



E&ICT Academy,
NIT Warangal

REPORT
FACULTY DEVELOPMENT PROGRAM
(FDP)

on

**“RECENT RESEARCH TRENDS
AND APPLICATIONS OF
ARTIFICIAL INTELLIGENCE &
INTERNET OF THINGS”**



Dept. of ECE,
NNRESGI, Hyderabad

Date: 16th March, 2023

❖ **PROGRAM PARTICULARS :**

<u>Duration</u>	<u>FDP Theme</u>	<u>Organized by</u>	<u>Mode of Conduct</u>
05th May – 13th May, 2023 9 Days 20 Sessions 40 Hours	“ Recent Research Trends and Applications of Artificial Intelligence & Internet of Things ”	Electronics & ICT Academy, NIT Warangal & ECE dept., NNRESGI, Hyderabad	Online <i>(Google Meet Application)</i>

❖ **PROGRAM's MOTIVE & PURPOSE :**

The Electronics & Information and Communication Technology (E&ICT) Academy of National Institute of Technology (NIT), Warangal in association the Department of Electronics & Communication (ECE) Engineering & Institute Innovation Cell (IIC) of Nalla Narasimha Reddy Education Society's Group of Institution, Hyderabad had organized a Faculty Development Programme (FDP) on **“RECENT RESEARCH TRENDS AND APPLICATIONS OF ARTIFICIAL INTELLIGENCE & INTERNET OF THINGS”** from **05th May, 2023 (Friday)** to **13th May, 2023 (Saturday)** through **Online mode** (Google Meet platform).

This program was organized for the teaching, research & industrial community with an intention & motive to create the awareness and understanding of latest trends and applications of Artificial Intelligence (AI) & Internet of Things (IoT) technologies along with the research opportunities & challenges. The main purpose was to bring together the learners of different areas of Electronic Science, Computer Science & other hybrid streams which use the blend of AI & IoT solutions in their service & application, and to know the current day research know-hows and challenges to be addressed. As a part of program, the schedule from Day-1 (05/05/2023, Friday) to Day9 (13/05/2023, Saturday) was made to

accommodate 20 lecture sessions by various renowned engineering delegates & active research scientists along with industrial experts.

The inaugural session was held at 10.30am, and made by **Dr. T.Kishore**, *Professor, Dept. of ECE*, NIT, Warangal and **Dr. C.V.Krishna Reddy**, *Director*, NNRESGI, Hyderabad followed with welcome messages and brief introduction of FDP program.

The Head of Department, ECE **Dr.S.Ravichand**, had welcomed the delegates, speakers & participants virtually organized on Google Meet Platform.

The Coordinator of the program **Dr.Ravi Bolimera**, *Associate Professor*, ECE department had briefed up the session topics and schedule. A strength of 40-45 participants including faculty & research scholars had actively involved in all the sessions of program.

The following section gives the brief information about the each day's session along with the few glimpses of presentation (screenshots).

Day-1 : 05th May, 2023 (Friday) – 2 Sessions

Day-1 : 05th May, 2023 (Friday)

Session 1 : 10:00 AM to 12:00 PM (2 Hours)

THE ROLE OF AI IN DEFENCE APPLICATIONS

by

Dr. G.MALLIKARJUNA RAO,

Scientist & head, RFSD1/DRFSI, RCI,

Defence Research & Development Organization (DRDO), Hyderabad.

Outline:

The first session of the FDP program Day -1 was handled by Dr.G.Mallikarjuna Rao, Scientist & Head, Research Centre Imarat (RCI), DRDO, Hyderabad. Sir spoke the role of Artificial Intelligence (AI) in the field of Defence and related areas. He highlighted that AI is playing an increasing role in planning and supporting military operations and becoming a key tool in intelligence and analysis of the enemy's intelligence. Another field of application of AI is the field of application of autonomous weapon systems and vehicles.



Speaker exploring on research trends in AI

Day-1 : 05th May, 2023 (Friday)

Session 2 : 2:00 PM to 4:00 PM (2 Hours)

INTRODUCTION TO AI, IoT AND ITS APPLICATIONS

by

Prof. T.KISHORE KUMAR,

Dept. of ECE,

National Institute of Technology (NIT), Warangal

Outline:

The second session of Day-1 FDP was taken by Dr.T.Kishore Kumar, Professor, Department of ECE, NIT, Warangal. Speaker clearly explained about the importance of AI in applications of medicine field. Sir also signified that AI is likely to play an increasingly important role in the translational medicine, due to its ability to analyze large datasets quickly and accurately, to identify patterns and trends, and to help develop personalized treatments and new drugs.

Interestingly, between preclinical and clinical research, translational research is benefitting from computer-based approaches, transforming the design and execution of translational research, resulting in breakthroughs for advancing human health.

The screenshot shows a web browser window displaying a Google Drive presentation. The presentation title is "Recent Research Trends and applications of Artificial Intelligence and Internet of things (2023-05-05 14:42 GMT+5:30)". The slide content is as follows:

$AIoT = AI + IoT$

- **AIoT : Embedding AI technology into IoT components.**
- **Objectives:**
 - To increase operational efficiency
 - Improve human-machine interactions
 - Upgrade data management and analytics
- **When used in the right way**
 - AI can transform IoT data into valuable information for **improved decision-making**, both on-site and remotely.

The presentation is displayed within a video player interface, with a small video feed of the speaker, Prof. T. Kishore Kumar, visible in the bottom right corner. The browser's address bar shows the URL "drive.google.com/drive/my-drive". The Windows taskbar at the bottom indicates the time is 16:19 on 13-06-2023.

Speaker introducing AI, IoT in applications

Day-2 : 06th May, 2023 (Saturday) – 2 Sessions

Day-2 : 06th May, 2023 (Saturday)
Session 1 : 10:00 AM to 12:00 PM (2 Hours)

INTELLIGENT FRAMEWORKS FOR SMART APPLICATIONS

by
Prof. G.RAM MOHANA REDDY,
Dept. of Information Technology,
National Institute of Technology (NIT), Surathkal, Karnataka.

Outline:

The second session of Day -2 FDP was presided over by Prof. G.Ram Mohana Reddy, Dept. of IT, Surathkal. Sir, shared few things based on his research experience in field of AI and IoT. His talk included topics focusing on democratization of AI that will enable everyone to utilize its potential, the current trends are on generative AI improves efficiency and delivers faster insights, explainable AI to increase transparency and expose biases in automated decision-making processes, enhanced customer experiences.

He highlighted that The future of IoT Operations will include algorithms and Artificial Intelligence to automate and optimize processes and systems, as well as provide critical insights to improve performance and decision-making.

The screenshot shows a Zoom meeting in progress. The main presentation slide is a welcome message for Prof. Rammohana Reddy Guddeti, a Professor (HAG Scale) in the Department of IT at NITK, Surathkal, Mangalore. The slide is titled 'WELCOMES' and features a portrait of the professor flanked by two bouquets of red roses. Below the portrait, it mentions 'Research Trends in AI & IOT' and provides the date 'Date:06.05.2023' and time 'Time: 10:00 AM'. The slide also states it is 'Organized by Department of ECE, NNRG, Hyderabad' and 'In Association with E&ICT, NIT Warangal'. The right side of the screen displays a grid of participant video feeds. Visible participants include Prof. G R M Reddy, lavanya reddy, Kambhampati Rambabu, Bharadwaja Uppu, KOUSTUBH KULKARNI, Dr S Rekha, and a group of 24 others. The bottom of the screen shows the Zoom toolbar with icons for chat, mute, video, and other controls. The system taskbar at the very bottom shows the time as 10:08 AM on 06-05-2023.

