzimidazole derived schiff base: synthesis, characterization and biological activity

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International Journal of Science and Research Archive, 2023, 08(01), 388–392

Publication history: Received on 02 December 2022; revised on 20 January 2023; accepted on 22 January 2023

Article DOI: https://doi.org/10.30574/ijsra.2023.8.1.0054

Abstract

Novel transition metal [Co(ll), Cu(ll), Ni(ll) and VO(ll)] complexes derived from Schiff bases of 2-amino methyl benzimidazole and 2-furan carbaldehyde(BNFM) have been synthesized and characterized by physical, spectral and analytical data. The synthesized Schiff-bases act as tridentate ligand for the complexation reaction with Co (ll),Cu(II), Ni(ll) and VO(ll) ions. The new compounds, possessing the general formula [ML_2] where [M=Co (II), Cu (II), Ni(II) and VO(ll)]. The Schiff bases and their complexes have been screened for biological activity against the strains such as Escherichia coli, Staphylococcus aureus, B.Subtilis and Pseudomonas aeruginosa in order to evaluate the effect of complexation of metals with Schiff base. The metal coordinated Schiff bases have shown more antibacterial activity against bacterial species as compared to uncoordinated Schiff-bases.

Keywords: Schiff bases; Biological activity; 2-amino methyl benzimidazole; Characterization

1. Introduction

Schiff bases are widely used versatile organic compounds and can be easily synthesized by the condensation reaction of amine and aldehyde or ketone [1-2]. Schiff base ligands have been extensively studied in the field of coordination chemistry due to their facile synthesis, easy availability, and electronic properties. In recent times, Schiff base coordination chemistry has attracted much attention because of their significance in organic synthesis, analytical chemistry, refining of metals, metallurgy, electroplating, and photography [5-7]. Schiff bases have wide applications in dye industry, catalysis, fungicidal, and agrochemical [8-9]. Several Schiff bases are reported to possess remarkable antibacterial, antifungal, and anticancer activities [10]. In such class of compounds, the C=N moiety is important for biological activity.In view of the interesting behavior of Schiff base complexes, we considered it worthwhile to prepare Cu(II), Co(II), Ni(II) and VO(IV) complexes of tridentate ligand derived from 2-(aminomethyl)benzimidazole and Furan-2-carbaxaldehyde. These complexes have been characterized by various physiochemical methods.

2. Experimental Method

The percentage compositions of C, H and N of complexes were determined by using micro analytical methods on Perkin Elmer 240C (USA) elemental analyzer. Infrared spectra of the ligand and its complexes were carried out by using KBr pellets in the range 4000-400 cm-1 on Perkin Elmer Infra-red model 337. The electronic absorption was carried out by Shimadzu UV-1601 using DMSO as solvent. TGA studies were carried on Mettler Toledo Star system in the temperature range of 0-1000 oC. The Mass spectra were recorded by ESI technique on VG AUTOSPEC mass spectrometer instrument. The 1H and 13C NMR spectra were recorded on Varian Gemini Unity Spectrometer by employing TMS as internal standard. Melting points of the ligand and decomposition temperature of complexes were determined on Polmon instrument (model No.MP-96). The Molar conductance measurements were carried out in DMSO (10-3 M) using Digisun

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Various Characterization Techniques For Nanomaterials For Energy Applications

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Abstract:

Nanomaterials are very important material for energy applications. For utilising them for different applications, different characterisation techniques need to be performed and studied. In the present manuscript, various surface and electrochemical characterisation techniques have been studied in detail.

Keywords:

Nanomaterials,Characterisation techniques,suface study, electrochemical study

1.Introduction

Nanomaterials have attracted great research interests due to enhanced and unique performance capabilities.They help to grow the society due to technological innovations. But to utlise nanomaterials for various applications, their characteristic properties need to be understood well. For that it is very important to study various characterisation techniques. Nanomaterials have different properties from the bulk materials. They possess high surface-to-volume ratio. This characteristics increase the reactivity of materials exponentially that leads to different electronic, mechanical, optical, chemical or physical properties. These attract material scientists for intensive studies of nanomaterials for potential energy applications. These days, different types of nanomaterials are being synthesized for energy applications. Utilization of the properties of nanomaterials for energy applications require development of various characterization techniques. In fact, quite often a wider characterization of synthesized materials is necessary. In this context, it is advantageous to learn about limitations and strengths of different techniques. Here, the use of different techniques for the characterization of nanomaterials are extensively described. These techniques are at times restricted for the study of only particular properties. Nanomatearials for energy applications are characterized for surface, compositional, and

IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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COMPREHENSIVE REVIEW ON OIL SPILLAGE AND ITS VARIOUS REMEDIATION METHODS

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Abstract **:** Oil spills are of great concern, and spills at sea can be life threatening to marine flora and fauna. Natural oil spills can occur through petroleum seep, which occurs due to activity inside the earth causing the escape of liquid or gaseous hydrocarbons to the earth's surface. Very large spills farther from the shore can also have serious impacts since a longer stretch of coastline may be affected as the oil spreads out and, even with dilution, levels may remain high enough to have serious effects on aquatic and shoreline ecosystems .Oceans and seas contain a variety of habitats characterized by different communities of animals and plants. Physical characteristics such as temperature, salinity, substrata, depth, light intensity, and wave exposure determine the type of marine habitats and the animals and plants that are adapted to them. These varieties of ecosystems respond in a different way to the oil spill thus effecting their habitat and environment . This paper reviews the remediation of marine oil spills, focusing on the various ways oil and its derivatives contaminate and their effects on the marine ecosystem. The numerous remediation techniques for oil spills are the main topic of this review article . It focuses on diverse physical, chemical, and biological procedures as well as on current advances in oil spill remediation strategies.

Index Terms : : **Oil spillage, Petroleum, Remediation, Booms, Skimmers, Dispersant, Microbial Bioremediation.**

I INTRODUCTION :

Oil is a hydrocarbon-based substance that is increasing in demand due to industrialization. Oil spillage is a controversial aspect of oil exploration. It is spilled on land and can cause damage to the habitat, but when it is spilled into an aquatic environment, it can spoil organism. The greatest oil spill in American history occurred in the Gulf of Mexico in 2010 as a result of the Deepwater Horizon disaster. Aquatic environments adjust severity of an oil spill by natural activities such as emulsification, oxidation, weathering, evaporation, and biodegradation.

The oil spreads out rapidly on water surfaces to form a thin layer called an oil slick. As the oil continues spreading, the oil slick layer becomes thinner and thinner and finally becomes a very thin layer called a sheen, which often looks like a rainbow. In developed countries, many oil spill events are reported and prompt actions are taken to remedy the affected ecosystem. The effects are generally more catastrophic at sea than on land, since the spills can spread faster for hundreds of nautical miles and form a thin coating of oil on water bodies. Hence, marine oil spills, particularly large-scale spill accidents, have received greater attention. Thus, it is necessary to develop a number of strategies to combat environmental degradation brought on by oil spills.

IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

A REVIEW ON THE SCALING AND SCOPING OF 2G ETHANOL BLENDED WITH CONVENTIONAL FUELS IN INDIA.

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Abstract : The use of cellulose in the manufacturing of ethanol prevents the waste of non-edible components of agricultural plants like corn and sugar cane. As opposed to bioethanol made from sugar and starch, they can be utilized to make bioethanol, which increases agricultural productivity and reduces the carbon footprint of crops by up to 85% (1G ethanol) Cellulosic ethanol reduces GHG emissions by 88% to 108% when compared to gasoline, depending on the feedstock used. Because of this, 2G ethanol is a sustainable fuel choice that helps cut air pollution. This review study discusses various methods for producing 2G ethanol, with a particular emphasis on pretreatment methods and 2G ethanol's energy efficiency. The findings help better decision-making in the development and design of biorefineries by illuminating the optimum process alternatives that can result in increased sustainable ethanol output.

Index Terms: Fuels, 2G Ethanol, lignocellulosic materials, biorefinery, Pretreatment, Dilute Acid Pretreatment, energy efficiency, Bagasse stillage.

I. INTRODUCTION:

The main motivation for oil-importing nations like India is to lessen their reliance on fossil fuels. With limited access to crude oil resources, nations like India can produce crops for energy use and attain some economic independence. Biofuels can be combined with gasoline and are clean fuels with little Sulphur in them. They can be made on an industrial scale using the sugar fermentation method, and depending on where the sugars come from, they can be either first generation (1G) or second generation (2G). When it comes to feedstock, lignocellulosic materials like wheat straw, corn, wood, agricultural byproducts, or municipal solid waste are commonly employed as a source of bioethanol in 2G technology. Crop leftovers, a waste that would otherwise be worthless, are used in 2G technologies as opposed to 1G technology, which uses grain as feedstock. This study summarizes the contents of several periodicals, focusing on the current situation in the nation and the need to switch to 2g ethanol.

Gonzalez-Contreras *et al*. (2017) proposed a methodology to evaluate alternatives for the synthesis of 2G bioethanol from agro-industrial wastes, with the incorporation of different processing technologies. The conceptual design of the 2G ethanol biorefinery consists of five main sections : Pretreatment, Saccharification, Fermentation, Separation, and Purification.[1] The author has chosen Dilute Acid Pretreatment (DAP) and Steam Explosion Pretreatment (SEP) methods for pretreatment study **Fig 1.**

Pretreatment processes of lignocellulosic biomass play a key role in the productivity and performance of saccharification and fermentation, while dehydration of ethanol determines the quality of the final product to be used as a fuel. Two ethanol dehydration processes have been selected: Adsorption with molecular sieves (AMS) and extractive distillation with solvents (EDS). By taking four combinations of pretreatment and dehydration processes the author concluded that the best pretreatment would be DAP and there was no distinction between the AMS and EDS separation processes. SuperPro Designer is used to evaluate mass and energy balances, and the Pinch method for heat integration is used to reduce input of external energy and operating costs. [2-3]

International Journal of All Research Education and Scientific Methods (IJARESM), ISSN: 2455-6211
Volume 11, Issue 2, February-2023, Impact Factor: 7.429, Available online at: ww.ijaresm.com

Assessment of Oxidative Status in Fresh Edible Oils by Colorimetric Ferric Thiocyanate Method

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ABSTRACT

A rapid method for the quantitative determination of peroxide value (PV) of fresh edible oils by colorimetry is described. The determination of the peroxide value is the traditional and most used parameter for measuring the primary products of oxidative degradation. In addition, the analysis of the peroxide content of oil samples is a very analytical task because high peroxide levels in oils have been a threat to human health. The peroxide value is a suitable parameter for measuring the deterioration of quality of edible oils over prolonged heating. In the present study, a series of edible oils were taken and analyzed for PV, based on the co-oxidation of Fe(II) to Fe(III) by hydroperoxides from sample (fat) and the formation of the reddish Fe(III)-Thiocyanate complex which is read at 510 nm on a colorimeter.

Keywords: Peroxide value, Thiocyanate complex, edible oils, colorimetry

1. INTRODUCTION

A free radical reaction involving oxygen that leads to deterioration of oils which form off- flavours is an auto oxidation reaction[1]. Peroxide value of oils indicates concentration of peroxides in an oil or fat. It is useful for assessing the extent to which deterioration has advanced. Peroxide value can be used to identify oxidative rancidity in oils. Auto oxidation in oils leads to formation of toxic compounds which are injurious to health , unsaturated oils such as free fatty acids, triglycerides ,phospholipids undergo spontaneous oxidation reaction .They are chain reactions which form lipid hydro peroxides as a primary product .Peroxide value determines primary lipid hydro peroxide .It is usually expressed in mill equivalents (meq). Acceptable limit of PV is ,it should not be above 10–20 meq/kg fat to avoid rancidity flavor [2].Antioxidants in oils minimize auto oxidation reactions[3].Some of the official methods by which PV in oils can be analyzed are AOAC method ,American Oil Chemists Society Method ,Iodometric titrations, Spectrophotometric determination of ferric ions formed by oxidation of ferrous ions by peroxides in presence of xylenol orange also known as ferrous oxidation xylenol orange (FOX) method, International diary federation method (IDF), number of techniques based on chromatography NMR spectroscopy also have been developed for determination of lipid peroxides.The present study is based on IDF method .This method is similar to MFOX method. IDF method uses simple, easily available chemicals, the method was found to be reliable and rapid.IDF method is sensitive requires less sample. It can be used as spot test for peroxide value in oils.

2. METHODOLOGY

2.1 MATERIALS AND METHODS

Groundnut oil, sesame oil , castor oil , olive oil , sunflower oil , rice bran oil, cow ghee, buffalo ghee , vanaspathi and coconut oil were purchased from local grocery. All the oils were stored at room temperature (25^{o}c) under light and atmospheric conditions. All the chemicals and reagents (analytical grade) used were from Merck (Darmstadt, Germany), or SigmaAldrich Chemical Co. (St. Louis, MO), unless stated otherwise.

2.2 DETERMINATION OF PEROXIDE VALUE

IDF modified method for determination of PV. The proposed method was developed as a modification of the IDF standard method that is based on the co-oxidation of Fe(II) to Fe(III) by hydro peroxides and the formation of the reddish Fe(III)-Thiocyanate complex for colorimetric determination of PV.

