



NATIONAL INSTITUTE OF TECHNOLOGY WARANGAL (NITW) ONLINE FACULTY DEVELOPMENT PROGRAMME (FDP) – REPORT

Emerging Technologies for Engineering Education: Quantum Computing, AI-Driven Cyber Security and Machine Learning 11–22 August 2026

Session Details:

Programme: Online Faculty Development Programme (FDP)

Dates: 11–22 August 2026

Duration: 10 days

Title: Emerging Technologies for Engineering Education: Quantum Computing, AI-Driven Cyber Security and Machine Learning

Mode: Online

Brief of the Event

A Ten-Day Online Faculty Development Programme (FDP) on “Emerging Technologies for Engineering Education: Quantum Computing, AI-Driven Cyber Security and Machine Learning” was conducted from 11th to 22nd August 2026. The programme was designed to provide faculty members with contemporary knowledge and practical perspectives on emerging technologies relevant to engineering education, research and professional practice. The sessions covered Machine Learning, Deep Learning, Quantum Computing, AI for Cyber Security, IoT Security, Biometric Security, Computer Vision, Medical Image Processing, Reinforcement Learning, Blockchain, AI model security and privacy, Quantum Communications, Ensemble Learning and Deep Learning for Autonomous Vehicles.

The programme featured resource persons from NIT Warangal, IIT Indore, IIT Jodhpur, NIT Raipur and industry. The sessions combined foundational concepts with advanced applications, providing participants with a broad overview of emerging technologies and their relevance to engineering education.

Objective of the Event

- To enhance faculty knowledge and awareness of emerging technologies and their applications in engineering education.
- To strengthen understanding of Machine Learning, Deep Learning, Quantum Computing and AI-driven Cyber Security.
- To expose participants to contemporary applications such as computer vision, medical image analysis, IoT security and autonomous vehicles.
- To provide insights into security, privacy and responsible considerations in AI and intelligent systems.
- To encourage participants to integrate emerging technologies into teaching, learning, research and project-based activities.

Outcome of the Activity

- Participants gained exposure to current concepts and applications in Machine Learning, Deep Learning and Quantum Computing.
- The FDP strengthened understanding of AI applications in cyber security, IoT security and biometric security.
- Participants were introduced to advanced applications including rPPG for computer vision, medical image segmentation and disease diagnosis using Machine Learning.

- The sessions provided insights into Quantum Image Processing, Quantum Communications and Quantum Computing applications for smart grids and future technologies.
- Participants developed awareness of security and privacy issues associated with AI models and contemporary intelligent systems.
- The programme supported the integration of emerging technologies into engineering teaching, research and practical learning activities.

Topics Covered

- Machine Learning fundamentals and the role of data-driven learning in engineering applications.
- Neural Networks and Deep Learning: basic architectures, learning principles and practical application areas.
- Quantum Computing foundations, quantum information concepts and the emerging quantum technology ecosystem.
- Quantum Algorithms and their significance for solving selected computational problems.
- Artificial Intelligence for Cyber Security, including AI-assisted threat detection and intelligent security analytics.
- Cyber Security in Industry 4.0 and the protection of connected, automated and data-driven industrial environments.
- IoT Security: challenges, threats, attack surfaces and approaches for securing connected devices and systems.
- Biometric Security using Deep Learning for authentication and identity-related applications.
- Future applications of Quantum Computing across engineering and technology domains.
- Quantum Computing applications for Smart Grid and intelligent energy systems.
- Remote Photoplethysmography (RPPG) for non-contact human-vital estimation using computer vision.
- Quantum Image Processing and the representation/processing of image information using quantum concepts.
- Medical Image Segmentation using Deep Learning for extracting meaningful structures from medical images.
- Machine Learning for Disease Diagnosis and data-driven healthcare decision support.
- IoT Security using Blockchain for trust, authentication, integrity and secure distributed coordination.
- Security and Privacy considerations in AI models, including risks associated with intelligent and data-driven systems.
- Quantum Communications and their relevance to secure communication and future information networks.
- Ensemble Learning methods for combining multiple predictive models to improve robustness and performance.
- Deep Learning for Autonomous Vehicles, including perception, decision support and safety-oriented intelligent functions.

