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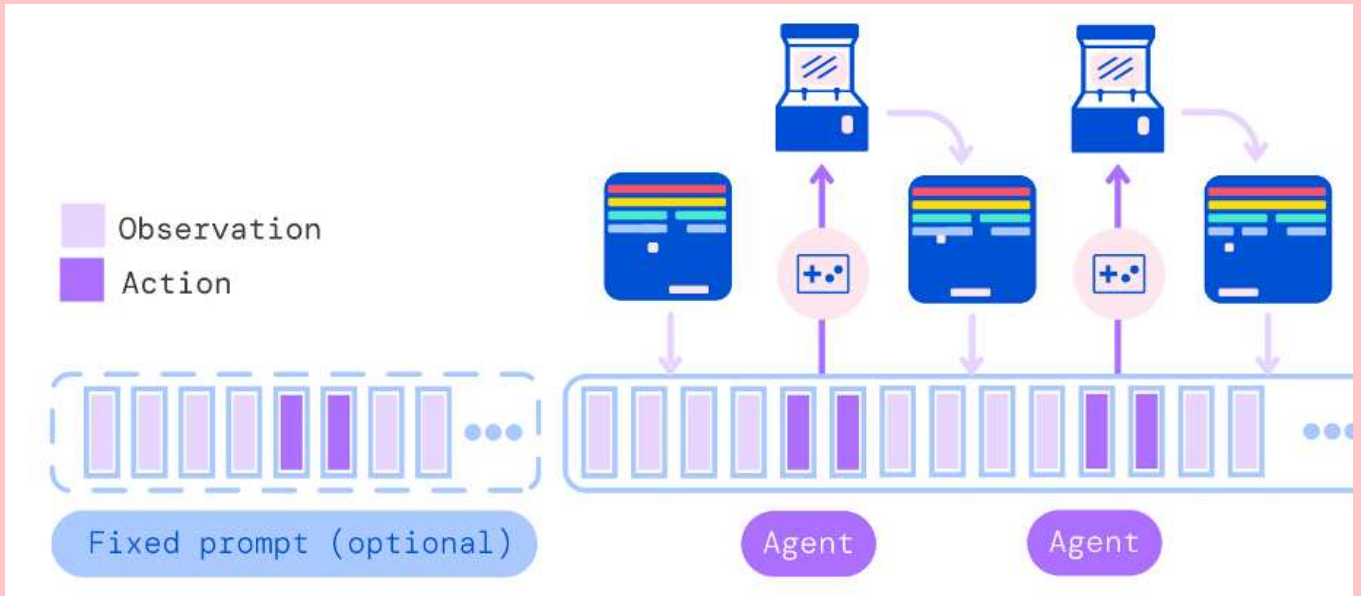
II B.TECH CSD: CH Akshitha, V SPugina

# CONTENTS

1 GATO
ONE AI MODEL FOR 600 TASKS

BY- SAI PALLAVI SISTLA
20251A05B7
II CSE-B

Gato is DeepMind's generalist AI agent that can perform many different tasks that humans can do, without carving a niche for itself as an expert on one task. Gato can perform more than 600 different tasks, such as playing video games, captioning images, working as a chatbot, moving real-world robotic arms, etc.

WHAT IS GATO?

"The agent, which we refer to as Gato, works as a multi-modal, multi-task, multi-embodiment generalist policy. The same network with the same weights can play Atari, caption images, chat, stack blocks with an accurate robot arm, and much more, deciding based on its context whether to output text, joint torques, button presses, or other tokens." is how DeepMind defines it.
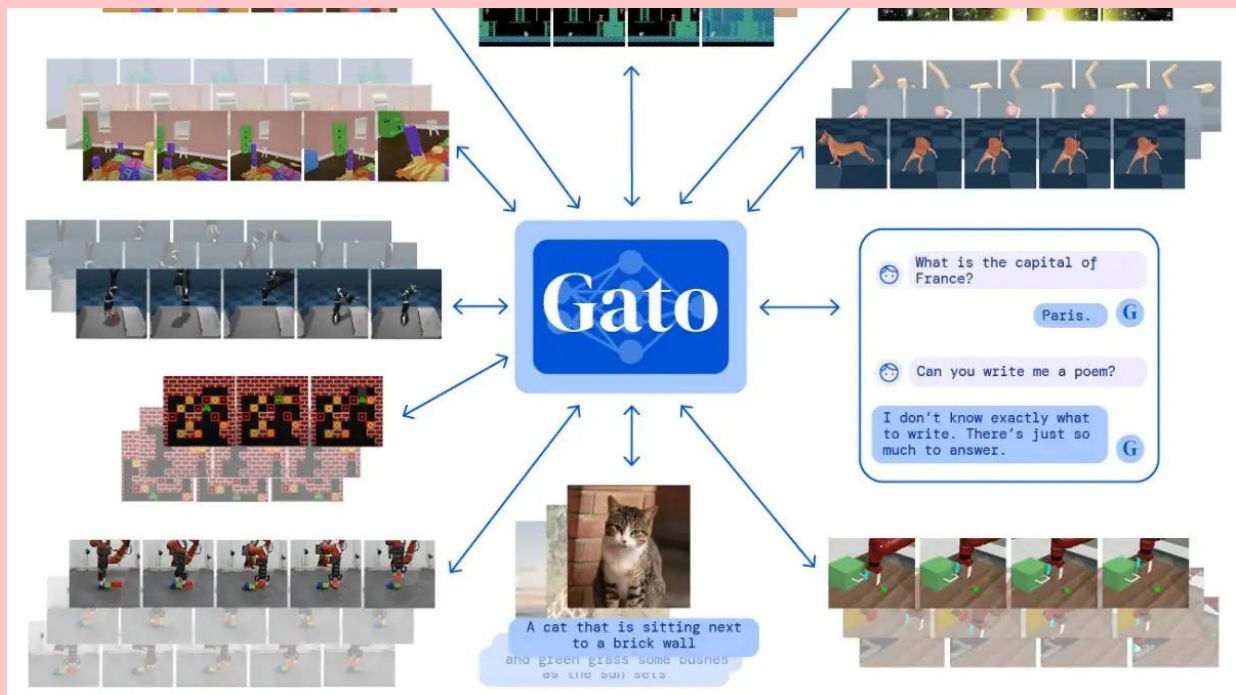
A general way of understanding GATO would be "One Artificial intelligence model that can perform any task, you can possibly think of". Let us analyze the need for one such model, so far in the history of Machine learning and Artificial intelligence, we have built models and trained algorithms that helped in automating tasks, making predictions, recognizing patterns in complex datasets, making business decisions, and so on.