To quantify the PV, the sample (200mg) was placed in a boiling tube and dissolved in 1 mL of chloroform/acetic acid (3:7), added 50µL Fe(II)solution and added 50µL of saturated ammonium thiocyanate solution to the sample. After 3 min, absorbance at 510nm was measured against a chloroform and aceticacid mixture as blank.

IOSR Journal of Applied Chemistry (IOSR-JAC)
e-ISSN: 2278-5736.Volume 16, Issue 3 Ser. I (March 2023), PP 33-39
www.iosrjournals.org

Synthesis of Bismuth Selenide nanoparticles and its Photocatalytic activity for the degradation of some textile dyes

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Abstract:
In the current study, Bi_2Se_3 nanoparticles are prepared under greenery conditions using economically viable desktop chemicals such as L-Ascorbic acid (vitamin C), $BiCl_3$, EDTA (Ethylene diamine tetra acetic disodium salt) and sodium selenite (Na_2SeO_3). Prepared Bi_2Se_3 nanoparticles were characterized by XRD (X-ray Diffraction), Scanning electron microscopy (SEM), EDAX,UV-Visible, and TEM studies. Prepared nanocatalyst is found as an efficient catalyst for photodegradation of cationic dyes . The effect of catalyst morphology on dye degradation and the photocatalytic efficiency of catalysts were evaluated. This study helps to understand the pathway to eliminate highly toxic and persistent cationic dyes.

Key Words:*Dyes, Photodegradation,Bi_2Se_3*

Date of Submission: 05-03-2023 Date of Acceptance: 17-03-2023

I. Introduction

In the present scenario developmental activities have led to increase in the economic status which led to increase in environmental pollution due to addition of poisonous pollutants which is considered to be a serious environmental issue . Everyday diversified pollutants such as organic or inorganic origin are entering into the environment . Since the invention of first dye, Mauveine, by William Henry Perkin in 1856 synthetic dyes are being used extensively in diverse fields [1,2]. Presently, around 0.1 million [3] type of synthetic dyes are being used in various industries like, textile [4], leather [5,6], printing [7], paint [8], paper [9], plastic [10], cosmetics [11], pharmaceuticals [12] ,food [13,14] on daily basis.During processing a large percentage of these dyes are lost and released as waste water[15,16]. Since these synthetic dyes are highly photostable[17] and non-biodegradable[18] in nature remain in the environment for a very long time. Usually dyes in waste water prevent the penetration of sunlight and reduce the amount of dissolved oxygen in water which endangers aquatic life[19]. Different methodologies have been adopted for the removal of dyes from waste water which includes, chemical oxidation, adsorption , biological degradation, membrane filtration and photocatalytic degradation etc [20-24]. Among these photocatalytic degradation is the simplest way out solution for this problem because of low cost effectiveness and easy to implement . Among the bismuth chalcogenides ,bismuth selenide a member of a family V-VI is gaining momentum due to its wide range of applications as thermoelectric devices[25],optical devices[26] topological insulators[27], semiconductors[28].Bismuth based semiconductors have become a promising group of advanced photocatalytic materials[29-30]. In recent years synthesis of BismuthSelenide (Bi_2Se_3) at nanoscale has received quite some attention during the past decades owing to low toxicity ,environmentally friendly element, easily available andeconomical.

II. Experimental Methods

2.1 Synthesisof Bismuth nanoparticles

In a typical synthesis process 6.66mmol $Bi(Cl)_3$,10mmol of Sodium Selenite (Na_2SeO_3), and 0.666g EDTA ethylene diamine tetra acetic disodium salt were mixed with 135 mL distilled water in a 250mL R.B flask. After thorough mixing 1.166g of KOH or NaOH or NH_3, 1.166g ascorbic acid were added to the contents of R.B flask. Contents of the flask were heated in an oil bath at temperature of 150 $^{\circ}$C with constant stirring with a speed of 100 rpm for 24 hrs. The precipitated dark grey powder was filtered, washed with distilled water and ethanol for several times. Then as-obtained air dried sample was calcinated for about 6hrs at 100°C.

IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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Nanomaterials For Super Capacitor And Perovskite Solar Cell Applications: A Review

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Abstract:

In this review paper,the latest developments in nanomaterials for supercapacitors and perovskite solar cells have been discussed. Nanomaterials have shown significant potential for improving the stability and efficiency of Perovskite solar cells and Super capacitors.There are several types of nanomaterials which are suitable for supercapacitor and perovskite solar cell applications.

Keywords Nanomaterials, Super capacitors,Perovskite solar cell

Introduction:

The demand for clean energy solutions has driven the development of advanced materials and devices for energy conversion and storage[1]. Among these, nanomaterials have emerged as a promising avenue for improving the performance and efficiency of renewable energy technologies. Supercapacitors and perovskite solar cells are two key examples of green energy utilization that have attracted significant attention in recent years due to their potential for high efficiency and low cost[2], [3]. In this review paper, we will discuss the latest developments in nanomaterials for supercapacitors and perovskite solar cells.

Supercapacitors:

Supercapacitors are energy storage devices that offer high power density and fast charging and discharging rates, making them ideal for applications that require rapid energy delivery. One of the main challenges in supercapacitor technology is increasing the energy density, which can be achieved by using nanomaterials. Nanomaterials such as carbon nanotubes, graphene, and metal oxides have been extensively studied for their potential in enhancing the performance of supercapacitors. Carbon-based materials have excellent electrical conductivity, large surface area, and good mechanical properties, making them suitable for use as electrodes in supercapacitors. Graphene, in particular, has emerged as a highly promising material due to its high surface area, high electrical conductivity, and excellent mechanical properties. Metal oxides such as titanium dioxide and manganese oxide have also been explored as electrode materials due to their high capacitance and stability[4]–[9].

IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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The Structural and Photoluminescence properties of Ta: In_2O_3 Thin Films grown by Pulsed Laser Deposition Technique

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Abstract. High purity Tantalum oxide and indium oxide powders are taken as starting materials to prepare Tantalum doped Indium oxide powder by solid state reaction method to prepare robust targets of $(In_{1-x}Ta_x)_2O_3$ (x=0.06) for Pulsed Laser Deposition (PLD) to grow Ta:In_2O_3 Thin films, prepared pellet was sintered at 1000ºC for 12hours. The films are deposited on ultrasonically cleaned (100) oriented Silica substrates are maintained at a substrate temperature of 400ºC. The vacuum chamber evacuated by a turbo molecular pump to a base vacuum better than 10^{-6} Torr and oxygen partial pressure was maintained at 0.3 mTorr. The deposited film structural characterization was done by GIXRD, EDX and stylus profile meter. UV-vis spectroscopy and Photoluminescence spectroscopy studies are performed for optical properties of the deposited films. GIXRD suggest polycrystalline nature with the preferred orientation along (222) direction. TEM images of the deposited films show nanometric grained rod like morphology. CIE plots confirm that deposited films are applicable for blue LED.