Participant Details:

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FDP Session Schedule

Day	Date	Morning Session (10 AM–12 PM)	Resource Person	Afternoon Session (2 PM–4 PM)	Resource Person
1	11 Aug 2026	Machine Learning Fundamentals	Prof. Farooq Hashmi, NITW	Introduction to Neural Networks and Deep Learning	Prof. Venateshwararao Kagita, NITW
2	12 Aug 2026	Quantum Computing Foundations	Prof. Prakash Kodali, NITW	Quantum Algorithms	Prof. USN Raju, NITW
3	13 Aug 2026	AI for Cyber Security	Mr. Sai Satish, CEO, Indian Servers	Cyber Security in Industry-4.0	Prof. E. Suresh Babu, NITW
4	14 Aug 2026	IoT Security: Challenges, Threats, and Solutions	Prof. Venkanna U, NITW	Biometric Security using DL	Dr. Ilaiiah Kavati, NITW
5	17 Aug 2026	Quantum Computing in Future Applications	Prof. Prakash Kodali, NITW	Quantum Computing for Smart Grid	Prof. J. Chandra Shekhar, NIT Raipur
6	18 Aug 2026	RPPG for Computer Vision	Prof. Puneet Gupta, IIT Indore	Quantum Image Processing	Prof. USN Raju, NITW
7	19 Aug 2026	Medical Image Segmentation using DL	Prof. Puneet Gupta, IIT Indore	Reinforcement Learning	Prof. Gaurav Harit, IIT Jodhpur
8	20 Aug 2026	Disease Diagnosis using ML	Dr. Ilaiiah Kavati, NITW	IoT Security Using Blockchain	Prof. E. Suresh Babu, NITW
9	21 Aug 2026	Security and Privacy in AI Models	Prof. Venkanna U, NITW	DL for Autonomous Vehicles	Dr. Ilaiiah Kavati, NITW
10	22 Aug 2026	Ensemble Learning	Dr. Ramalinga Swamy, NITW	Quantum Communications	Prof. J. Chandra Shekhar, NIT Raipur

Resource Persons

Name	Institution / Profile
Prof. Venateshwararao Kagita	NIT Warangal
Prof. Farooq Hashmi	NIT Warangal
Prof. Prakash Kodali	NIT Warangal
Prof. USN Raju	NIT Warangal
Mr. Sai Satish	CEO, Indian Servers
Prof. J. Chandra Shekhar	NIT Raipur
Prof. Venkanna U	NIT Warangal

Prof. Puneet Gupta	IIT Indore
Prof. Gaurav Harit	IIT Jodhpur
Dr. Ramalinga Swamy	NIT Warangal
Prof. E. Suresh Babu	NIT Warangal
Dr. Ilaiyah Kavati	NIT Warangal

Day-wise Session Report

Day 1 – 11 August 2026

Morning Session (9:30 AM – 10:00 AM)

INVITATION

The Department of Computer Science and Engineering, MJCET, HYD
&
The Department of Electronics & ICT Academy, NIT Warangal,
Cordially invite you to the Inaugural Function of

FDP on “Emerging Technologies for Engineering Education: Quantum Computing, AI-Driven Cyber Security and Machine Learning”

11th to 22nd Aug 2026

Jointly Organized by
Electronics & ICT Academy, NIT Warangal,
and
Department of Computer Science and Engineering, MJCET, HYD
(Sponsored by the Ministry of Electronics and Information Technology (MeitY), GOI)

CHIEF PATRON
Janab Zafar Javeed,
Honorary Secretary, SUES

CHIEF GUEST
Prof. S. Anuradha
Chief Investigator
E&ICT Academy, NITW

GUEST OF HONOR
Prof. Surampudi Srinivasa Rao
Principal
MJCET, HYD

Prof. Mohammed Hamraj
Dean (Academics)
MJCET, HYD

Prof. Syed Ferhathullah Hussainy
Dean (Student Affairs) &
Controller of Examinations (A)
MJCET, HYD