Inspired by this progress in large-scale language modeling, DeepMind has applied a similar approach towards building a single generalist agent beyond the realm of text outputs that can automate and integrate tasks of already existing models.

Now that we have established a basic understanding of what GATO is and why was it built, let us briefly look into the working and training of the model.

THE GATO MODEL

A general way of understanding GATO would be "One Artificial intelligence model that can perform any task, you can possibly think of". Let us analyze the need for one such model, so far in the history of Machine learning and Artificial intelligence, we have built models and trained algorithms that helped in automating tasks, making predictions, recognizing patterns in complex datasets, making business decisions, and so on.

"The guiding design principle of Gato is to train on the widest variety of relevant data possible, including diverse modalities such as images, text, proprioception, joint torques, button presses, and other discrete and continuous observations and actions."

Gato is trained on a large number of datasets comprising agent experience in both simulated and real-world environments, in addition to a variety of natural language and image datasets.

Gato, like all AI systems, learns by example, ingesting billions of words, button presses, joint torques, and more in the form of tokens. These tokens served to represent data in a way Gato could understand, enabling the system to perform different tasks.

HOW DOES GATO WORK?

Tokenization is one of the core processes involved in the working of GATO. Tokenization breaks the raw text into words, sentences called tokens. These tokens help in understanding the context or developing the model.
For example: "it is raining" can be tokenized into "it" "is" "raining"

A prompt is tokenized during the deployment phase to form the initial sequence. Following this, the environment yields the first observation, which is also tokenized and appended to the sequence. Next, Gato samples the action vector autoregressively. It comprehends one token at a time, and once all tokens have been sampled, Gato decodes the action and sends it to the environment. The environment then yields a new observation, and the process is repeated in a loop.

DID GATO ACHIEVE AGI?

AGI, Artificial General Intelligence is the ability of an intelligent agent to understand or learn any intellectual task that a human being can. According to DeepMind's claim, GATO is a "generalist agent", which means GATO is assumed to be one step ahead of all the models and companies trying to achieve AGI.

According to a few Deep Learning scientists, GATO is a bunch of independently trained agents, that then amortized all of their policies into a single network. But what is surprising is the efficiency of the model, and also training an AI to accomplish varied tasks may eventually create a solid foundation of general knowledge on which a more adaptable model could be based.
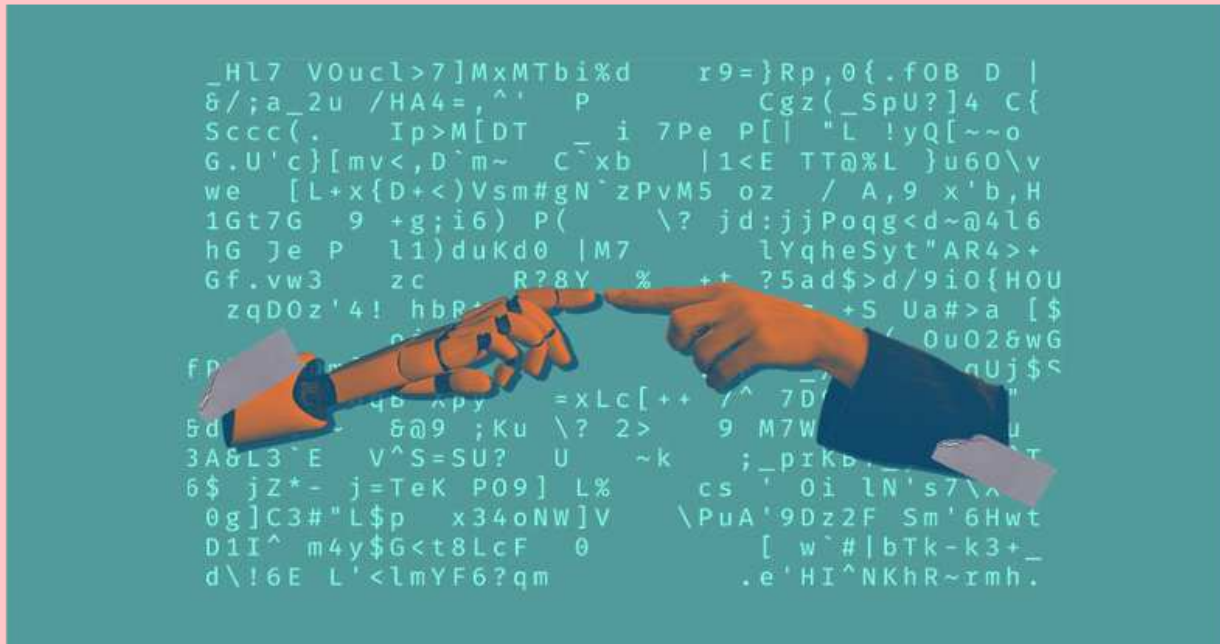
FINAL THOUGHTS ON DEEPMIND'S GATO

GATO might not be a breakthrough in the field of AGI but is definitely one of the most significant milestones in the field of AGI since Transformer sequence models are effective as multi-task multi-embodiment policies, including for real-world text, vision, and robotics tasks. In the future, such models could be used as a default starting point via prompting or fine-tuning to learn new behaviors, rather than training from scratch.

Better hardware and network architectures will allow the training of bigger models while maintaining real-time robot control capability. By scaling up and iterating on this same basic approach, a useful general-purpose agent can be built.

2 WEB 3.0

BY- SHAISTA FIRDOUSE
19251A0552
III CSE-A

Web 3.0 is the third generation of the internet where websites and apps will be able to process information in a smart human-like way through technologies like Artificial Intelligence(AI), Machine Learning (ML), Big Data, decentralised ledger technology (DLT), etc. Web 3.0 was originally called the Semantic Web by World Wide Web inventor Tim Berners-Lee, and was aimed at being a more autonomous, intelligent, and open internet. The ultimate goal of Web 3.0 is to create more intelligent, connected and open websites.

EVOLUTION OF THE WEB 3.0 TECHNOLOGIES

- ## WEB 1.0 (1989-2005)

  Web 1.0 is a Content Delivery Network (CDN), also known as a Read-only network defining the advent of the internet. Web 1.0, also called the Static Web where the users could only consume information given on the web pages hosted through web servers. It was the first and most reliable internet in the 1990s despite only offering access to limited information with little to no user interaction.