INTRODUCTION

Transparent conducting oxides (TCO) are unique materials that exhibit mutually exclusive material properties such as low resistivity and high optical transparency by utilizing these unique properties results in wide range of applications. TCO thin films have received much attention because of their wide applications such as thin film solar cells [1], Flat panel display[2],defrosters [3], opto-electronics [4], anti-static coatings[5].Organic light-emitting diodes [6]. Metal oxides exhibits unacceptably high resistivity for TCO applications. Thus, various metal oxides are employed to enhance the film conductivity. It has been widely reported that doping appropriate impurities into metal oxide films can decrease the resistivity by one or two orders of magnitude [7]. Among various TCOs Sn doped Indium oxide (ITO) is most widely used for optoelectronic applications because ITO thin films have high transmittance and low resistivity [8]. However the research focuses on new elemental dopings which can achieve better properties for prescribed applications. The doped material oxides should be chosen through consideration of both the charge and radius of the atom. There are some depends such as In_2O_3:Mo[9],In_2O_3:Ti[10] and In_2O_3:Zr[11] . Ta is one of the promising dopant because of its ionic radius (Ta^{5+}) is nearly similar and smaller than that of In^{3+} ions.There are some reports on Ta doped metal oxides but relatively very less number of papers available in the literature on Ta doped metal oxides prepared by Pulsed Laser Deposition (PLD).

Bulletin of Environment, Pharmacology and Life Sciences
Bull. Env. Pharmacol. Life Sci., Vol 12 [4] March 2023

Online ISSN 2277-1808
Journal's URL:http://www.bepls.com
CODEN: BEPLAD

ORIGINAL ARTICLE **OPEN ACCESS**

Effect of global warming on temperature rise due to pollution in the capital city of New Delhi, India in past 25 years

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ABSTRACT

Over the past few decades, air pollution and climate change have become major global concerns. In light of this concern about Indian cities, where air pollution and climate change have a significant health impact, this review was conducted. Human health is at risk from the expanding urban areas that experience extreme climate events like high rainfall, extreme temperature, floods, and droughts. Urban residents are experiencing thermal discomfort and a number of health issues as a result of the elevated temperature levels brought on by the intensified heat waves brought on by climate change. The study also looks at the rising levels of air pollution that are higher than what is required for the majority of Indian megacities. The concentrations of PM and aerosols have been investigated, and the potentially harmful effects on human health of particles that enter the respiratory system and are inhaled by humans have also been discussed. Also looked at were the health effects of the COVID-2019 lockdown on Indian cities' air quality. Lastly, the link between urbanization, air pollution, and climate change has been shown because air pollutants like aerosols affect Earth's climate directly (through absorption and scattering) and indirectly (through modifying cloud properties and radiation transfer processes). As a result, the information in this review will act as a starting point for policymakers when it comes to evaluating vulnerable regions and putting into action plans to reduce air pollution. Based on the review, adaptation and mitigation measures can be implemented in Indian cities to mitigate the effects on human health by regularly monitoring air pollution and addressing climate change.

Key words: *Air pollution, environmental threat, health, economic productivity, Sustainable Development Goals (SDGs)*

Received 14.12.2022 Revised 30.01.2023 Accepted 24.02.2023

INTRODUCTION

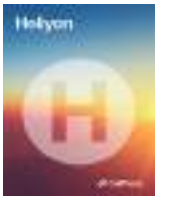
According to the Intergovernmental Panel on Climate Change (IPCC) report released on August 16, 2021, Delhi, India's national capital, may be on its way to becoming the nation's heat capital by the end of this century under the worst emission release scenario. Under the worst-case emission scenario, the capital city's mean temperature could rise by 5.3°C compared to the pre-industrial period by the end of the 21st century. Even in the best emission release scenario, which is expected to limit global average temperature rise to 1.5 degrees Celsius below pre-industrial levels, Delhi's average temperature is expected to rise by at least 2°C. Humanity's only hope of survival is thought to lie at this point. The 2015 Paris Agreement stipulated that the global mean temperature increase should not exceed 1.5 degrees Celsius compared to the pre-industrial temperature benchmark. Under the worst-case scenario for the release of warming emissions, which is primarily caused by high temperatures and severe air

Heliyon 9 (2023) e15935

Contents lists available at ScienceDirect

Heliyon

journal homepage: www.cell.com/heliyon



Research article

Design, synthesis, anticancer evaluation and molecular docking studies of 1,2,3-triazole incorporated 1,3,4-oxadiazole-Triazine derivatives

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ARTICLE INFO

Keywords:
Altretamine
1,3,5-Triazine
1,2,3-Triazole
Mubritinib
Anticancer activity

ABSTRACT

A new library of 1,2,3-triazole-incorporated 1,3,4-oxadiazole-triazine derivatives (9a-j) was designed, synthesized, and tested in vitro for anticancer activity against PC3 and DU-145 (prostate cancer), A549 (lung cancer), and MCF-7 (breast cancer) cancer cell lines using the MTT assay with etoposide as the control drug. The compounds exhibited remarkable anticancer activity, with IC50 values ranging from 0.16 ± 0.083 μM to 11.8 ± 7.46 μM, whereas the positive control ranged from 1.97 0.45 μM to 3.08 0.135 μM. Compound 9 d with a 4-pyridyl moiety shown exceptional anticancer activity against PC3, A549, MCF-7, and DU-145 cell lines, with IC50 values of 0.17 ± 0.063 μM, 0.19 ± 0.075 μM, 0.51 ± 0.083 μM, and 0.16 ± 0.083 μM, respectively.

1. Introduction

In medicinal chemistry, nitrogen heteroatom-containing heterocyclic scaffolds serve as active pharmaceutical components in the design and development of new chemotherapeutics. Apart from 1,3,5-triazines, nitrogen atoms with six-membered heterocyclic motifs are among the most recognized nitrogen atoms with a particular role in therapeutics. These triazine compounds exhibited various pharmacological activities, including anti-inflammatory [1], anticancer [2,3], anti-Alzheimer's [4], antibacterial [5], antiviral [6], and antifungal [7]. The U.S Food and Drug Administration has sanctioned the therapeutic agent, namely altretamine (1, Fig. 1), which bears 1,3,5-triazine moiety as a main backbone of the drug structure and is employed for the therapeutics of various cancers [8–10].