Speaker shared his views on AI & IoT

Day-2 : 06th May, 2023 (Saturday)
Session 2 : 2:00 AM to 4:00 PM (2 Hours)

HANDS-ON SESSION ON ADVANCED PYTHON LIBRARIES FOR SIGNAL PROCESSING APPLICATIONS

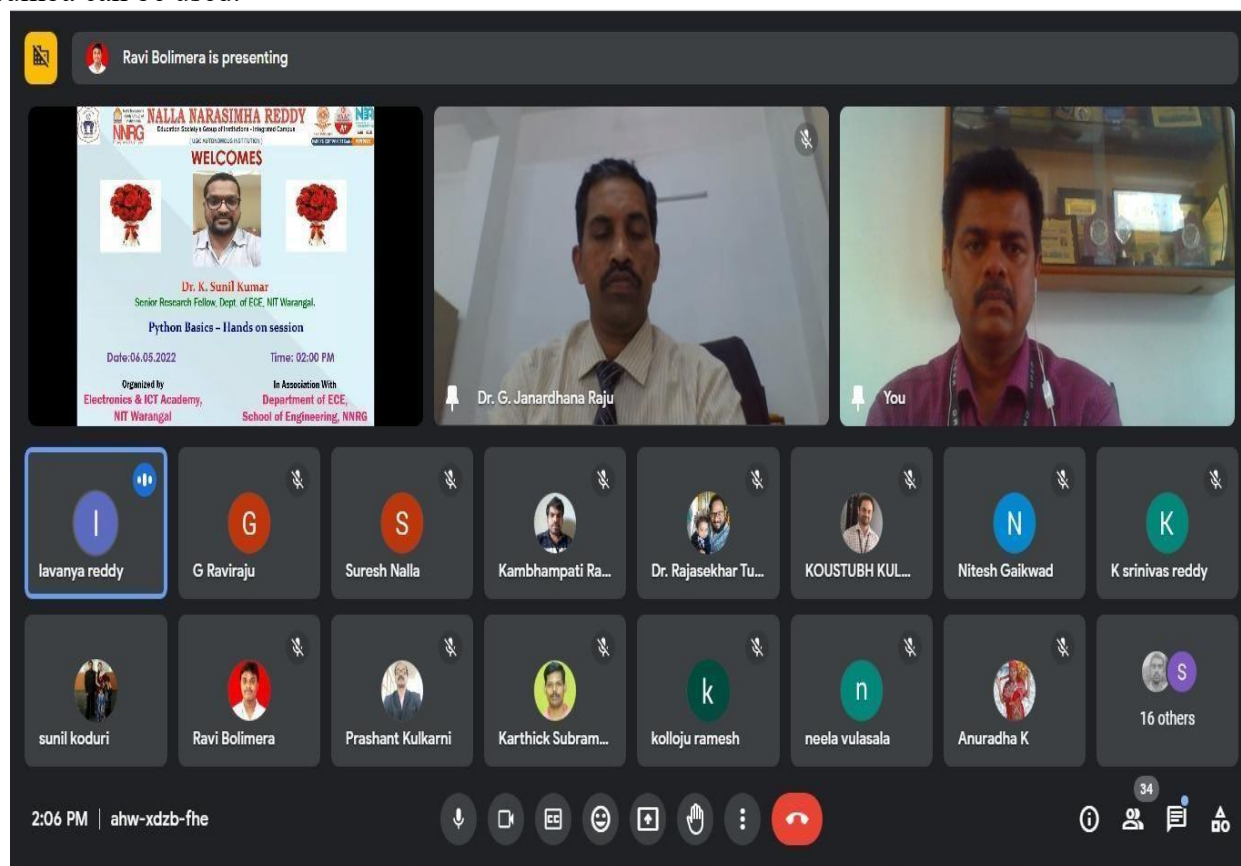
by
Dr. K SUNIL KUMAR,
Senior Research Fellow (SRF),
National Institute of Technology (NIT), Warangal

Outline:

The second session of Day -2 FDP was conducted by Dr.K.Sunil Kumar, who is working as Senior Research Fellow (SRF) in the department of ECE at NIT, Warangal. The Speaker talked majorly on Python language and its vital libraries required for signal processing applications, with some case studies through the hands-on module presentation.

He emphasized that „One of the key advantages of Python“ is that packages can be used to extend the language to provide advanced capabilities such as array and matrix manipulation, image processing, digital signal processing, and visualization.

Also, suggested that the tools like Scipy, Numpy and Matplotlib are the good libraries to work with signal processing algorithms and also, to increase the speed of the simulation Cython and Numba can be used.



Speaker shared his content on Python & Applied Python with libraries

Day 3 : 07th May, 2023 (Sunday)

Session : 10:00 AM to 12:00 PM (2 Hours)

DATA TRENDS IN AI AND ML

by

Mr. TONY SANDEEP

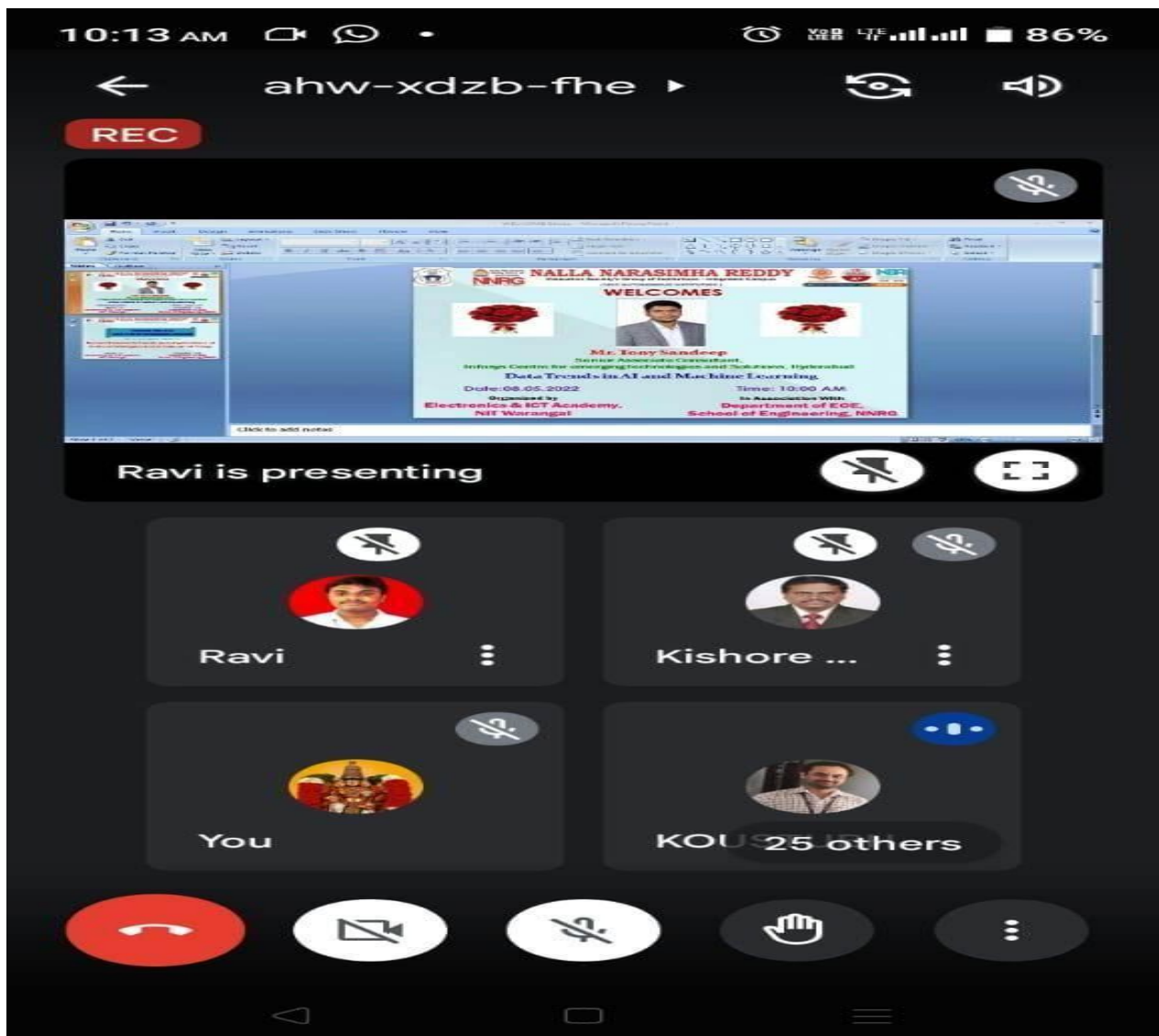
Senior Associate Consultant,
Infosys, Hyderabad