- ## WEB 2.0 (2005-PRESENT)

  Web 1.0 is a Content Delivery Network (CDN), also known as a Read-only network defining the advent of the internet. Web 1.0, also called the Static Web where the users could only consume information given on the web pages hosted through web servers. It was the first and most reliable internet in the 1990s despite only offering access to limited information with little to no user interaction.
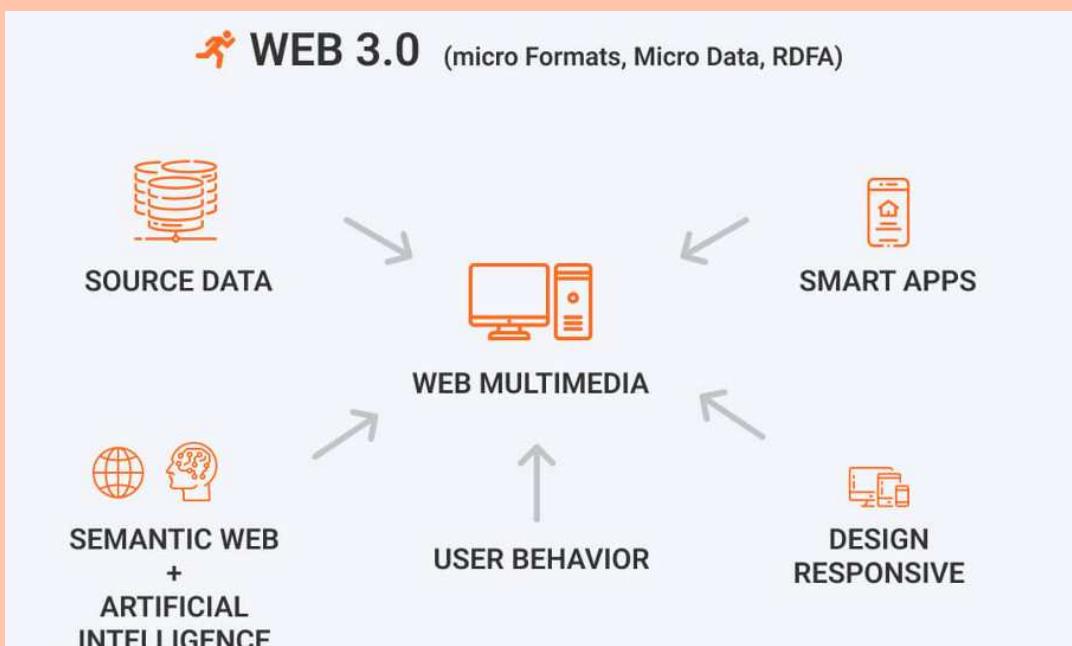
WEB 2.0 { XML, RSS}

WEB MASTER → DYNAMIC WEB ← COMMUNITY

PARTICIPATING USERS

- **WEB 3.0**

  Web 3.0 is the next stage of the web evolution that would make the internet more intelligent or process information with near-human-like intelligence through the power of AI systems that could run smart programs to assist users. This semantic web understands the context and concept of the data to deliver the most accurate results.

WEB 3.0 (micro Formats, Micro Data, RDFA)

SOURCE DATA

SMART APPS

WEB MULTIMEDIA

SEMANTIC WEB + ARTIFICIAL INTELLIGENCE

USER BEHAVIOR

DESIGN RESPONSIVE

KEY FEATURES OF WEB 3.0

1. **Connectivity and ubiquity**

With Web 3.0, information and content are more connected and ubiquitous, accessed by multiple applications and with an increasing number of everyday devices connected to the web (Internet of things).

2. **Semantic web**

The semantic web is an extension of the world-wide-web which enables computers to comprehend data by extracting relevant interpretations via data descriptors. According to the founder of Semantic Web, Tim Berners-Lee, this technology helps computers to analyze various types of content and deduce similarities between them to deliver the best possible results. Web-users will therefore have a similar experience like humans conversing with each other. Internet users will have a better experience driven by enhanced data connectivity.

3. **Artificial Intelligence**

In Web 3.0, computers will be able to understand information similarly to humans, through technologies based upon Semantic Web concepts and natural language processing(NLP). These capabilities will enable computers to produce faster and more relevant results in a host of areas like drug development and new materials.

4. **Spatial Web and 3D Graphics**

Web 3.0 is also called the Spatial Web as it aims to blur the line between the physical and the digital by revolutionizing graphics technology, bringing into clear focus three-dimensional (3D) virtual worlds. 3D graphics bring a whole new level of innovation in the sectors like health, real estate, gaming, e-commerce, etc.

5. **Decentralisation**

Decentralisation of data is the core feature of web 3.0. Web 3.0 uses the process where information is searched by the user query/ content available anywhere on the net. Therefore, with the advent of web 3.0, data could be distributed and stored at multiple locations.

6. **Data Ownership**

Over the years, big companies have been controlling user-generated data and using it for their profitability. However, with web 3.0 end-users will have complete ownership of the data. Users can make money out of the information they share.

7. **Permission-less and trustless**

Web 3.0 is trustless and permission-less because Web 3.0 applications will run on Blockchains or peer-to-peer networks. This kind of network will allow people to connect directly without any intermediary and anyone will be able to access and participate without seeking any kind of authorisation.

WEB 3.0, CRYPTOCURRENCY AND BLOCKCHAIN

As Web 3.0 networks will operate through decentralized protocols — the founding blocks of blockchain and cryptocurrency technology, we can expect to see a strong convergence and symbiotic relationship between these three technologies and other fields. They will be interoperable, seamlessly integrated, automated through smart contracts and used to power anything from micro transactions in Africa, censorship-resistant P2P data file storage and sharing with applications like Filecoin, to completely changing every company conduct and operate their business.

FUTURE VISION

1. With Web 3.0, women, men, machines & businesses will be able to trade value, information & work with global counter-parties they don't know or yet explicitly trust, without an intermediary.
2. We will see nearly all of today's normally offline machines, from home appliances like ovens, vacuums, and refrigerators to all types of transport become part of the IoT economy, interacting with its autonomous servers and decentralised applications (DApps), advancing new digital realms like blockchain and digital asset to power a myriad of new tech "miracles" for the 21st century.
3. The most important evolution enabled by Web3.0 is the minimisation of the trust required for coordination on a global scale. This marks a move towards trusting all constituents of a network implicitly rather than needing to trust each individual explicitly and/or seeking to achieve trust extrinsically.

4. Web 3.0 will fundamentally expand the scale & scope of both human and machine interactions far beyond what we can imagine today. These interactions, ranging from seamless payments to richer information flows, to trusted data transfers, will become possible with a vastly increased range of potential counterparties.

5. Web 3.0 will enable us to interact with any individual or machine in the world, without having to pass through fee-charging middlemen. This shift will enable a whole new wave of previously unimaginable businesses and business models: from global co-operatives to decentralized autonomous organizations and self-sovereign data marketplaces.

6. Web 3.0 will cryptographically connect data from individuals, corporations and machines, with efficient machine learning algorithms, leading to the rise of fundamentally new markets and associated business models. The result is akin to a "return to the global village" — daily immersion in the human-centric & highly personalized interactions from which we used to benefit, yet now delivered at the global scale of the internet and supporting an ever-increasing myriad of human and machine skills specializations.