Similarly, 1,2,3-triazoles are nitrogen-containing five-membered heterocyclic aromatic scaffolds and contribute significantly to the medicinal field. They demonstrated various biological activities like anticancer [11], antimalarial [12], antitubercular [13], *anti*-HIV

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https://doi.org/10.1016/j.heliyon.2023.e15935
Received 23 February 2023; Received in revised form 25 April 2023; Accepted 27 April 2023
Available online 3 May 2023

JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

Analysis of minerals in bakery products - Flame Photometry

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ABSTRACT: *Various brands of biscuits were studied to ascertain the percentage composition of minerals by flame photometry. The sample solutions were aspirated into the flame and were analysed for the presence of sodium, potassium and calcium in their atomic forms. The metals were introduced into the flame and the emitted light intensity was measured in the range 500nm to 800nm.The wavelength determined the presence of the element and the colour of the flame indicated the presence of the elements in the samples .The presence of calcium was indicated by a brick red colour flame measured in the range 550-650nm.Crimpson colour flame measured in the range 750-850nm indicated the presence of potassium .For the analysis of sodium measurements were made in the range 550-650nm and the flame emitted yellow light.*

Results of the investigation were found to be accurate and reproducible.

Key Words: *Flame Photometry.*

1. INTRODUCTION

Approximately 98% of calcium is found in human bones. Sodium, potassium and calcium are involved in neutral conduction and muscle contraction. HCl in stomach influences solubility and absorbability of many minerals from foods in the diet [1] .Ca, Na and K are few of the dietary macro minerals and have specific functions in the body. The deficiency of these minerals can cause body malfunctions. Correct levels of these minerals are essential for normal cell function and any changes in the levels can effect nervous system and heart and sometimes can be fatal [2]. The typical daily diet contains 130-280 mmol (8-15 g) sodium chloride. The body requirement of Ca and Na is for 1-2 mmol per day, so the excess is excreted by the kidneys in the urine The human body requires about 50-150 mmol/day of K [3-5].Trace minerals include Fe, I, Zn, Cu, Cr, Mn, Mo,F,Se,Si, which play biochemical roles in maintain body functions. Ultra-trace elements include V, Sn, Ni, As and B.

2. METHODOLOGY

2.1. FLAME PHOTOMETRY:

Flame photometry is based on the measurement of light emitted when a metal is introduced in to the flame. The wave length of the color indicates the presence of the element and the intensity of the color gives information about the amount of the element present.

PRINCIPLE:

The flame photometer consists of a flame of temperature around 2000^{O}C [6]. The flow rate of the fuel gas and the oxidant gas is properly controlled and automizer is used to obtain fine drops of sample solution which is sent in to the flame. The radiation emitted by the flame is passed through a monochromator and then to detector which measures the intensity of the spectral lines.

Sample is sprayed into the flame and is converted into droplets. Due to the thermal energy of the flame, the solvent in the droplets evaporate leaving behind residue, to give free neutral atoms or radicals .These atoms are excited by thermal energy and are unstable at the excited state, so they return to the ground state emitting photons of specific wavelength radiation. The wavelength of the radiation emitted is characteristic of elements which helps in identifying the elements qualitatively .The intensity of the radiation emitted depends upon the concentration of the elements (quantitative analysis).

Plastic Pollution - A Review on Impacts of Pollution on Environment

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ABSTRACT

Plastic pollution is the accumulation of plastic particles and objects in the Earth's environment that adversely affect humans, wildlife and wildlife habitat. Most of today's plastics are made from Organic polymers produced from petroleum based chemicals. Plastics are in expensive and durable. These are the reason why the plastic production by humans are very high and the demand keeps on increasing day by day. Plastic, with numerous advantages and disadvantages, has now become an integral part of daily human life playing an important role in every aspect. Human activities have the potential to endanger human life and the natural ecosystems. This is experienced when plastics such as plastic bottle, plastic bags etc are being utilised/used for packaging, after they are being utilised, it is realised that they are discarded recklessly without thinking of what will be the consequence. These plastic wastes litters everywhere when not well discarded/disposed affecting the wildlife, wildlife habitat, humans and producing chocking, and pungent odour.

Key words: Plastic, Pollution, Wildlife, Endanger, Pungent

Introduction:

The plastic waste mass may obstruct the ground water movement (Silva et al., 2014). Plastic waste may usually in the form of film and hard plastic may contains harmful metal based elements such heavy metal, at which when mixed up with water or rain water can impede soil and receive water. In any case, plastic garbage can impede the pace of percolation and in turns would crumble the soil fertility if it is mixed with soil. Plastic waste is derived from hydrocarbon-based material, its exert comparatively high calorific value which can be used for incineration or boiler. However, burning of plastics at lower temperature may liberate deadly and poisonous chemical gases into the air, including dioxins which is corrupting to the Human being. Plastic waste can also be used to produce new plastic based products after submitting to reprocessing line (Saiki and Brito, 2012).

The use of plastic bottles is growing day by day, resulting in a massive volume of plastic waste. Plastics do not breakdown in the soil or in water. Recycling plastic trash into any usable product is the best strategy to reduce plastic waste. Rope is a very popular product that always has very high demand. There had been some earlier methods for manufacturing rope directly from PET (Polyethylene terephthalate) bottles.

Plastics are low-budget, lightweight, strong, durable, corrosion-resistant materials, with high thermal and electrical insulation properties (Andrade et al. 2016). Plastics include

IOSR Journal of Research & Method in Education (IOSR-JRME)
e-ISSN: 2320–7388, p- ISSN: 2320-737x Volume 13, Issue 3 Ser. I (May. – June. 2023), 46-51
www.iosrjournals.org

A Conceptual Study In Analysing The Overall Influence Of Artificial Intelligence Towards Teaching And Learning In Higher Education

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Abstract:
In this article, we study the growing use of AI in the instructional methods of educational institutions such as universities. It explores the ways in which students learn as well as the ways in which teachers can adapt in order to stay up with the rapid development of new technology. In order to forecast what will happen to higher education in a world dominated by AI, it is necessary to investigate the most recent technological advancements and the speed with which new technologies are being adopted.
In the past three decades, there has been significant progress made toward introducing and making use of cutting-edge technology in educational settings. When seen through the prism of modernity, it is simple to disregard the debates that raged inside our educational institutions over the availability of technologies that are now regarded as archaic. The authors of a 1993-2005 US-based longitudinal study on accommodations for impaired students recall the heated debate that took place over whether or not it was appropriate to allow students with and without disabilities to use calculators and spell-checking software (Lazarus et al., 2008). The study was conducted in the United States. Magnification tools, text-to-speech and speech-to-text software, text-to-speech and speech-to-text software, text-to-speech and speech-to-text software, predictive text, spell checks, and search engines were among the first assistive technologies to be developed. Later on, the range of devices that might benefit from these advancements was enlarged, and now, they are present in a wide variety of devices, ranging from desktop computers to smartphones to smartwatches. Because of the better opportunities for teaching and educational experience creation brought about by these technologies, there is currently a rise in the learning interactions of all students located in every region of the world.