Will preside over the function

Date & Time:
11th August 2026
at 9:30AM

Please join us at link:
<https://meet.google.com/jyn-rsvg-qxz>

ONLINE INAUGURAL SCHEDULE

Date: 11th Aug 2026 **Time:** 9:30 AM

TIME	PROGRAMME	
9:30 AM	Welcome Address	Prof. Syed Shabbeer Ahmad FDP Coordinator, Hod, CSED, MJCET, HYD
9:35 AM	Overview of the FDP	Prof. Ilaiyah Kavati FDP Coordinator, NIT Warangal
9:40 AM	Address by Dean-Academics, MJCET	Prof. Mohammed Hamraj Dean (Academics), MJCET, HYD
9:45 AM	Inaugural Address by Guest of Honor	Prof. Surampudi Srinivasa Rao Principal, MJCET, HYD
9:50 AM	Inaugural Address by the Chief Guest	Prof. S. Anuradha Chief Investigator, E&ICT Academy, NIT Warangal
9:55 AM	Vote of Thanks	Mr. M. A. Raheem FDP Internal Coordinator, MJCET, HYD

Please join us at link: <https://meet.google.com/jyn-rsvg-qxz>

Morning Session (10:00 AM – 12:00 PM)

Topic: Machine Learning Fundamentals

Resource Person:



Prof. Mohammad Farukh Hashmi, NIT Warangal

The session introduced the foundations of Machine Learning and its role in building data-driven intelligent systems. The discussion provided a basis for understanding learning from data, model development and application-oriented machine learning.

After Noon Session (2:00 PM – 4:00 PM)

Topic: Introduction to Neural Networks and Deep Learning

Resource Person:



Prof. Venkateswara Rao Kagita, NIT Warangal

The session introduced neural-network-based learning and the transition from conventional Machine Learning to Deep Learning. The discussion highlighted the relevance of deep models to AI applications and research.

About the Resource Persons

Prof. Mohammad Farukh Hashmi works at NIT Warangal in areas including biomedical image processing, deep learning for healthcare, computer vision, digital signal processing, machine/deep learning and IoT. His academic profile also lists courses such as Deep Learning Architectures and Machine Learning for Signal Processing.

Prof. Venkateswara Rao Kagita is an Assistant Professor in CSE at NIT Warangal. His research areas include Artificial Intelligence, Recommender Systems, Machine Learning and Deep Learning; he also handles courses including Machine Learning, Deep Learning and Artificial Intelligence.

Key Learning Points

- Understanding the role of Machine Learning in intelligent systems.
- Introduction to neural-network and Deep Learning concepts.
- Linking learning models with practical engineering applications.

Day 2 – 12 August 2026

Morning Session (10:00 AM – 12:00 PM)

Topic: Quantum Computing Foundations

Resource Person:



Prof. Prakash Kodali, NIT Warangal

The session introduced the fundamental concepts of Quantum Computing and its emerging relevance to engineering and computing. The discussion connected quantum concepts with future computational architectures and applications.

After Noon Session (2:00 PM – 4:00 PM)

Topic: Quantum Algorithms

Resource Person:



Prof. U. S. N. Raju, NIT Warangal

The session focused on the role of quantum algorithms in exploiting quantum computational principles for problem solving. It provided participants with a foundation for understanding algorithmic approaches in quantum computing.

About the Resource Persons

Prof. Prakash Kodali is associated with NIT Warangal and works across AI/ML, image processing, biomedical electronics, embedded systems and machine/deep learning applications. His profile also lists Quantum Computer Architecture among the courses handled.

Prof. U. S. N. Raju is an Associate Professor in CSE at NIT Warangal. His research areas include Computer Vision and Image Processing and Quantum Image Processing; his teaching includes Foundations of Quantum Computing, Quantum Computing and Quantum Technologies.