APPLICATIONS

1. **Wolfram Alpha**

   Wolfram Alpha is a computational knowledge engine to collect sufficient information from databases on the Web to make it available through an elegant user interface. One can easily type any kind of question and this application of Web 3.0 will provide an accurate answer efficiently.

2. **Siri**

   Apple's Siri is another popular application of the semantic internet. Its voice recognition software is the key element of Web 3.0. The semantic internet will help Siri and other voice assistants to provide conclusive answers to help users with information for a wide range of issues.

3. **Flickr**

   Flickr is a Web 3.0 application which has over 17 million monthly visitors every year. Flickr is known as the photo-sharing site that allows users to search, create, and upload images as well as photo albums to share with a community. The application of Web 3.0 will make it easier and faster to search for images and help in user interaction efficiently and effectively.

4. **Sapien**

   Sapien web 3 app is a decentralized social network tool that is released on a Blockchain-based platform. This application allows users to build Ethereum based Blockchain applications with no requirements for payments and ads. This application also offers services and technologies that help people to communicate, share, transact and create multiple communities using tools.

5. **Brave**

   Brave is claimed to be one of the most secure browsers to date. It guarantees all kinds of invasive ads blockage, cookies blockage, cross-site tracker blockage and provides malware & phishing protection. Brave also promises to block trackers and deliver complete privacy to users by leveraging Blockchain technology. Moreover, it is faster as well as more secure than Google or any other mainstream browser.

ADVANTAGES

- Personalisation of the internet to a greater extent.
- Proficient looking and Better showcasing.
- More adequate and accurate search results.
- Perusing the internet more efficiently in a more efficient manner.
- Web 3.0 will assist vendors in better marketing their products.
- Web 3.0 doesn't require the control of a single entity. Larger businesses may no longer have complete control over the internet. As a result, decentralised apps, also known as dApps, cannot be filtered or limited in any way.
- Sellers can comprehend your buying demands and display the items and services that you are interested in acquiring with the aid of Web 3.0's artificial intelligence. This allows you to see more relevant and better adverts that are more likely to be valuable to you.
- As the internet becomes more individualised, working on it becomes increasingly simpler

DISADVANTAGES

- Web 1.0 sites will appear to be substantially more outdated.
- Many laws needed to be changed for security and ownership of user's data.
- Regulating is difficult. Decentralization may make it more difficult to oversee and regulate Web 3.0. This might lead to an increase in cybercrime and online abuse, among other things.

- It's difficult for newbies to grasp
- More time will be spent on the internet
- Less progressed gadgets won't have the option to deal with Web 3.0.Web 3.0 will necessitate faster CPUs. Web 3.0 will be incompatible with older devices. As a result, to utilize the future version of the internet, you'll need a gadget with above-average specs.
- Owners of existing websites will be forced to modernize. As apps and websites that use Web 3.0 grow more popular, incumbent firms will be forced to enhance their digital services to avoid losing market share.
- Access to one's personal and political data is made easier. Web 3.0 is a massive and linked network. Though this is one of its advantages, the neural network also makes it simple for anybody to obtain access to the public and private information you provide online. This hampers privacy.

CONCLUSION

Web 3.0 is a massive transformation that will build the internet from the ground up. The main principle is that it will be decentralized rather than controlled by governments and corporations, as is the case with today's internet, implying that none of the firms would have control over the user's online activities. Web 3.0 eliminates the need for a middle man during transactions and streamlining operations. Therefore, with web 3.0 already rolled down, the internet is definitely going to improvise the traditional way of operations, making users more authoritative and bringing all-around transparency in all kinds of dealings. This made internet exponentially more integrated in our daily lives.

3 HYPERAUTOMATION

BY- M.LIKITHA
II CSM
20251A6618

Hyperautomation is the term initiated by Gartner (A management consulting company).

"Hyperautomation has shifted from an option to a condition of survival," said Fabrizio Biscotti, research vice president at Gartner.

Basically, Hyperautomation is an approach that enables organisations to rapidly identify, evaluate and automate as many processes as possible using technologies like robotic process automation (RPA), low-code application platforms (LCAP), artificial intelligence (AI) and virtual assistants.

Technologies, tools or platforms that can be included:
- Robotic process automation (RPA)
- Artificial intelligence (AI)
- Machine learning

- Event-driven software architecture
- Business process management (BPM) and intelligent business process management suites (iBPMS)
- Integration platform as a service (iPaaS)
- Packaged software

We see 4 aspects of hyper-automation in enabling higher levels of automation:

- Use of existing automation/digital transformation technologies like RPA and process mining
- Reliance on machine learning to automate operational decision making
- Organisational and cultural change to drive fast experimentation and rapid adoption of automation technologies
- Process simplification to reduce automation challenges

Due to several issues, traditional, product-based automation approaches with limited reliance on machine learning have failed to deliver significant benefits:

- Process complexity has slowed down automation efforts even in rules-based processes.
- Employees have yet to adopt a culture of looking for automation opportunities and rapidly experimenting with new technologies
- Most efforts did not rely on building custom machine learning models which limited application areas

All of these lead companies to look for different approaches.
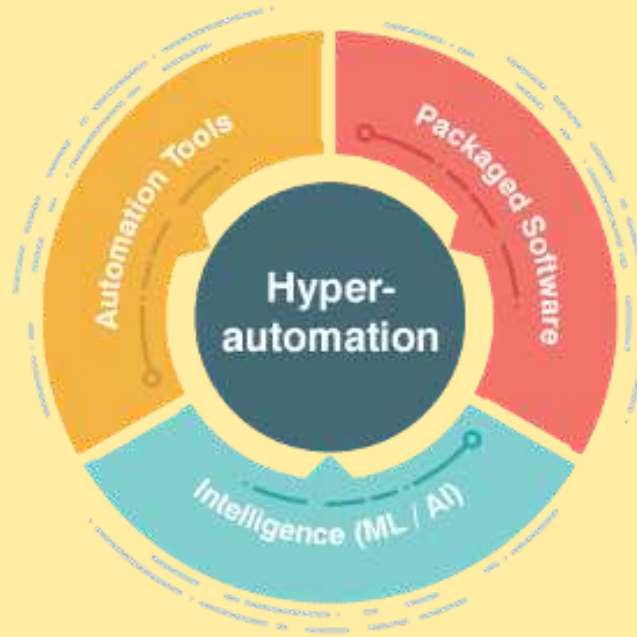
APPLICATIONS:

1) Accounts payable

Processes of receiving, and paying invoices from suppliers lead to the risk of errors, consuming a lot of time when it is maintained manually.