Keywords: *Artificial Intelligence, Higher Education, Regression analysis*

Date of Submission: 08-05-2023 Date of Acceptance: 18-05-2023

I. INTRODUCTION

There is a significant relationship between the ever-increasing processing capacity of new intelligent computers and the direction that higher education will take in the future. It is probable that one of the unanticipated impacts of research and development in artificial intelligence will be a shift in the administration and internal structure of universities; yet, this transformation will also bring both new opportunities and obstacles for teaching and learning. The responses to these questions have been shaped by philosophical viewpoints that have been held at least as far back as Aristotle. As a direct consequence of this, there is not a single definition of artificial intelligence that is accepted by the majority of people (Botrel, 2015).

The rapid development of AI has led to significant modifications in the kinds of services supplied by educational institutions like universities. These shifts have been brought about by the quick advancement of AI. Institutions have already started to implement AI technology, such as IBM's Watson, the company's supercomputer with artificial intelligence capabilities. (González,, 2015) In order to gain support with their academic pursuits, students at Deakin University in Australia have access to the system around-the-clock, 365 days out of the year. The use of Watson is just one illustration of how the future profile of the administrative personnel in higher education will change as a result of the application of artificial intelligence. Despite the fact that Watson's algorithms perform best on tasks that are repetitious and can be predicted with a certain degree of accuracy, this remains the case. Adjustments to the university's labor structure, as well as its time dynamics and service quality structures, are currently being undertaken as a direct result of this situation. If a supercomputer had the capacity to provide immediate and personalised feedback, there would be no need for the same number

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 10, May 2023

Application of Total Quality Management in the Engineering Mathematics Classroom to Improve Students' Performance

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Abstract: *Quality has become the defining element of education in the 21st century. Total Quality Management (TQM) is a management philosophy, defined as a customer-oriented process and aims for continuous improvement of business operations. It ensures that allied works are toward the common goals of improving service quality and enhancing the process of rendering services. As all education institutions are service oriented organizations, there is a greater need of TQM in educational institutions. In this paper, we study the application of TQM in the teaching learning process of Engineering Mathematics by applying Deming's model to improve the students' performance*

Keywords: Total Quality Management, Quality control, Teaching and Learning Process, Continuous Improvement

I. INTRODUCTION

TQM is both a philosophy and methodology. TQM as a management model with its emphasis on leadership, team work, rigorous analysis and self assessment, has a universal message. And it has always been a philosophy for the long haul rather than a short term fix. It is now required more than ever in the world of continuous change.

Quality assurance and total quality were originally developed in the 1930s and 1940s in the United States, by W.Edwards Deming. Deming began formulating his ideas in the 1930s while working on methods of removing variability and waste from the industrial processes. The Japanese put into practice the ideas of Deming, Joseph Juran and other US quality experts who visited Japan on their post war census of World War II. The Japanese developed the ideas of Juran and Deming into what they call "Total Quality Control" and used it in automobiles, electronics and consumer durable industries in the 1970s and 80's. The most famous Japanese national writer on quality, Kauro Ishikawa, described the Japanese approach to TQC as 'a thought revolution in management'.

II. TOTAL QUALITY MANAGEMENT IN EDUCATION

The phase of industrial revolution took a major leap after the implementation of TQM as to improve the quality of the product or the service offered. The components of TQM which are Quality planning, Quality assurance, Quality control and Quality improvement has helped the companies to come up with better products and services.

The same concept of TQM can be applied to Education service sector which gives out fresh graduates every year. Quality in education has become an inevitable part of everyone's career growth. The need of the hour is to understand the factors that are to be considered to improve the quality of teaching, learning which in turn is evident on the quality of students.

Present education system which works on the marks or grade system forces and restricts the students to think out of the box and they end up in learning just to gain marks. There has to be a change in the present system and give more importance to practical learning, aptitude based understanding and logical thinking. Let the students come up with creative and innovative ideas and solutions.

The empirical analysis in determining the critical determinants of using technology in utilising online learning platforms for improving academic achievements using Anova analysis

(https://journals.eikipub.com/index.php/jetm/issue/view/jetm_vol1_02)

PDF (Read or Download) (https://journals.eikipub.com/index.php/jetm/article/view/10/14)

Published: Jun 15, 2023

DOI: https://doi.org/10.59652/jetm.v1i2.10 (https://doi.org/10.59652/jetm.v1i2.10)

Keywords:
online learning, teaching technology, teaching tools

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Abstract

The goal of this study is to identify and investigate the elements that may influence the levels of achievement and contentment experienced by students enrolled in online classes. There is a body of research that has already investigated the advantages and applications of online education. In the current dynamic environment, many people using online platforms, this presents a problem in and of itself. The purpose of this study is to gain a deeper understanding in determining the critical determinants of using technology in utilising online learning platforms for improving academic achievements.

In the past, some of the implementation issues that have been highlighted include a lack of trained lecturers, insufficient facilities, and students who are unprepared to use online learning platforms and Learning Management System (LMS) platforms as teaching tools. In addition, a dearth of trained lecturers has been identified as a challenge. The demand for it among students increased, and it is currently utilized by individuals all over the world as a result of its adaptable design and several helpful functions. There have, for a considerable amount of time, been concerns over the expansion of online learning environments at the expense of those that are more traditional.

ISSN: 2278-4632
Vol-13, Issue-02, No.03, February 2023

BIG DATA IN EDUCATION

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Abstract:
One of the hottest buzzwords these days is big data. It's probably been on everyone's lips for quite some time. The truth is that big data is spreading like wildfire and is about to overtake the entire planet, taking over not only the IT business but other industries as well. With so much information generated every second, data scientists are always on the go with that information. In addition to companies analyzing this data to make better business decisions, big data is also being used in the education sector. Every year, a huge amount of data is produced as thousands of students enroll in a variety of courses at various institutes. The student information includes course information, enrollment year, student ID, exam grades, and marks earned in each topic. For advancing their careers, analysis of this data can be incredibly helpful. Modern educational institutions use student data to understand their educational experience. This allows teachers to better guide their students. Educational Institutes have faced a lot of challenges in the analysis and study of such a huge volume of data with traditional data processing tools. To overcome these challenges, some big data solutions were introduced.

Keywords: Data Analytics, Educational Management, Teaching and Learning Systems, Decision Making, Big data, Cloud.