Key Learning Points

- Foundations of Quantum Computing and quantum technologies.
- Role of quantum algorithms in computational problem solving.
- Introduction to Quantum Image Processing.

Day 3 – 13 August 2026

Morning Session (10:00 AM – 12:00 PM)

Topic: AI for Cyber Security

Resource Person:



Mr. Sai Satish, CEO, Indian Servers

The session examined the role of Artificial Intelligence in Cyber Security, emphasizing intelligent approaches to identifying, analyzing and responding to cyber threats. The industry perspective connected cyber-security concepts with practical security challenges.

After Noon Session (2:00 PM – 4:00 PM)

Topic: Cyber Security in Industry-4.0

Resource Person:



Prof. E. Suresh Babu, NIT Warangal

The session discussed security requirements emerging from connected and automated Industry-4.0 environments, with emphasis on protecting IoT and networked systems.

About the Resource Persons

Mr. Sai Satish is the Founder and CEO of Indian Servers and is described by his organization as an ethical hacker, cyber-security expert, author and trainer. He has delivered extensive training and awareness programmes on cyber security and cyber crime.

Prof. Erukala Suresh Babu is associated with the CSE Department of NIT Warangal. His research areas include AI Security, Blockchain Technologies, Fog and Edge Security, IoT, IoT Security and Wireless Networks & Security.

Key Learning Points

- AI-assisted approaches to cyber-threat analysis.
- Security considerations in Industry-4.0 environments.
- Importance of IoT, network and blockchain-based security.

Day 4 – 14 August 2026

Morning Session (10:00 AM – 12:00 PM)

Topic: IoT Security: Challenges, Threats, and Solutions

Resource Person:



Prof. Venkanna Udutalapally, NIT Warangal

The session examined the security challenges associated with IoT and connected systems, including threats arising from device connectivity, network exposure and large-scale deployment.

After Noon Session (2:00 PM – 4:00 PM)

Topic: Biometric Security using Deep Learning

Resource Person:



Dr. Ilaiyah Kavati, NIT Warangal

The session discussed Deep Learning approaches for biometric security and identity-oriented applications, linking image processing, biometrics and security.

About the Resource Persons

Prof. Venkanna Udutalapally is an Associate Professor in CSE at NIT Warangal. His research areas include Autonomous Vehicles Security, IoT/IIoT, Network Security, Software Defined Networks and Security and Privacy on AI models.

Dr. Ilaiyah Kavati is an Assistant Professor in CSE at NIT Warangal. His research areas include Image Processing, Internet of Things, Biometrics and Security.

Key Learning Points

- IoT threat landscape and security requirements.
- Deep Learning applications in biometric security.
- Integration of AI, IoT and security concepts.

Day 5 – 17 August 2026

Morning Session (10:00 AM – 12:00 PM)

Topic: Quantum Computing in Future Applications

Resource Person:



Prof. Prakash Kodali, NIT Warangal

The session explored the future-facing role of Quantum Computing and its potential applications in engineering and technology. The discussion emphasized the importance of understanding quantum technologies for future research and innovation.

After Noon Session (2:00 PM – 4:00 PM)

Topic: Quantum Computing for Smart Grid

Resource Person:



Prof. J. Chandra Shekhar, NIT Raipur

The session connected Quantum Computing with Smart Grid applications, highlighting the potential of advanced computation for complex energy-system problems and future intelligent-grid research.

About the Resource Persons

Prof. Prakash Kodali's NIT Warangal profile lists AI/ML, image processing, biomedical electronics and machine/deep learning among his research areas and Quantum Computer Architecture among courses handled.

Key Learning Points

- Future opportunities enabled by Quantum Computing.
- Potential quantum applications in Smart Grid systems.
- Research scope for quantum-enabled engineering solutions.

Day 6 – 18 August 2026

Morning Session (10:00 AM – 12:00 PM)

Topic: RPPG for Computer Vision

Resource Person:



Prof. Puneet Gupta, IIT Indore

The session introduced Remote Photoplethysmography (RPPG) as a computer-vision approach for estimating human vital parameters from non-contact video. The topic connected computer vision, deep learning and healthcare-oriented sensing.