Outline:

There was only one scheduled session on Day -3 FDP, that was taken up by Mr. Tony Sandeep, who is currently working with Infosys, Hyderabad as a Senior Associate Consultant. He explained the current trends in data analytics with the blend of AI and ML.

His talk covered the concepts from Deep learning and artificial intelligence (AI) that are rapidly evolving fields with new technologies emerging constantly. Five of the most promising emerging trends in this area include federated learning, GANs, XAI, reinforcement learning and transfer learning.

He affirmed that these technologies have the potential to revolutionize the various applications of machine learning, from image recognition to game playing, and offer exciting new opportunities for researchers and developers alike.



Speaker enumerating on the data trends in AI and ML

Day 4 : 08th May, 2023 (Monday) – 2 Sessions

Day 4 : 08th May, 2023 (Monday)

Session 1 : 10:00 AM to 12:00 PM (2 Hours)

ARTIFICIAL INTELLIGENCE IN TRANSLATION MEDICINE AND APPLICATIONS

by

Prof. T.KISHORE KUMAR,

Dept. of ECE,

National Institute of Technology (NIT), Warangal

Outline:

The second session of Day -1 FDP was taken by Dr.T.Kishore Kumar, Professor, Department of ECE, NIT, Warangal. Speaker clearly explained about the importance of AI in applications of medicine field. Sir also signified that AI is likely to play an increasingly important role in the translational medicine, due to its ability to analyze large datasets quickly and accurately, to identify patterns and trends, and to help develop personalized treatments and new drugs.

Interestingly, between preclinical and clinical research, translational research is benefitting from computer-based approaches, transforming the design and execution of translational research, resulting in breakthroughs for advancing human health.

The screenshot shows a Google Meet interface. At the top, the URL is 'meet.google.com/ahw-xdzb-fhe'. Below the address bar, a banner indicates 'Ravi Bolimera is presenting'. The main content area displays a presentation slide from Nalla Narasimha Reddy Education Society's Group of Institutions (NNGR). The slide features a portrait of Dr. T. Kishore Kumar, a Senior Professor of ECE at NIT Warangal, and the title 'Artificial Intelligence in Translation Medicine and Applications'. It also includes the date '08.05.2022', time '10:00 AM', and mentions the organizing body 'Electronics & ICT Academy, NIT Warangal' and the association with the 'Department of ECE, School of Engineering, NNGR'. To the right of the slide, a grid of video thumbnails shows participants: Kishore Kumar T., Krishna Reddy Chantigari, naveenkumar kanchanp..., Koustubh Kulkarni, Bharadwaja Uppu, lavanya reddy, 25 others, and a 'You' thumbnail. At the bottom, the time '10:07 AM' and the meeting ID 'ahw-xdzb-fhe' are visible, along with standard Google Meet controls like mute, video, chat, and end call.

Speaker discussing on various key aspects & applications in translational medicine

Day 4 : 08th May, 2023 (Monday)
Session 2 : 2:00 AM to 4:00 PM (2 Hours)

EDGE COMPUTING & APPLICATIONS

by
Dr. SATISH KUMAR,
Chief Scientist,
CSIR-CSIO, Chandigarh

Outline:

The second session of Day -4 FDP was presented by Dr. Satish Kumar, who is a Chief -Scientist at CSIR-CSIO unit, Chandigarh. Sir's topic for the session was on the „Edge Computing & Applications“. His talk comprised of some vital points on Edge Computing, which is a distributed computing framework that brings enterprise applications closer to data sources such as IoT devices or local edge servers. This proximity to data at its source can deliver strong business benefits, including faster insights, improved response times and better bandwidth availability.

The screenshot shows a Google Meet interface. At the top, the browser tabs include 'Inbox (96) - ravichandsankuru1@...', 'WhatsApp', and 'Meet - ahw-xdzb-fhe'. The address bar shows 'meet.google.com/ahw-xdzb-fhe'. The main video area displays a presentation slide with the following text: 'NALLA NARASIMHA REDDY Education Society's Group of Institutions - Integrated Campus (UGC AUTONOMOUS INSTITUTION) WELCOMES Dr. Satish Kumar Chief Scientist and Head, Centre of Excellence for Intelligent Sensors and Systems (ISenS), CSIR - CSIO, Chandigarh Edge Computing & Applications Date: 08.05.2022 Time: 02:00 PM Organized by Electronics & ICT Academy, NIT Warangal In Association With Department of ECE, School of Engineering, NNRG'. The right sidebar shows a grid of participants: Y Srinivas, Bharadwaja Uppu, Nitesh Gaikwad, Ravi Bolimera, lavanya reddy, Krishna Reddy Chantigari, and Swetha T joined. The bottom status bar shows the time as 2:04 PM and the meeting ID as ahw-xdzb-fhe.

Speaker highlighted the impact of Edge Computing along with their applications

Day 5 : 09th May, 2023 (Tuesday) – 2 Sessions

Day 5 : 09th May, 2023 (Tuesday)

Session 1 : 10:00 AM to 12:00 PM (2 Hours)

APPLICATIONS OF IOT, AI-ML AND IMAGE PROCESSING IN SMART CITIES & VILLAGES

by

Prof. VINAY KUMAR MITTAL,

*Director, NETI , Research center & Vice
Chancellor, GIET University, Odisha.*

Outline:

The first session of Day-5 FDP was headed by Prof. Vinay Kumar Mittal, who is the Director of NETI Research Centre and Vice Chancellor of GIET University located in Odisha. Sir briefed about the impact of AI and IoT in building the smart cities and villages. It started with the concept : „Smart city is a collective term for technologies and concepts that are directed toward making cities efficient, technologically more advanced, greener and more socially inclusive.