Introduction:

The current IT world is facing a tsunami-like situation due to the rapidly growing numbers of data and information. As the number of end users grows, a secure and dependable model is required to handle the situation. To deal with such situations, big data and the cloud are the best solutions. Virtualization has completely transformed the storage concept. It has a significant impact on industries such as education, healthcare, and finance. Big Data is defined as a massive volume of structured and unstructured data that is too large and difficult to process using traditional methods and current software technologies. Today, data is rapidly increasing, resulting in Big Data. Online transactions, video, audio, email, number of clicks, logs, posts, social network data, scientific data, remote access sensory data, mobile phones, and their applications are common sources of Big Data. Real-time big data applications are used in a variety of industries, including healthcare, network security, market and business, sports, education systems, the gaming industry, and telecommunications. Big data technologies process a wide range of data at high volumes and speeds in order to extract data value and ensure the accuracy of original data. Data is constantly generated by devices and people. Big data is the buzz phrase in the IT industry. Every student is different. A particular learning process may be the best fit for some students while being unsuitable for others. For example, Some students prefer visual learning while others prefer aural learning. The study here aims to implement an automated system for students that can categorize them and provide them with a tailored learning environment. Big Data in education can improve students' overall learning environment, which is essential for quality education. One of the primary goals of any educational system is to provide students with the knowledge and skills they need to become successful human beings. Education assists individuals in developing a variety of skills that will aid in their overall development. Education has taken on a new dimension as the number of schools, colleges, and coaching institutes has increased. The effectiveness with which global educational systems achieve educational goals is a major determinant of both economic and social progress. Every year, a large number of students enroll in universities. With such a large number of students, it has become difficult to provide high-quality

Research Paper
Impact Factor: 6.462
Peer Reviewed & Indexed Journal
www.ijmsrr.com

IJMSRR
E- ISSN - 2349-6746
ISSN -2349-6738

ROLE OF DIGITALIZATION IN ORGANISATION DEVELOPMENT

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Abstract
In modern times, digitalization is playing a huge role in transforming the dynamics of the workforce within the organizations. It is empowering the human resource in storing and preserving the employees' data or information. It is changing the overall mechanism of organization development by converting it into digital way. Organizations are now transforming their technologies and advancing themselves by adopting technological progress. It is providing a new platform for the organizations in building and designing the digital working mechanism. Thus, the present paper deals with the role of digitalization in the context of organization development. It also studies the concept, review of literature, significance of digitalization, benefits of digitalization in organization development, challenges to digitalization in organization development. Further, it analyses the role of digitalization in organization development and brings out the conclusion.

Keywords: Digitalization, Organization Development, Technological Progress, Employees.

1.2. Introduction

Digitalization is a term that describes the phenomenon of adopting digital technologies in business, organization and / or society. It is the term use to cover the affiliated changes in the connectivity of individuals, organizations, and objects. It is creating keen changes in the world of work. The key feature of wire or wireless communication is not mobility but perpetual connectivity and time saving work productivity. In the context of organization development, digitalization is the process of adopting the working mechanism into the form of digital work. The digital work can be done through the use of digitalization. In organization development, digitalization is helping the individuals and organizations in building and designing their day to day professional activities. It is creating many new opportunities to the organizations by providing digital methods of working. It is supporting the staff in carrying out their business activities and providing them the advance opportunity to move ahead in the businesses.

Digitalization is increasing the tempo of daily life. It is not only supporting the common people but also providing useful contribution in the fields of industry, trade, business and organization. Today, we live in "speed-up society," with a faster pace through the day, fewer pauses, more multitasking, and more time pressures. Most of our daily life is directly connected with information and communication technology (ICT). ICT is allowing us to do tasks and activities easier and faster. Nowadays people have more and more activities performing through the use of internet. Even in organizations, several managerial activities are being executed digitally. In various forms of managerial functions digitalization is involved in formal or informal way.

Digitalization has a great impact on the developmental activities of the organization. One of the biggest impacts of digitalization on organizations is that information has become more accessible and transparent, which allows organizations to share more information with all employees – even those at lower levels of the hierarchy. This easy accessibility resulted in increased worker productivity and in greater demands at work and at home. Whether it is top level of management, middle or lower level of

A Study on Mediating Effect of Resilience and Emotional Intelligence between Occupational Stress and Job Performance

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Abstract: Stress is a normal part of life for working professionals and is something they have to deal with every day. In the past ten years, a great number of research studies have been carried out in order to investigate occupational stress, its connection to the level of performance an employee exhibits in the workplace, and the measures that ought to be taken in order to lower the levels of stress experienced by employees. This conceptual paper's goal is to conduct a literature study with the intention of determining the impact that resiliency and emotional intelligence play in bridging the gap between occupational stress and work success. Both emotional intelligence and the ability to bounce back quickly from setbacks are crucial in the life of an employee. According to the many different Literature Reviews, there is a basic connection between work performance and occupational stress. If the worker is under a lot of pressure, it will show in his performance. This is not a good thing. Through the review of a large number of research publications, it has been investigated how resilience and emotional intelligence are related to occupational stress as well as performance on the work. Following the completion of the literature studies, a conceptual model was developed. It focuses on the link between occupational stress and work performance, as well as the influence that resilience and emotional intelligence have on both of these variables as a mediating force. In addition to this, it places an emphasis on the need of providing training to workers in the areas of resiliency and emotional intelligence.

Key Words:nStress, Resilience, Job performance, Emotional Intelligence

I. INTRODUCTION

In older times, the only things that could be found in the factory were humans and machines. This was the working environment. The order that was given by superiors or managers was regarded as the definitive one. The employees had a habit of following them without question. The culture at this workplace has undergone a full transformation. The office setting has seen significant changes over the course of time, including the introduction of advanced levels of technological involvement. The rising stress levels in the workplace are directly linked to the development of various technologies. The workers are constantly experimenting with new technology and are undergoing a personal revolution as a result. The deadlines, the regulations of the business, the workers' relationships with their peers and superiors, and other factors all contribute to the employees' high levels of stress. Additionally, stress has various negative effects on one's health. Traumas may leave their victims with short-term, long-term, or even permanent effects, and in certain extreme circumstances, they can even be fatal. It is not possible for the management to continue treating the workers in the same manner as they did in the past. They have to make use of the emotional intelligence they possess in order to make certain that the workers do not have the purpose of leaving the company. They need to make sure that workers are provided the organisational support they need to cope with stress, and that workers are driven to perform to the best of their abilities so that they may reach their full potential. The personnel should have a level of resilience that allows them to deal with the stress that they experience while working for the firm. This guarantees that they are able to confidently confront challenging circumstances, take them in stride, and continue to perform to the best of their abilities.