But with machine learning and other automation strategies, technologies like Optical Character Recognition, and RPA(Robotic process automation) are used by business strategies to automate tasks in AP (Accounts Payable).

2) Banking customer onboarding

In banking sector, customer onboarding is a documentation oriented area due to know-your-customer (KYC) regulations. The processes involve

- identity verification
- customer due diligence
- scoring
- reporting
- account activation

Automation of customer onboarding is provided by
- Pre-trained bots to extract information from documents, input data into their systems and build risk profiles via machine learning
- Human-in-the-loop and machine learning models to enable verification and validation of information
- Intelligent bots are trained by historical data to improve their accuracy

3)Anti Money Laundering (AML)

To prevent fraud in transactions, companies can either work with end-to-end AML solutions or combine RPA bots to provide automation:
- RPA bots collect related data and processes to validate customer records

Fraud detection models identify unusual patterns through ML algorithms
- RPA bots perform follow-up actions

4)Customer Service Operations

Three technologies are involved in the end-to-end automation of serving simple customer requests:
- NLP: Customer input (e.g. email, document, query) understanding
- Machine learning algorithms to classify customer requests and match them to potential actions
- RPA bots or scripts for output (e.g. sending response emails or messages)

Advantages :

Agility: The business doesn't need to rely on a single technology for automation purpose. Reliance on a suite of tools along with cultural change, enable organisations to achieve scale and flexibility in operations.

Enabling employees and improving their productivity: Automation frees the time of employees so that they can focus on more value-added tasks.

Improved collaboration: Hyperautomation enables businesses integrate digital technologies across their processes and legacy systems. With the integration of technologies, stakeholders have better access to data and can communicate seamlessly throughout the organization.

Disadvantages :

Challenges in using AI in automation: The risk of data privacy issues may occur when you share personal data with AI vendors, yet, you can't build everything yourself. Therefore, companies should invest in privacy-enhancing technologies such as data masking.

Challenges in process simplification: Most processes are not well documented. Process mining tools can help organisations understand processes that rely on log files but still important process information such as the content of calls are hard to analyse, creating challenges.

Organisational challenges: Avoidance of potential errors and inertia are responsible for most cases of slow adoption of automation. Employees should be empowered to run experiments on sandboxes and digital twins to quickly see the impact and challenges of potential automation technologies.

4 BUSINESS INTELLIGENCE

BY- CH. MONICA CHOWDARY
III CSE-A
19251A0516

Business intelligence (BI) refers to the procedural and technical infrastructure that collects, stores, and analyses the data produced by a company's activities. It combines business analytics, data mining, data visualization, data tools and infrastructure, and best practices to help organisations to make more data-driven decisions.

WHAT IS BI?

Business Intelligence enables businesses to have insight into what their competitors are doing and enables them to make informed and educated decisions for plans. Business Intelligence has a direct impact on organisation's strategic, tactical and operational business decisions. BI supports fact-based decision making using historical data rather than assumptions and gut feeling.

WHY BI IS IMPORTANT?

> A real-time enterprise without real-time business intelligence is a real fast, dumb organization.
>
> Stephen Bobst, CTO Teradata

- Measurement: creating KPI (Key Performance Indicators) based on historical data
- Identify and set benchmarks for varied processes.
- With BI systems organisations can identify market trends and spot business problems that need to be addressed.
- BI helps on data visualisation that enhances the data quality and thereby the quality of decision making.
- BI systems can be used not just by enterprises but SME (Small and Medium Enterprises)

HOW BUSINESS INTELLIGENCE SYSTEMS ARE IMPLEMENTED?

- Raw Data from corporate databases is extracted. The data could be spread across multiple heterogeneous systems.
- The data is cleaned and transformed into the data warehouse. The table can be linked, and data cubes are formed.
- Using BI system the user can ask queries, request ad-hoc reports or conduct any other analysis.

EXAMPLES OF BUSINESS INTELLIGENCE SYSTEM USED IN PRACTICE

In an Online Transaction Processing (OLTP) system information that could be fed into product database could be to

- add a product line
- change a product price

Correspondingly, in a Business Intelligence system query that would be executed for the product subject area could be, did the addition of new product line or change in product price, increase revenues.

In an advertising database of OLTP system query that could be executed are

- Changed in advertisement options
- Increase radio budget

Correspondingly, in BI system query that could be executed would be how many new clients added due to change in radio budget.
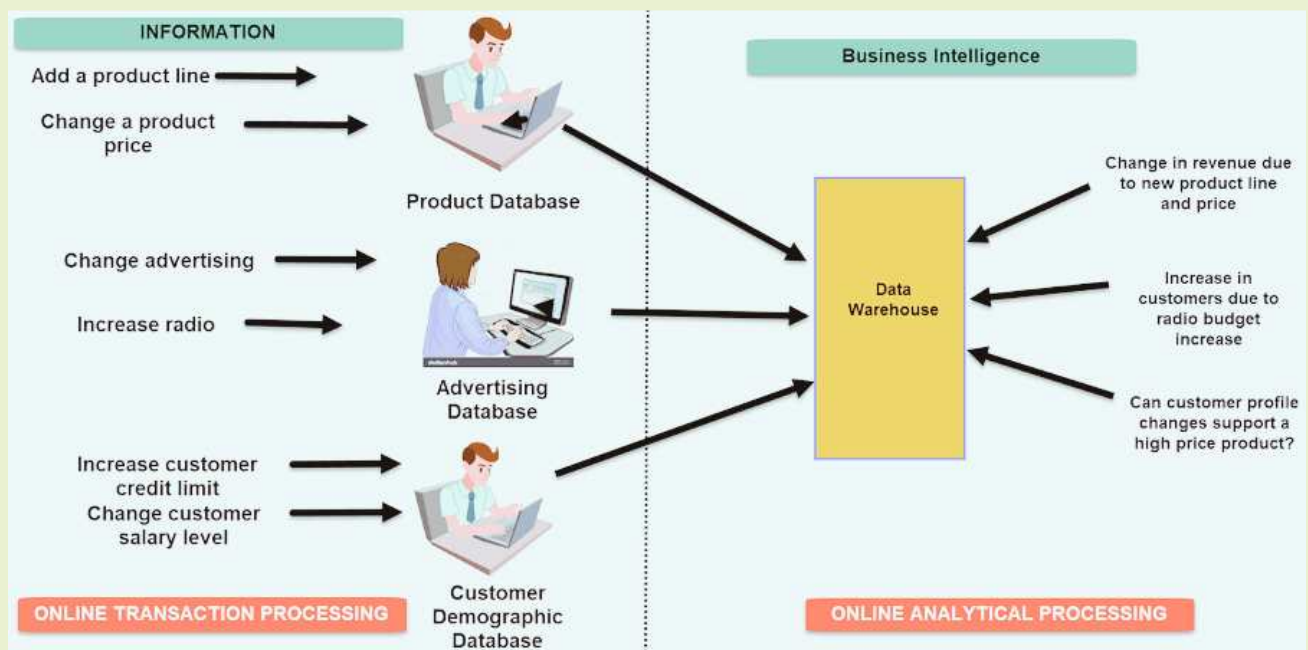
ADVANTAGES OF BUSINESS INTELLIGENCE

Here are some of the advantages of using Business Intelligence System:

1. Boost productivity

With a BI program, It is possible for businesses to create reports with a single click thus saves lots of time and resources. It also allows employees to be more productive on their tasks.

