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AY:20-21

Report on Challenges in Computer Vision using Deep Learning & IoT Protocols, (Hands on - Contiki, Tensorflow)

Name of the program : Challenges in Computer Vision using Deep Learning & IoT Protocols, (Hands on - Contiki, Tensorflow)

Date : 20-07-20 to 24-07-20

Venue: ONLINE

Description : Deep Learning and IoT are fast growing in today's research, and there areas provides solutions to most of the Vision, Speech related and real time problems. In the FDP, the sessions focussed on few essential concepts in Computer Vision and Deep Learning. Also insight on the architecture of Communication Technologies of IoT. and Research challenges in area of IoT Security were discussed. Demo sessions using Contiki for IoT protocol implementations were covered

The workshop covered following topics

Day 1: Basic Areas of CV: Model Fitting, Motion Detection & Tracking, and Object Detection

Day 2: IoT: Introduction, IoT Architecture, Protocol Stack of IoT, Challenges of IoT

Day 3: Communications Technologies of IoT- 6LowPAN, Zigbee, BLE. Hands on- Protocol Stack of IoT, IoT Security.

Day 4: Deep Learning in CV: Object Detection by R-CNN, YOLO, Generative Models: GANs, VAEs & Applications.

Day 5: Hands on- Basics of OpenCV, Tensor Flow with Keras, YOLO – for Plant Disease Detection, Building CNN Model using TF, Object Classification, PCD.

Outcomes:

1. Learn key topics of Computer Vision, Deep Learning & their applications.
2. Obtain comprehensive understanding of the technologies in IoT
3. Gain knowledge on implementation details of (a)Protocols on Contiki (b)DL using OpenCV.


Speaker details: Resouce persons were from NIT, HCU and Industry –SmartBridge

Number of participants/students benefited: 51 Participants attended & have given Excellent Feedback. Feedback with respect to Quality of the Content in the session, content delivery by resource person, relevance of the content to the FDP, useful of the content for the research/job, overall session feedback was taken. Overall feedback was analyzed to be 75% to be excellent 25% -very good and good. All the participants expressed that the sessions were very good.

Protocol Stack of IoT

	IETF IoT Protocol Stack	TCP/IP Protocol Stack
Application Layer	IETF COAP	HTTP, FTP, DNS, SSH, SMTP, NTP, ...
Transport Layer	UDP	TCP, UDP
Network Layer	IPv6, IETF RPL	IPv4, IPv6
Adaption Layer	IETF 6LoWPAN	N/A
MAC Layer	IEEE 802.15.4 MAC	Network Access
Physical Layer	IEEE 802.15.4 PHY	


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 Co-ordinator


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