After Noon Session (2:00 PM – 4:00 PM)

Topic: Quantum Image Processing

Resource Person:



Prof. U. S. N. Raju, NIT Warangal

The session explored the processing of image information using quantum-computing concepts and highlighted Quantum Image Processing as an emerging research area at the intersection of quantum technologies and computer vision.

About the Resource Persons

Prof. Puneet Gupta is an Associate Professor in CSE at IIT Indore. His research interests include Computer Vision, Deep Learning and Image Processing, including non-contact estimation of human vitals such as heart rate, breathing rate and blood pressure.

Prof. U. S. N. Raju's research areas include Computer Vision and Image Processing and Quantum Image Processing. His NIT Warangal profile also lists Quantum Computing and Quantum Technologies among his teaching areas.

Key Learning Points

- Principles and motivation of remote physiological sensing from video.
- Computer Vision and Deep Learning for healthcare.
- Emerging concepts in Quantum Image Processing.

Day 7 – 19 August 2026

Morning Session (10:00 AM – 12:00 PM)

Topic: Medical Image Segmentation using Deep Learning

Resource Person:



Prof. Puneet Gupta, IIT Indore

The session addressed Deep Learning-based Medical Image Segmentation, focusing on the role of image analysis in healthcare applications and the extraction of meaningful anatomical or pathological regions from medical images.

After Noon Session (2:00 PM – 4:00 PM)

Topic: Reinforcement Learning

Resource Person:



Prof. Gaurav Harit, IIT Jodhpur

The session introduced Reinforcement Learning as a framework for sequential decision-making, where an intelligent agent learns through interaction with an environment and feedback.

About the Resource Persons

Prof. Puneet Gupta's research covers Computer Vision, Deep Learning and Image Processing, with applications in healthcare, biometrics, affective computing and human-vital estimation.

Prof. Gaurav Harit is a Professor in CSE at IIT Jodhpur. The institute profile states that he joined IIT Jodhpur in July 2010 after serving as an Assistant Professor at IIT Kharagpur. His broader academic work includes image analysis, pattern recognition, computer vision and machine learning.

Key Learning Points

- Medical image analysis and segmentation using Deep Learning.
- Role of intelligent systems in healthcare imaging.
- Reinforcement Learning for sequential decision-making.

Day 8 – 20 August 2026

Morning Session (10:00 AM – 12:00 PM)

Topic: Disease Diagnosis using Machine Learning

Resource Person:



Dr. Ilaiah Kavati, NIT Warangal

The session discussed the use of Machine Learning for disease diagnosis and data-driven healthcare decision support, highlighting how predictive models can assist analysis of complex medical data.

After Noon Session (2:00 PM – 4:00 PM)

Topic: IoT Security using Blockchain

Resource Person:



Prof. E. Suresh Babu, NIT Warangal

The session explored Blockchain as a mechanism for strengthening trust, authentication, integrity and secure coordination in IoT environments.

About the Resource Persons

Dr. Ilaiah Kavati works in Image Processing, IoT, Biometrics and Security. His research profile also includes work related to computer-vision-based autonomous-vehicle applications, supporting the session's interdisciplinary focus.

Prof. Erukala Suresh Babu's research includes AI Security, Blockchain Technologies, Fog and Edge Security, IoT Security and Wireless Networks & Security, making his expertise closely aligned with the session topic.

Key Learning Points

- Machine Learning for data-driven disease diagnosis.
- Blockchain-enabled trust and integrity for IoT.
- Integration of AI, healthcare and secure distributed systems.

Day 9 – 21 August 2026

Morning Session (10:00 AM – 12:00 PM)

Topic: Security and Privacy in AI Models

Resource Person:



Prof. Venkanna Udutalapally, NIT Warangal

The session focused on security and privacy considerations associated with AI models, emphasizing the need to understand threats, vulnerabilities and responsible handling of data and intelligent systems.