He made it clear that these concepts include technical, economic and social innovations. This term has been tossed around by various actors in politics, business, administration and urban planning since the 2000s to establish tech-based changes and innovations in urban areas and rural areas. The idea of the smart city is used in conjunction with the utilization of digital technologies and at the same time represents a reaction to the economic, social and political challenges that postindustrial societies are confronted with at the start of the new millennium.

The key focus is on dealing with challenges faced by urban society and also to make rural sector the more revolutionary.

The screenshot displays a Google Meet interface during a presentation. The main window shows a slide titled "IoT: Overview" with a diagram illustrating various IoT applications in smart cities and villages. The diagram includes components like Smart Grid, Renewable Energy, Hospital Optimization, Home Energy Management, Traffic Flow Optimization, Factory Optimization, Logistics Optimization, Intelligent Highway, Intelligent Hospital, Intelligent Home, and Intelligent City. The meeting controls at the bottom show the time as 10:24 AM and the meeting ID as ahw-xdzb-fhe. The participant list on the right includes Dr. Vinay Kumar Mittal, Krishna Reddy Ch..., Suneetha edavaluri, kolloju ramesh, Dr S Rekha, Sharath Chandra..., Bharadwaja Uppu, Nitesh Gaikwad, Subhashini Yella, Anuradha K, and 23 others.

Speaker briefing the applications of AI and IoT in urban and rural sector

Day 5 : 09th May, 2023 (Tuesday)
Session 2 : 2:00 PM to 4:00 PM (2 Hours)
DEEP LEARNING FOR COMPUTER VISION

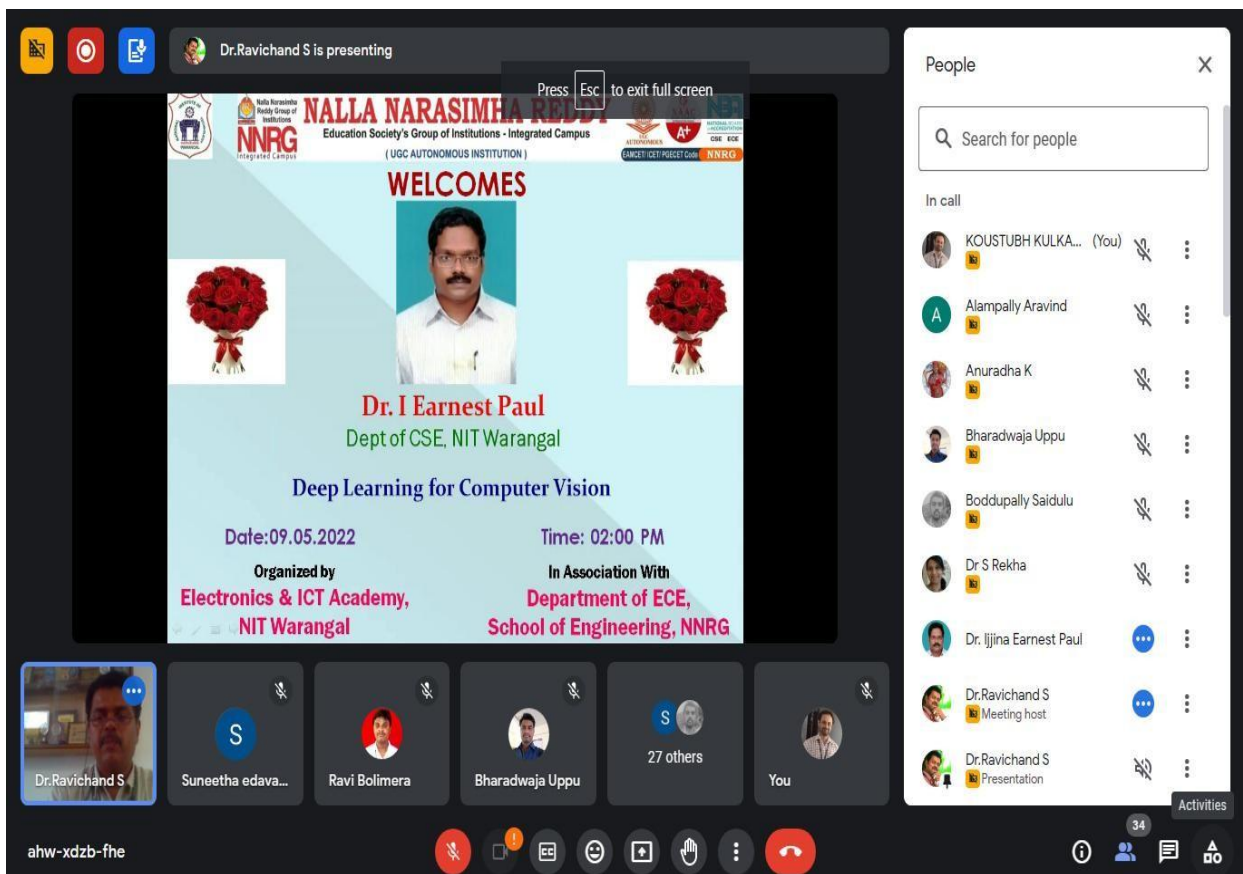
by
Dr. I. EARNEST PAUL,
Professor,
Dept. of CSE, NIT, Warangal

Outline:

The second session of Day -5 FDP was taken by Dr. I.Earnest Paul, who is working as Professor in the department of CSE at NIT, Warangal. Sir had selected the most trending topic titled „Deep Learning for Computer Vision“. It had begun with the introduction of machine learning and deep learning concepts that defines the algorithms to be established for machine vision & computer vision applications.

He threw some light on the Computer vision (CV), which is the scientific field that defines how machines interpret the meaning of images and videos. Computer vision algorithms analyze certain criteria in images and videos, and then apply interpretations to predictive or decision making tasks.

Today, deep learning techniques are most commonly used for computer vision. This article explores different ways you can use deep learning for computer vision. In particular, you will learn about the advantages of using convolutional neural networks (CNNs), which provide a multi-layered architecture that allows neural networks to focus on the most relevant features in the image. He concluded his talk by saying that CV is a part of an extensive series of guides about AI Technology.



Speaker explaining on Deep Learning basics & algorithms

Day 6 : 10th May, 2023 (Wednesday) – 2 Sessions

Day 6 : 10th May, 2023 (Wednesday)

Session 1 : 10:00 AM to 12:00 PM (2 Hours)