2. To improve visibility

BI also helps to improve the visibility of these processes and make it possible to identify any areas which need attention.

3. Fix Accountability

BI system assigns accountability in the organisation as there must be someone who should own accountability and ownership for the organisation's performance against its set goals.

4. It gives a bird's eye view:

BI system also helps organisations as decision makers get an overall bird's eye view through typical BI features like dashboards and scorecards.

5. It streamlines business processes:

BI takes out all complexity associated with business processes. It also automates analytics by offering predictive analysis, computer modelling, benchmarking and other methodologies.

6. It allows for easy analytics.

BI software has democratised its usage, allowing even non technical or non-analysts users to collect and process data quickly. This also allows putting the power of analytics from the hand's many people.

CONCLUSION

BI(Business Intelligence) is a set of processes, architectures, and technologies that convert raw data into meaningful information that drives profitable business actions.BI systems help businesses to identify market trends and spot business problems that need to be addressed.BI technology can be used by Data analysts, IT people, business users and the head of the company.BI systems help organisations to improve visibility, productivity and fix accountability.
The drawbacks of BI is that it is time-consuming, costly and a very complex process.

5 INTERNET OF BEHAVIOUR (IOB)

BY- GUNDALA TRIPTHI
III CSE-A
19251A0527

Internet of behaviour (IoB) is the extension of Internet of Things (IoT).As the need for simple user experience has to be expanded and evolve in terms of its complexity, i.e. the way in which devices are interlinked, the computations that can be processed by these devices autonomously, and the data that is stored in the cloud evolve in a more complex way, IoT has to be extended as IoB. The shift to mobile devices has ultimately changed the way people communicate and interact with the world around them. The usage data collected by these IoT devices provide valuable information about users' interests, behaviour, and preferences.

WHAT IS THE INTERNET OF BEHAVIOR AND HOW DOES IT WORK?

Internet of Behavior, also known as IoB, can be defined as the collection and use of data to drive behaviors. Wearable technologies, individual online activities, and household electrical devices collect this data, which can provide valuable information about user behavior and interests. It is based on human psychology perspectives such as purchasing or following a specific online brand to track and interpret those behaviors using emerging technological innovations and developments in machine learning algorithms.

IoB is the combination of 3 fields:

- Technology
- Data Analytics
- Behavior Science

In theory, IoB could provide organizations with critical insights that enable them to increase productivity. As an example, consider Uber and its IoT application. It's used to keep track of drivers and passengers.

A survey is conducted at the end of each journey to evaluate the passenger experience. They can go even further by using IoB instead of IoT to collect data without the need for a survey to evaluate the experience.So, that the necessary changes could be made to attract more customers and to enhance better user experience.

IMPORTANCE OF INTERNET OF BEHAVIOR

IoB provides benefits such as better understanding how users interact with products, gaining greater insight into shopping patterns, providing real-time assistance, and communicating with customers in ways that were previously not possible. Furthermore, the IoB concept revolves around proper behavioral data analysis and understanding, as well as the desire to apply that enhanced knowledge to create and promote customized products and services that will be of greater value to consumers and businesses. Corporations and other organizations are heavily investing in this technology to boost their bottom lines.

BENEFITS OF IOB IN DIGITAL MARKETING

1. Market products more effectively to customers- Many digital marketing agencies are already using analytics tools to uncover insights into common consumer behaviours. Marketers can use the IoB to analyse customer purchasing habits across platforms, gain access to previously unobtainable data, redefine the value chain, and even provide real-time point-of-sale notifications and targeted ads.

2. Improve user experience- Designing UX is a crucial part of sales. Organisations can have a better understanding of people's attitudes toward specific products or services thanks to the knowledge provided by IoB, making it even easier to resolve customer concerns.

3. Enhance public health- Companies in the manufacturing industry are already using sensors and RFID tags to determine whether or not on-site employees wash their hands regularly. Furthermore, computer vision can determine whether or not employees are following mask protocol or social distancing directives. In the health industry, providers can track patients' activation and engagement efforts.

4. Improve public safety- Monitoring public safety is opening up exciting new opportunities in a variety of industries. Vehicle telematics is used in one application to track driver behaviour and flag erratic or dangerous behaviour.

WHAT DOES THE FUTURE HOLD FOR IOB?

It is estimated that by the end of 2025, more than half of the world's population will be subject to at least one IoB program, whether from a commercial or governmental source. IoB, like other technology trends such as AI and machine learning, is likely to spark significant debate about the ethics vs. positive applications of this technology. According to these experts, by 2023, the individual activities of 40% of the global population will be tracked digitally to influence their behaviour through the IoB concept.

CONCLUSION

IoB has its own share of advantages and disadvantages, like any other technology. It has the potential to simplify consumers' lives, improve businesses, and assist governments in providing better services to their citizens.

The challenge is to avoid negative consumer reactions, it will be critical to strike a balance between personalised offers and intrusion. Strong and fundamental basics of cybersecurity will result in better implementation of IoB.

6 METAVERSE

BY- ADDEPALLI SAI SRIYAM
II CSE-A
20251A0531

Whether you've come across Facebook rebranded as Meta, live virtual concerts, or a digital art gallery– there's no escaping the internet's favourite buzzword: the "Metaverse." CEOs like Mark Zuckerberg or Satya Nadella talk about it, the metaverse is the future of the internet. So, what exactly is "Metaverse" is it a video game or a deeply uncomfortable and enhanced version of worse zoom?

The term metaverse does not denote or refer to any specific type of technology, metaverse is a concept of a persistent, online, 3D universe that combines multiple different virtual spaces. It is a virtual reality / augmented reality universe that helps you build social connections virtually and allows

users to work, meet, game, and socialize together in these 3D spaces.

Metaverse is a place parallel to the physical world, where you spend your digital life. A place where you and other people have an avatar, and you interact with them through their avatars.