After Noon Session (2:00 PM – 4:00 PM)

Topic: Deep Learning for Autonomous Vehicles

Resource Person:



Dr. Ilaiah Kavati, NIT Warangal

The session connected Deep Learning with autonomous-vehicle applications, including intelligent perception and safety-oriented decision support. The topic also links Deep Learning with computer vision, IoT and autonomous systems.

About the Resource Persons

Prof. Venkanna Udutalapally's research includes Network Security, IoT/IIoT and Security and Privacy on AI models, directly supporting the security-oriented focus of the session.

Dr. Ilaiah Kavati works in Image Processing, IoT, Biometrics and Security. His research profile also includes work related to computer-vision-based autonomous-vehicle applications, supporting the session's interdisciplinary focus.

Key Learning Points

- Security and privacy risks in AI models.
- Need for trustworthy and privacy-aware AI systems.
- Quantum Communications as an emerging secure-communication paradigm.

Day 10 – 22 August 2026

Morning Session (10:00 AM – 12:00 PM)

Topic: Ensemble Learning

Resource Person:



Dr. Ramalingaswamy Cheruku, NIT Warangal

The session covered Ensemble Learning as an approach for combining multiple predictive models to improve generalization, robustness and decision-making performance. The topic is closely related to contemporary Machine Learning research and healthcare analytics.

After Noon Session (2:00 PM – 4:00 PM)

Topic: Quantum Communications

Resource Person:



Prof. J. Chandra Shekhar, NIT Raipur

The session introduced Quantum Communications as an emerging area connecting quantum information science with secure and future communication systems.

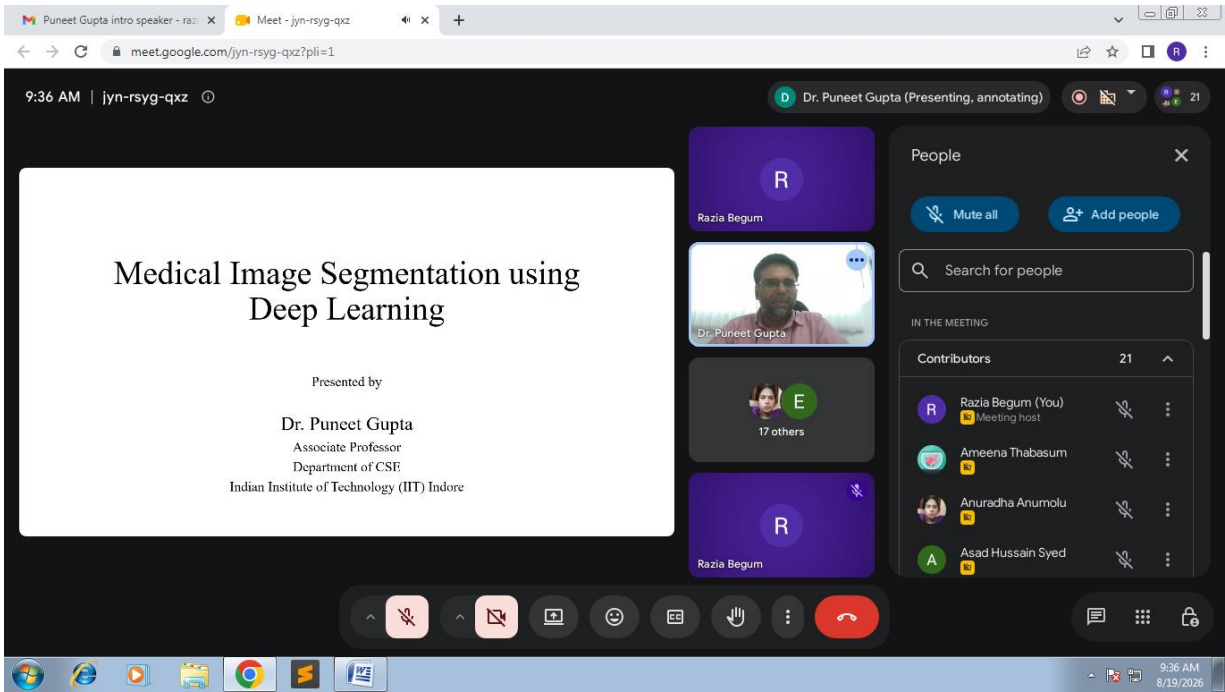
About the Resource Persons

Dr. Ramalingaswamy Cheruku's research areas include Machine Learning, Optimization, Deep Learning and Image Processing, with substantial research activity in ensemble learning and disease diagnosis.