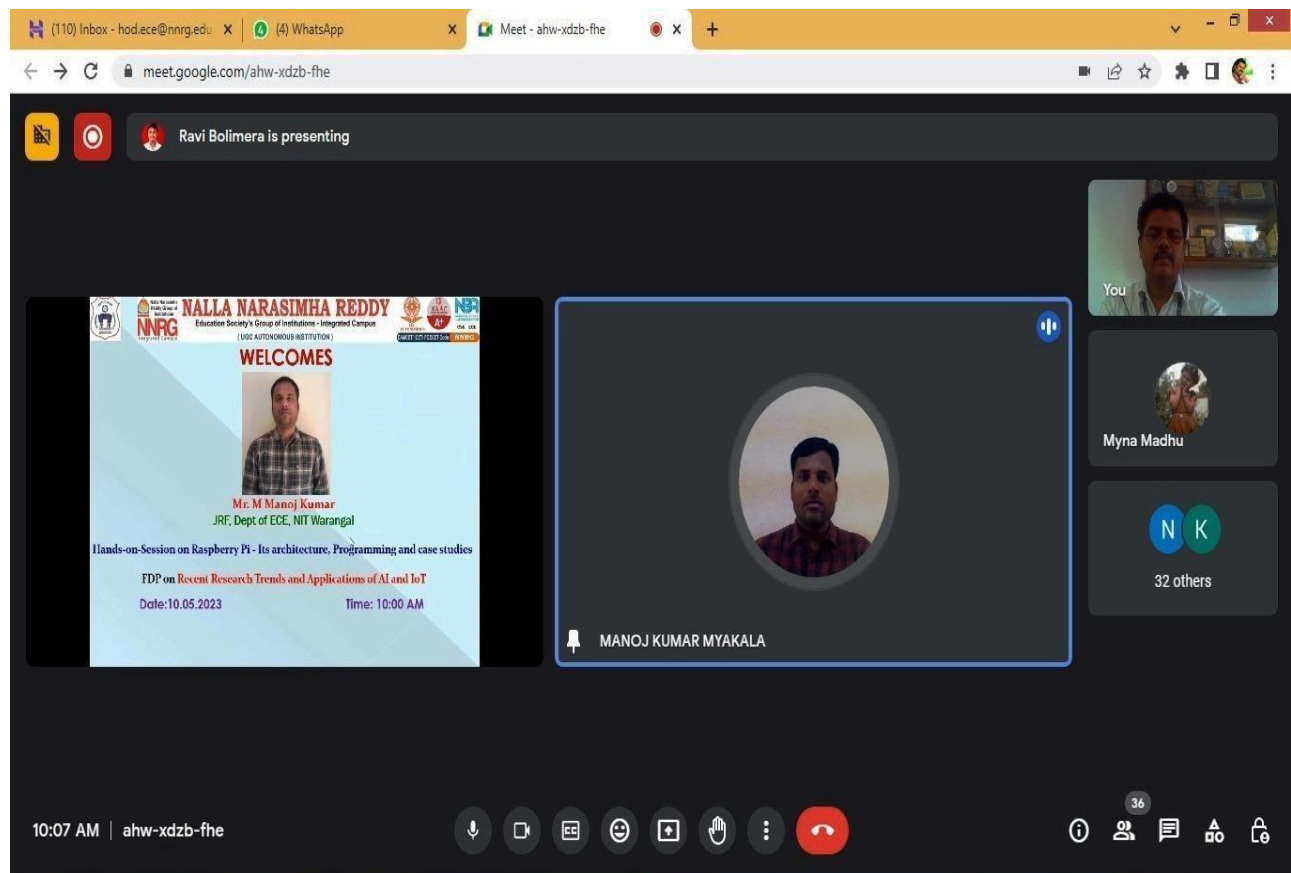
**HANDS-ON SESSION ON RASPBERRY-PI, ITS ARCHITECTURE,
PROGRAMMING AND CASE STUDIES**

by
Mr. M. MANOJ KUMAR.,
Junior Research Fellow (JRF),
NIT, Warangal

Outline:

The first session of Day-6 FDP was handled by Mr. Manoj Kumar, who is working as Junior Research Fellow (JRF) at National Institute of Technology (NIT), Warangal. He had delivered his presentation on the theme of „Raspberry Pi-its architecture and applications with several case studies and approaches as apart of case studies in research.

His lecture was mainly on the case studies of research carried out and hands -on session in The use cases that vary from the hobbyists using it to classify animals they saw in their backyard to actual industrial applications such as classifyin g objects on the production line into good or bad. People until now were either using third -party accelerators such as the Google USB 3.0 accelerated device which could be directly connected to Raspberry Pi, or were doing the AI work on the CPU. “For a lot of AI applications, the CPU is actually sufficient,”. However, he said it has its own advantages and disadvantages.



Speaker giving his research findings in the form of case studies

Day 6 : 10th May, 2023 (Wednesday)
Session 2 : 2:00 AM to 4:00 PM (2 Hours)
REAL TIME EMBEDDED CONCEPTS IN IOT

by
Dr. K.V.SRIDHAR,
Associate Professor,
Dept. of ECE, NIT, Warangal

Outline:

The second session of the Day-6 FDP was handled by Dr.K.V.Sridhar, who is working as an Associate Professor in the dept. of ECE at NIT Warangal. His talk was mainly on the „Real-Time Embedded Concepts and Applications in IoT“. Sir had given clear insights on the major developments happened in the field of Embedded Systems with exclusive introduction of IoT and its significance.

The Speaker also gave the clear picture of on how... Real-time applications of embedded systems such as MP3 players, video game consoles, mobile phones, digital cameras, DVD players, and GPS are the solutions to the advancements and inventions of technology . As well as, household appliances such as microwave ovens, washing machines, and dish washers, that majorly include embedded systems to provide flexibility and efficiency.

The screenshot shows a Zoom meeting in progress. The main window displays a presentation slide titled "WELCOMES" for Dr. K V Sridhar, Assoc. Professor, Dept of ECE, NIT Warangal. The slide also mentions the FDP on Recent Research Trends and Applications of AI and IoT, dated 10.05.2023, organized by the Electronics & ICT Academy, NIT Warangal, in association with the Department of ECE, School of Engineering, NNRG. The slide features a portrait of Dr. K V Sridhar and two bouquets of red roses. The Zoom interface includes a top bar with the presenter's name "Ravi Bolimera is presenting", a "People" sidebar on the right listing participants like Koustubh Kulka, Alampally Aravind, and others, and a bottom bar with video thumbnails of participants including Prashant Kulkarni, Krishna Reddy, Dr. Ravichand S, and Dr. Sridhar K V. The bottom status bar shows the username "ahw-xdzb-fhe" and various meeting controls.

Speaker throwing some light on Embedded concepts in IoT

Day 7 : 11th May, 2023 (Thursday) – 3 Sessions

Day 7 : 11th May, 2023 (Thursday)

Session 1 : 10:00 AM to 12:00 PM (2 Hours)

INTRODUCTION TO OPTIMIZATION TECHNIQUES & ITS USAGE IN AI & ML

by

Dr. P.KISHORE KUMAR,

Former Head,

Department of ECE, NIT, AP

Outline:

Dr. KISHORE KUMAR PULI is presenting

Press **Esc** to exit full screen

WHAT IS MACHINE LEARNING

Traditional Programming

Data → Computer → Output

Program → Computer

Machine Learning

Data → Computer → Program

Output → Computer

Dr. KISHORE KU... Suneetha edava... neela vulasala Nagarani Adusu... 36 others You

Dr. KISHORE KUMAR PULI is presenting

Dr. KISHORE KUMAR PULI Presentation

Dr. Rajasekhar Turaka

Dr. Ravichand S Meeting host

Speaker explaining basics of Machine Learning

The principal goal of machine learning is to create a model that performs well and gives accurate predictions in a particular set of cases. In order to achieve that, we need machine learning optimization.

Machine learning optimization is the process of adjusting hyper parameters in order to minimize the cost function by using one of the optimization techniques. It is important to minimize the cost function because it describes the discrepancy between the true value of the estimated parameter and what the model has predicted.