The purpose of this article is to provide an overview of the recent systematic literature reviews that have been conducted in the fields of occupational stress, emotional intelligence, resiliency, and work performance during the last 10 years. The goal of this study is to gain an

 DOI : 10.35291/2454-9150.2023.0009

International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2022): 7.942

Effect of Grooves on the Piston Crown in Improving the Performance of Diesel Engine

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Abstract: ***In This study presents an experimental investigation on a 4-stroke Direct Injection Diesel Engine run with Diesel. The efficiencies of the engine were compared when run using both a normal piston and a piston with grooves. The grooves were designed to create turbulence and improve the thermal efficiency of the engine. The results showed that the grooved piston improved the engines performance under all load conditions.***

Keywords: Diesel Engine, Turbulence, Engine Performance, Grooved Piston, Thermal Efficiency, Mechanical Efficiency

1. Introduction

To obtain a better combustion with lesser emissions in direct-injection diesel engines, it is necessary to achieve a good spatial distribution of the injected fuel throughout the entire space available in the combustion chamber. In DI diesel engines, swirl can increase the rate of fuel-air mixing due to the turbulence provided by the grooved piston.

2. Literature Survey

Subba Reddy et al (ref 1), have carried out an experimental investigation on D. I Diesel Engine with three different tangential grooved pistons with cotton seed oil methyl ester blended with diesel in various proportions. They have reported a decrease in Brake Specific Fuel Consumption and a slight increase in thermal efficiency, when the engine is operated on blended fuel of 20% cotton seed oil methyl ester and 80% diesel (20BD), compared to that with diesel fuel.
Prathibha et al (ref 2), have carried out an experimental investigation to study about influence of the air swirl in the cylinder upon the performance and emission of a single cylinder diesel direct injection engine by using diesel on volume basis. The swirl intensification was done by cutting grooves over the piston crown. In this work three different configurations of piston i. e. in the order of number of grooves 6, 9, 12 are used to intensify the swirl for better mixing of fuel and air and their effects on the performance and emission are recorded.

In several other reported research works, it has been concluded that the thermal efficiency of an engine enhances with the turbulence created with the help of grooves provided on the piston crown.

Properties of Diesel

Table 1: Properties of diesel

Property	Diesel
Density (kg/m^3)	805.4
Calorific value (kJ/Kg)	41991.9
Specific gravity	0.805
Flash point (^{o} C)	52
Fire point (^{o} C)	56

3. Experimental Setup

This study is significant as it provides insights into how the design of engine components, specifically the piston, can be modified to improve engine performance and efficiency. The findings could have implications for the design of more efficient and environmentally friendly engines.

The study should provide more detailed information on the experimental setup, including the specific model of the engine used, the process of creating the grooves on the piston, and the method of measuring engine performance.

In order to find out the effect of turbulence created by the Grooves provided over the Piston crown, on the performance of DI Diesel Engine when run with diesel, a single cylinder vertical type four stroke, water-coo1ed, self governed type, compression ignition engine is used in the present work.

Table 2: Specifications of Engine

Engine type	4-Stroke Diesel Engine
B. H. P	5HP
Rated speed	1500 rpm
Bore size	85mm
Stroke length	110mm
Number of cylinders	Single cylinder
Cooling	Water cooled
Cylinder arrangement	Vertical

Table 3: Groove cut specifications

Number of grooves	5
Width of cut	2mm
Depth of cut	1mm

Figure 2: Grooved Piston

Materials Today: Proceedings xxx (xxxx) xxx

Contents lists available at ScienceDirect

Materials Today: Proceedings

journal homepage: www.elsevier.com/locate/matpr

Revamp the tool life of high speed steel tool by cryogenic heat therapy

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ARTICLE INFO

Article history:
Available online xxxx

Keywords:
Cryogenic treatment
Tool nose
Surface finish
Tool Life
HSS

ABSTRACT

The mechanical and physical properties of both ferrous and non-ferrous alloys may be improved using a heat treatment process called cryogenic heat therapy, which has been used for centuries. It is cost-effective to use cryogenic treatment on cutting tools because it improves their hardness, wear resistance, and dimensional stability while decreasing tool consumption and minimizing downtime during machine tool setup. Understanding the characteristics of these tool materials is crucial because of the impact they have on the turning process. Modifying and bettering these tool steels' characteristics will make machining more efficient. In this paper the lifespan of cryogenically treated tools to those that were not treated were compared by conducting an experiment using conventional lathe machine by doing turning operation. Cryogenically treated and untreated HSS tool bits were used to perform a turning operation on a hardened steel bar at varying speeds (90, 140, 230, 310, 500, and 725 revolutions per minute), and graphs were drawn to compare the tool wear and time interval for each speed. Cryogenic treatment on an HSS cutting tool affects its ability to machine a variety of tool materials with improved surface polish and extended tool life. The results showed that the cryogenically treated tool had lasted longer than the untreated tool at all speeds.

Selection and peer-review under responsibility of the scientific committee of the International Conference on Advancements in Materials and Manufacturing.

1. Introduction

Cryogenic heat therapy was introduced to the industries in 1920 s. Choosing the appropriate finishing step—which may include this kind of extra heat treatment—is critical for components with the most insignificant wear rate, least austenite content, and least monetary cost. This extraordinary power therapy can be isolated into two social events: I shallow cryogenic force therapy, which is finished at temperatures north of 125 K, and (ii) significant cryogenic force treatment, which is connected to medicines in which examples are warmed to bring down temperatures (125–77 K) in order to be cooled. [1] The removal of any remaining austenite is the primary outcome of cryogenic heat treatment for steels. Another outcome shown is a decrease in carbide size, the proportion of which rises and results in a more homogenous distribution of carbide [2,3]. For this effect to manifest, deep cryogenic treatment is required [25]. These microstructural changes happen because of carbon molecule movement at lower temperatures because of huge shrinkage in the steel structure [25-28]. These migrating carbon particles jump to local areas and act as advantageous destinations for estimated time of arrival of chromium carbide nucleation during preannealing. Carbides are added to steel and cast iron before they are subjected to cryogenic treatment, expanding the carbide focus and making a more uniform carbide circulation [4-6]. In tools such pinion shafts, brakes, rotors, bearings, gears, face gears, and dies [7], that have the greatest wear resistance is a crucial criterion for service life. This enhancement is of considerable value in all these areas. Carburized steels [8,9], high-speed steels [10], and tool steels are only a few of the ferrous materials that get deep cryogenic heat treatment. For both the cryogenically treated tool and the untreated tool, this research aims to maximise tool life. The turning operation was performed on a lathe on a cylindrical mild steel work piece using a cryogenically treated tool and an untreated tool. Turning operation was conducted on lathe machine on cylindrical mild steel job using cryogenic treated tool and un treated tool. Extending tool life is a

Abbreviations: HSS, High Speed Steel.

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https://doi.org/10.1016/j.matpr.2023.03.399

Selection and peer-review under responsibility of the scientific committee of the International Conference on Advancements in Materials and Manufacturing.