Key Learning Points

- Combining multiple models through Ensemble Learning.
- Improving robustness and predictive performance.
- Deep Learning applications in autonomous vehicles and intelligent perception.

Attendance Screenshots:



2:10 PM | jyn-rsyg-qxz

Gaurav Harit (Presenting, annotating)

People

Mute all Add people

Search for people

IN THE MEETING

Contributors 20

- R Razia Begum (You) Meeting host
- D Dr. Jameel Hashmi
- E EICT User3 NITW Meeting host
- fareeha yasmmeen

Human beings do not learn from a concrete notion of training data.

- They learn through a reward-guided trial and error process.

Learning in humans is a continuous experience-driven process

- Decisions are made regarding actions to be performed
- Rewards/punishments received from the environment are used to guide the learning process for future decisions.

14:10 19-08-2026

10:33 AM | jyn-rsyg-qxz

You lost your network connection. Trying to reconnect.

Ilaiah Kavati (Presenting, annotating)

REAL Background clutter

MOHAMMED RAHMAT ...

EICT User3 NITW

Hajera Parveen

Mrs. Narala Swarnalath...

Imreena Ali

Mairaj Fatima Rahman

14 others

Momin Mahaboob Ali

10:17 AM | jyn-rsyg-qxz

You lost your network connection. Trying to reconnect.

Ilaiah Kavati (Presenting, annotating)

MOHAMMED RAHMAT ...

EICT User3 NITW

Hajera Parveen

Mrs. Narala Swarnalath...

Imreena Ali

Mairaj Fatima Rahman

11 others

Momin Mahaboob Ali

10:25 AM | jyn-rsyg-qxz

You lost your network connection. Trying to reconnect.

#MediaPipe

The 3D landmark detection module is a part of a computer vision framework that allows you to detect and track facial landmarks in real-time. This module is used to detect the position of 468 points on a face, which are used to create a 3D model of the face. This model is then used to track the face's position and orientation in real-time. The module is used to detect the position of 468 points on a face, which are used to create a 3D model of the face. This model is then used to track the face's position and orientation in real-time. The module is used to detect the position of 468 points on a face, which are used to create a 3D model of the face. This model is then used to track the face's position and orientation in real-time.



Attribution: MediaPipe

Ilaiah Kavati

E H

21 others

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Meeting host

Afroze Begum

Ajaz Fatima

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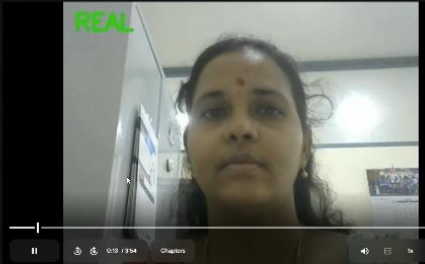
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10:31 AM | jyn-rsyg-qxz

You lost your network connection. Trying to reconnect.

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REAL



Attribution: MediaPipe

Ilaiah Kavati

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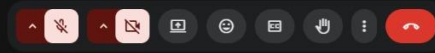
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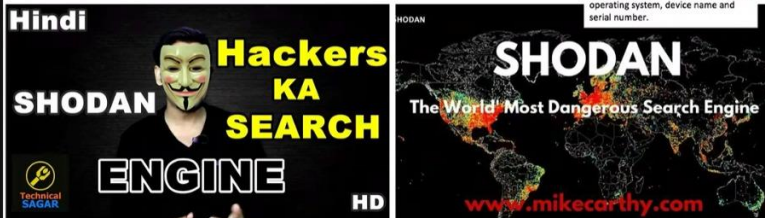
Securing IoT is a big problem?