Day 7 : 11th May, 2023 (Thursday)
Session 2 : 2:00 PM to 3:30 PM (1.5 Hours)

AI APPLICATIONS & IOT ASSISTED WIRELESS SENSOR NETWORKS

by

Dr. G.KIRAN KUMAR,

*Head of Department,
Dept of ECE, NIT, AP*

Outline:

Two well-known optimization problems are energy-efficient routing and clustering which have been studied widely to extend lifetime of Internet of Things (IoT) – assisted wireless sensor networks (WSNs). An advancement made in wireless technologies has developed a greater impact over the IoT systems. For connected people and objects, IoT have become popular for exchanging and collecting data based on sensors. Communication between entities plays a vital role to develop a sustainable environment. In IoT-assisted WSNs, there are several ways in which the nodes are considered as the resource parameters, like energy resources, storage resources, and computing resources for achieving higher energy utilization and for maintaining long network lifetime. Clustering is one of the efficient approaches that connects and organizes the sensor nodes by balancing the loads and maximizing the lifespan of the network.

The screenshot shows a Google Meet interface. At the top, the browser address bar displays 'meet.google.com/ahw-xdzb-fhe'. The main window shows a presentation slide titled 'WELCOMES' for Dr. P. Kiran Kumar, Head of Department of ECE, NIT AP. The slide also mentions 'Artificial Intelligence Applications & IoT Assisted Wireless Sensor Networks' and provides the date '11.05.2023' and time '02:00 PM'. The slide is organized by 'Electronics & ICT Academy, NIT Warangal' and is in association with the 'Department of ECE, School of Engineering, NNRG'. To the right of the slide, there is a video feed of Dr. P. Kiran Kumar. Below the main video feed, there is a smaller circular video feed of a participant named 'kiran kumar gurrula'. On the right side of the screen, there is a list of participants: 'You', 'Kishore Kumar T', and '33 others'. At the bottom of the screen, there is a taskbar with various application icons and a system tray showing the time '2:14 PM' and the date '11-05-2023'.

Speaker explaining basics of AI and IoT

Day 8 : 12th May, 2023 (Friday) – 3 Sessions

Day 8 : 12th May, 2023 (Friday)

Session 1 : 10:00 AM to 12:00 PM (2 Hours)

STATE OF THE ART MACHINE LEARNING MODELS FOR CLASSIFICATION AND REGRESSION

by

Dr. JOTHI PRABHA APPADURAI ,

Associate Professor,

Dept. of CSE (CN), KITS, Warangal

Outline:

Machine Learning algorithms are on the rise. Every year new techniques are presented that outdate the current leading algorithms. Some of them are only little advances or combinations of existing algorithms and others are newly created and lead to astonishing progress. For most techniques e xist already great articles that explain the theory behind it and some of them offer also an implementation with code and tutorial. None did yet offer an overview of the current leading algorithms, so the idea came up to present the best algorithms per tas k based on the results achieved (performance scores are used). Of course, there are many more tasks and not all tasks can be presented. I tried to select the most popular fields and tasks and hope this might help to get a better understanding. The metiers on which this article will lay a focus are Computer Vision, Natural Language Processing, Speech Recognition.

The screenshot shows a Zoom meeting in progress. At the top, a status bar indicates "You're presenting to everyone" and a "Stop presenting" button. The main screen displays a presentation slide titled "WELCOMES" by Dr. Jothi Prabha Appadurai, Associate Professor at KITS Warangal. The slide also mentions the "FIPon Revent Research Trends and Applications of AI and IoT" event on May 8, 2023. To the right of the main slide, there are smaller video thumbnails of participants: Krishna Reddy Chantigam, lavanya reddy, and a group of 34 others. At the bottom center, a large video thumbnail shows the presenter, Dr. Jothi Prabha Appadurai, speaking. A notification bubble on the left says "Mounika Mona can now join this meeting". The bottom of the screen shows the Windows taskbar with various application icons and a system tray displaying the time as 10:09 AM on 12-05-2023. A banner at the bottom right of the Zoom window reads "School of Engineering, NNRG".

Speaker giving away insights in detail on Machine Learning & related aspects

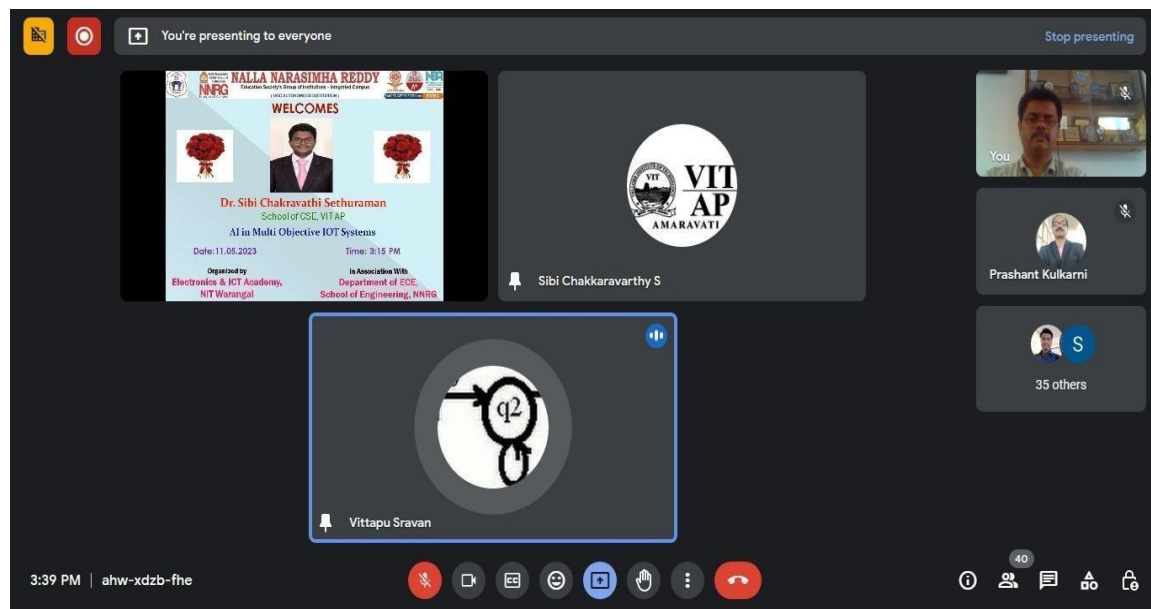
Day 8 : 12th May, 2023 (Friday)

Session 3 : 2:00 PM to 5:00 PM (1.5 Hours)
AI IN MULTI OBJECTIVE IOT SYSTEMS

by
Dr. SIBI CHAKRAVARTHY S,
Professor,
School of CSE, VIT, AP.

Outline:

From smart homes to smart cities and Industry 4.0 to Transportation Systems, Internet of Things (IoT) is a domain which promises incredible growth coupled with great impact, in numerous fields. IoT networks are composed of numerous different Things, arranged in diverse topologies with diverse needs. This diversity is partially due to the numerous areas where IoT applications are utilized, which at their entirety can be referred as the IoT ecosystem. The IoT ecosystem suffers from numerous vulnerabilities, due to reasons such as design flows, hardware limitation or simply human error and is subject to various attacks targeting IoT services, platforms and networks. These attacks can have significant consequences such as economic losses, service disruption or data leaks.