This concept of "metaverse" or the term "metaverse" originated in the 1992 science fiction novel *Snow Crash* as a portmanteau of "meta" and "universe." Metaverse development is often linked to advancing virtual reality technology due to increasing demands for immersion. In 2011 a dystopian science fiction novel, Ready Player One which was later adapted into a film in 2018 is based on a similar platform as well where "The OASIS", a virtual society and a massive multiplayer online role-playing game which can be accessed with a VR head set and wired gloves.

When seen in movies people generally love this kind of technology but in reality, the implementation is not so easy and its features not so fictional.

What features does Metaverse have? Or What can you do in Metaverse?

Inside the metaverse, users can engage in twelve types of activities, they can:
- Purchase and monetize real estate
- Create scenes, games, and other VR experiences
- Express yourself through customizable avatars
- Meet and collaborate with remote colleagues
- Socialize and make new friends
- Shop for real and virtual products
- Attend concerts, trade shows, and learning events
- Play virtual reality games
- Sell in-game assets for cryptocurrency tokens
- Invest in digital artwork through NFTs
- Brainstorm and design products in 3D

The promises and possibilities of the metaverse are enormous – and many companies are developing apps, products, and services to help develop the

metaverse and to serve its users in a more immersive digital world.

It's said that just like how every coin has two sides, each update or change be it in technology or software or something else has its pros and cons.

Similarly, Metaverse has a darker side as well.

The biggest challenges of the metaverse that have been raised so far by the

public are:

- Privacy Issues
- Health concerns
- Access inequality
- Metaverse Law (do laws exist in metaverse)
- Desensitization
- Protection of Kids and Identity Hacking

The conceptual scope of the metaverse appears to be limitless. It will range from your home, street, office, and town or city, through to the solar system itself, and everything in between. While a single, united metaverse is likely a long way off, we already can see developments that may lead to its creation. Perhaps we'll live in the metaverse intermittently. But in the meantime, we can already experience metaverse-like projects and continue to integrate blockchain more into our daily lives.

7 EDGE COMPUTING

BY- SUMA MALLAPRAGADA
II CSE-C
20251A05G5

The growing need for automation of tasks motivates the integration of the required devices to operate via "interactivity" to deliver tasks in the nick of time. Integration ensuring safety, reduction in transmission costs, wider and convenient accessibility in every niche is vital and highlights the need of a framework operating on distributed computing involving data sources and specific servers comprising a local area network in the vicinity of data sources. Edge Computing, as it is called, provides the bandwidth to analyze the massive data flowing in from sources without costs of latency, delay in processing and network disruptions. Storage and computing resources from the data center are distributed to the point where the data is generated, eliminating the reliability on a central data center incorporating the client-server architecture.

The role of Edge Computing in analysing quality and monitoring operational tasks in the Manufacturing sector; nutrient delivery and optimal harvest time determination in Farming demonstrates the efficiency of distribution. Data Sovereignty is demonstrated via edge computing as it helps process primary data subject to rules at a regional level for further processing on the cloud.

The hardware involved for Edge computing must be compact to be mountable anywhere and rugged for use in extreme environments, with sufficient storage and rich connectivity options on a wide power range, meeting the performance requirements for the tasks they perform. The processors in use involve a significant number of threads, cores, and higher clock frequencies for faster task completion.

Edge computing solutions can connect to the internet to offload critical data via cellular 4G, LTE, and 5G connectivity and allow redundancy with multiple SIM module sockets. The Trusted Platform Module (TPM) 2.0. makes edge computing devices secure via a crypto processor through integrated cryptographic keys. Employing VPUs for machine vision and FPGAs for flexibility promise the boost of Edge Computing.

Though Edge Computing established its role in analysis and monitoring, increase in storage capacity and security challenges are highlighted. The variation in the setup of edge devices and the involvement of non-uniform authentication standards should be addressed to ensure overall network security.

Storage capacity could be improved with a B-Tree structuring of hardware. Improvements in VLSI design could help curb hardware attacks, and would provide hardware designed to make recognition prominent.

Edge Computing tends to be a helpful solution for Sustainable Development. It encourages the use of existing infrastructure with a rugged design to encourage resource efficiency and green computing; ensures Hazard Management through quick communication modes, thereby reducing emissions and pollution.
It also helps organizations choose products and solutions compatible with their sustainability goals through efficient analytics provided with the correct sets of data chosen for analysis.

CONCLUSION
Edge Computing is thus an option to manage vast data with the evolution and burgeon of 5G,6G and 7G, leveraging IoT and Neuromorphic Computing to process large streams of data to ensure smart life.

8 FINTECH

BY- MANAAL GHOUSE
III CSE-C
19251A05F8

'Fintech' as a term is a combination of the words 'finance' and 'technology' refers to any business that uses technology to enhance or automate financial services and processes. It encompasses a rapidly growing industry that serves the interests of both consumers and businesses in multiple ways. From mobile banking and insurance to cryptocurrency and investment apps, fintech has a seemingly endless array of applications.

Some examples are:

1. Crowdfunding platforms :

Companies like GoFundMe,Patreon allow individuals to send or receive investors for a project or a startup.

2.Blockchain and Cryptocurrency

The whole point of transactions between real currency and crypto currency is facilitated through fintech apps like wazirx, coindcx etc.

3.Mobile Payments

Nowadays everyone with a smartphone uses some form of mobile payment. In fact the global mobile payment market is set to surpass $1.5 trillion in 2022.

4. Insurance

 Fintech has even disrupted the insurance
industry. In India Insuretech (as it's called) fundings have increased from $11 million in 2016 to $287 million in 2020. PolicyBazaar and Acko are some examples;

5. Budgeting Apps

 The fintech revolution has prompted the
development of financial services apps for consumers to keep track of their income and expenses and has hence transformed the way customers think about their money.