❖ **Shodan** - Search engine for IoT

Tools: Shodan and Censys



Shodan and Censys are search engines that find servers and other devices connected to the Internet that use Internet protocols specifically associated with industrial control systems and, increasingly, IoT devices & systems. They retrieve metadata about the devices such as geographic location, operating system, device name and serial number.



People

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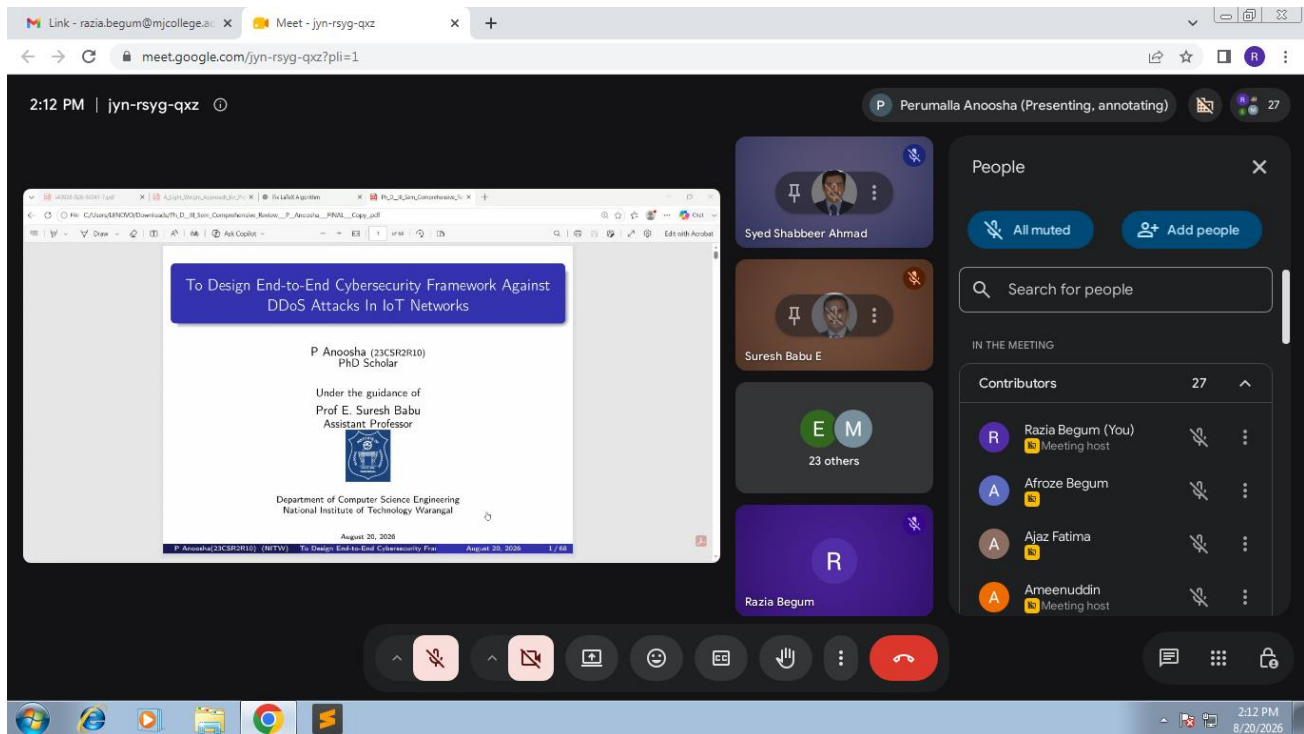
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Conclusion

The Ten-Day Online Faculty Development Programme successfully provided a structured learning platform on emerging technologies for engineering education. Through expert-led sessions covering Machine Learning, Quantum Computing, AI-driven Cyber Security and related advanced applications, the programme supported continuous faculty development and encouraged the adoption of contemporary technologies in teaching and research.

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