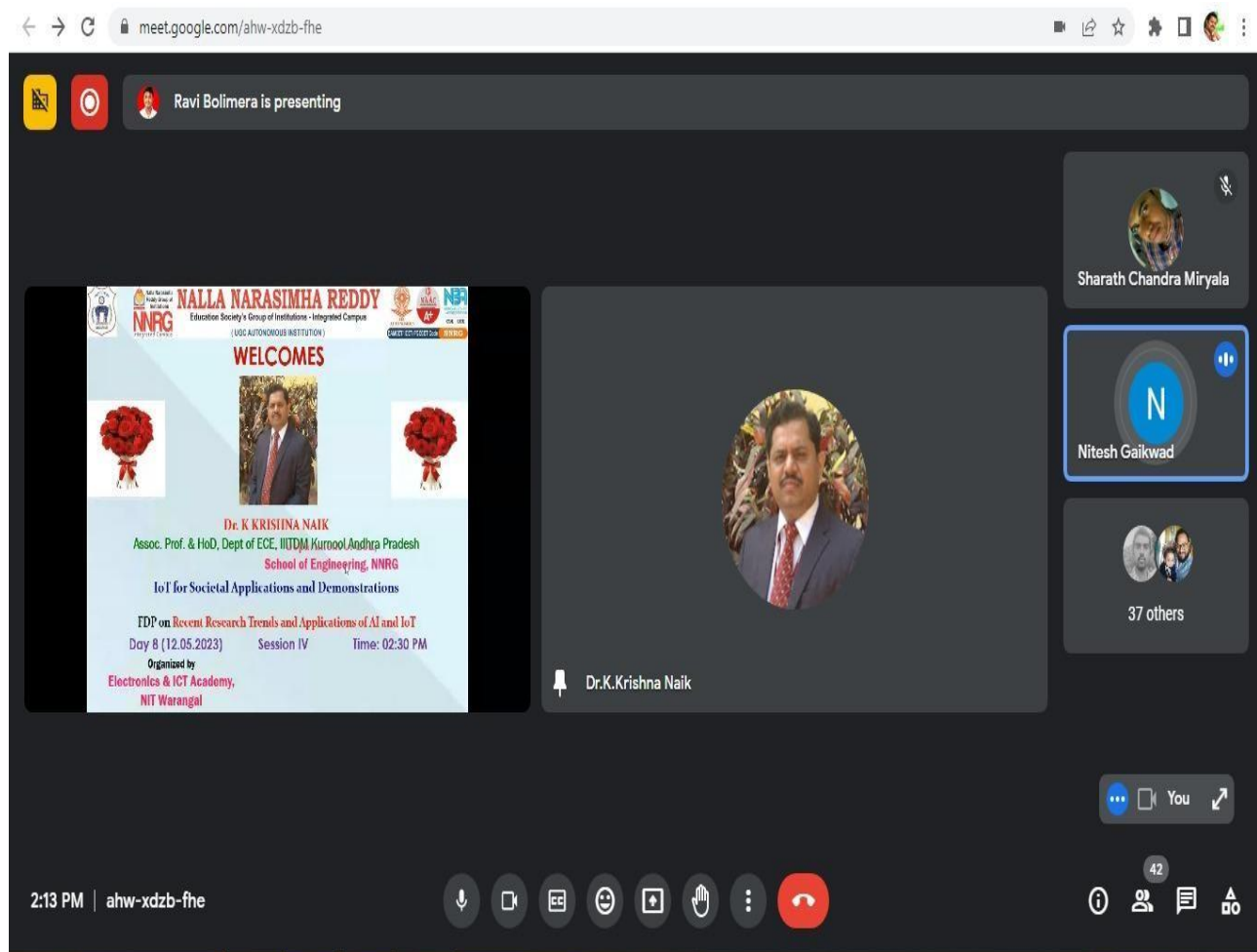
Speaker talking on multi-objective IoT systems with AI

Day 8 : 12th May, 2023 (Friday)
Session 3 : 3:30 PM to 5:00 PM (1.5 Hours)
IOT & ITS APPLICATIONS

by
Dr. KRISHNA NAIK,
Head, Dept. of ECE,
IIITDM, Kurnool

Outline:

The **Internet of Things (IoT)** provides the ability to interconnect computing devices, mechanical machines, objects, animals or unique identifiers and people to transfer data across a network without the need for human -to-human or human -to-computer is a system of conversation. **IoT applications** bring a lot of value in our lives. The Internet of Things provides objects, **computing devices**, or **unique identifiers** and people's ability to transfer data across a network without the **human-to-human** or **human-to-computer interaction**.



Speaker describing the applications of IoT

Day 9 : 13th May, 2023 (Saturday)

Session 1 : 10:00 AM to 12:00 PM (2 Hours)

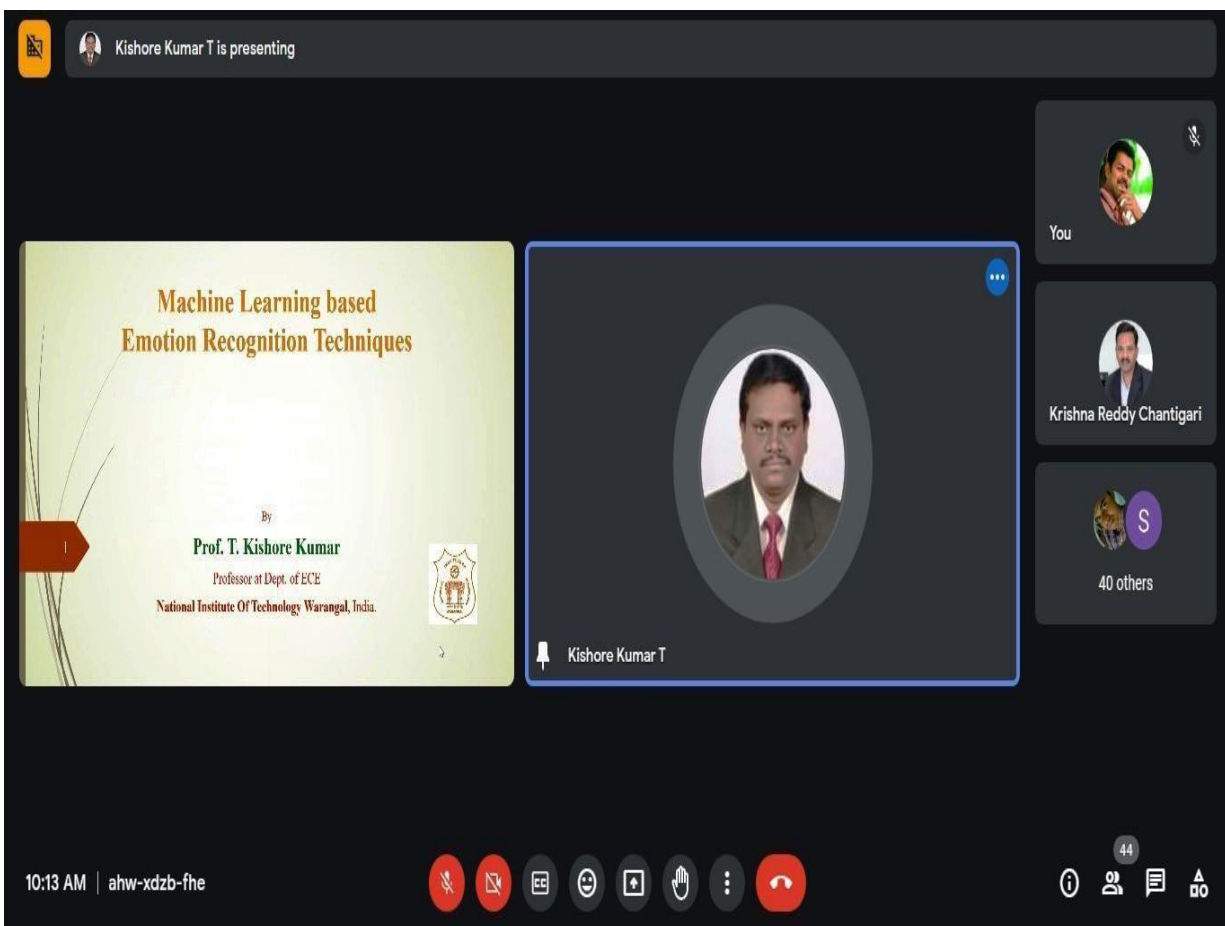
MACHINE LEARNING BASED EMOTION RECOGNITION TECHNIQUES

by

Prof. T.KISHORE KUMAR,
Dept. of ECE,
National Institute of Technology (NIT), Warangal