6. Stock Trading Apps

 Perhaps one of the most popular inventions in this
space has been the development of stock-trading apps. When once investors had to go to a stock exchange, they can now buy and sell stocks at the tap of a finger on their mobile device.
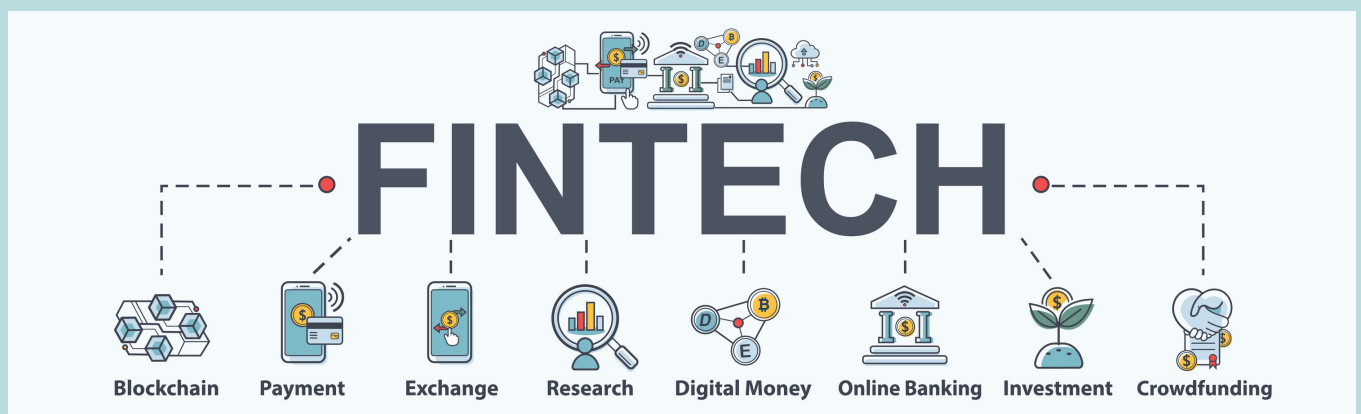
FUTURE OF FINTECH

Fintech continues to grab heavy investment in returns for heavy promises of relevant transformation in the current trend. Indian fintech jar is engaging with several investors to raise about $50 million at a $350 million valuation

A huge part of this industry is now also focusing on financial literacy of kids. These apps offer slick educational videos and tools while enabling children and teenagers to save and spend- and even invest in stocks. These apps pair with plastic debit cards keeping in mind the kids and teens using them.

This has created a new niche within the already wide market of expanding fintech technology.

9 ARTIFICIAL INTELLIGENCE AND CONSCIOUSNESS IN INTELLIGENT MACHINES

BY- G.CHAITANYA DEEPTI
III CSE-A
19251A05E3
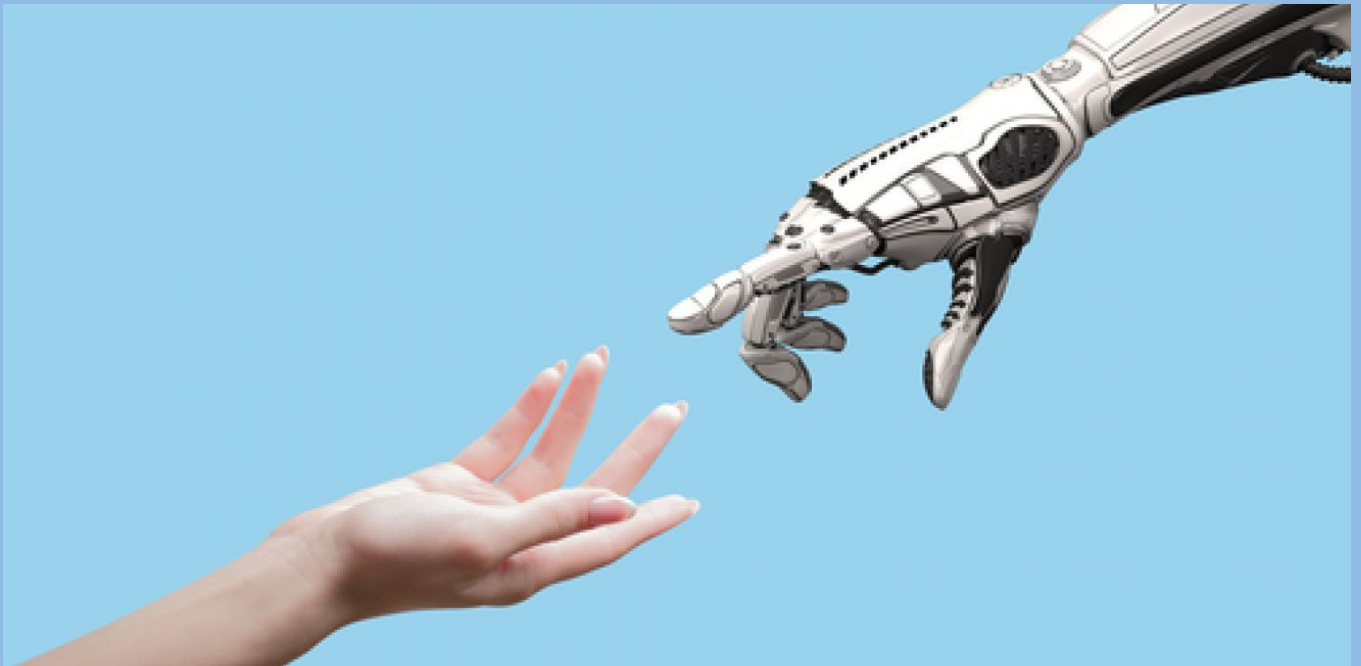
Robots are machines that are programmable by computer and can carry out many complex operations. But the question is, will they also be capable of developing feelings and thoughts. Consciousness refers to a state of being aware and responsive towards the surroundings. Humans are conscious beings. They can think, feel and respond to their surroundings based on the stimulus that they receive. There might be machines of human-level intelligence that can contribute to politics, economics, and also warfare in the future that is fast approaching. True Artificial Intelligence will impact humankind's future and also decide if there is one, especially since there will be more and more powerful machine learning algorithms coming into light.

CONSCIOUSNESS

We can explain human consciousness as something that humans have as a function but there is no accepted definition of consciousness. A subject is conscious when she feels visual experiences, bodily sensations, mental images, and emotions from the point of view of our experience. In the coming years, machines will get smarter. If we cannot distinguish a machine from a human, then we have reason to think that this machine is intelligent. Therefore we have to try to know if an intelligent machine can be considered conscious. This requires us to understand the relationship between AI and human consciousness.

RELATIONSHIP BETWEEN CONSCIOUSNESS AND ARTIFICIAL INTELLIGENCE

AI can be analysed by viewing it as a composition of hardware and software. From the point of view of hardware, computers and robots are intelligent machines whose physical and chemical components are not the same as human brains. The human brain is also hardware, but it is a physiological entity instead of a physical or chemical one which is different from intelligent machines that use fixed hardware connections. If we develop an intelligent machine that is a reflection of human physiology, its learning may still be independent. But this does not mean that we cannot couple a machine with human intelligence. The intelligence of AI lies in its software. AI, when coupled with human intelligence, will extend the human brain to achieve many tasks as AI is far superior to human beings in computing speed, capacity, and accuracy.

CONCLUSION

The development of consciousness in machines is far more dependent on the understanding of consciousness existing among human beings rather than the development of AI. But this does not mean that AI is not a primary contributor to this cause. The alternative is that computers will remain only sophisticated machinery, ghostlike empty shells, devoid of what we value most: the feeling of life itself. Computers might take over the world with AI within years. When that happens, we need to make sure that their goal is the same as ours.