Outline:

Emotion AI, also known as affective AI or affective computing, is a subset of artificial intelligence that analyzes, reacts to and simulates human emotions. The accuracy of emotion recognition is usually improved when it combines the analysis of human expressions from multimodal forms such as texts, physiology, audio, or video. Different emotion types are detected through the integration of information from facial expressions, body movement and gestures, and speech. Natural Language Processing (NLP) has enabled us to detect such emotions from written text such as reviews, publications, recommendations, conversations, etc., and take immediate action accordingly. Emotion Detection refers to the accurate identification of emotion from contextual data



Speaker highlighting the importance of Emotion Recognition based on ML techniques

Day 9 : 13th May, 2023 (Saturday)
Session 2 : 2:00 PM to 3:30 PM (1.5 Hours)

KNEE JOINT HEALTH MONITORING SYSTEM WITH VAG SIGNALS

by

Dr .K.ASHOKA REDDY,

Professor, Dept. of ECE &

Principal, KITS, Warangal

Outline:

A vibrarthographic (VAG) signal is the recorded vibration signal produced by human knee-joints during movements of the leg. These signals are useful in quantifying lubrication and roughness of articular cartilage layers of the knee-joint. The early detection and treatment of an abnormal kneejoint will help in providing a better quality of life for the suffering patients.

An accurate noninvasive knee-joint anomaly (KJA) detection can be achieved through the vibroarthographic (VAG) signal. The VAG signal is the recorded acoustic-vibration signal generated from the knee-joints of human beings due to natural actions of the leg. The VAG signal is usually obtained as described in [4] where the person is positioned on a fixed table in a un-strained posture with his/her leg being freely suspended.

The image shows a screenshot of a presentation slide displayed on a computer screen. The slide is titled "Knee Joint Health Monitoring System with VIBRO-ARTHROGRAPHIC (VAG) SIGNALS" in red and black text. Below the title, it lists the author as "Prof. K. Ashoka Reddy, Dept of ECE, KITS Warangal". It also mentions the FDP is organized by "NITW in association with NNRG, Hyderabad" for "Recent Research Trends and Applications of AI and IoT" on "Date: May 13, 2023, Saturday". At the bottom, there is a dedication: "Pranaams to my PhD Supervisor Prof. V. Jagadeesh Kumar, Dept of EE, IITM". The presentation is being viewed in a software window with a standard toolbar at the top. On the right side of the screen, there is a small video feed of a man, identified as Ashoka Reddy Karna, speaking.

Day 9 : 13th May, 2023 (Saturday)

Speaker introducing in detail on VAG signals & Knee-Joint health monitoring

Day 9 : 13th May, 2023 (Saturday)

Session 3 : 3:30 PM to 5:00 PM (1.5 Hours)

NATIONAL EDUCATION POLICY 2020

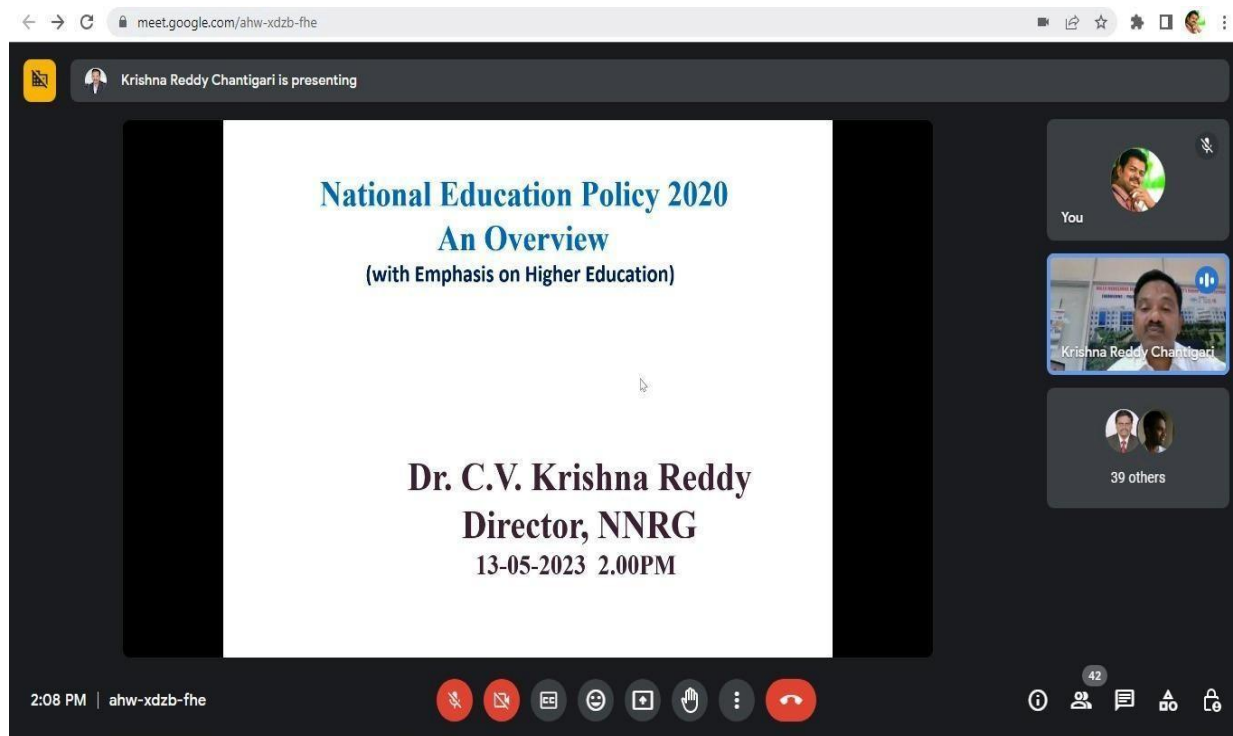
by

Dr. C.V.KRISHNA REDDY,

*Professor, Dept. of ECE &
Director, NNRESGI, Hyderabad*

Outline:

The policy is based on the Draft National Education Policy 2019, which the Committee for Draft National Education Policy – chaired by Dr. K. Kasturirangan, former chairman of the Indian Space Research Organisation – submitted to the Ministry of Human Resource Development on December 15, 2018. The four –part National Education Policy covers school education (Part I); higher education (Part II); „Other Key Areas of Focus“ (Part III) such as adult education, promoting Indian languages and online education; and „Making it Happen“ (Part IV), which discusses the policy’s implementation. The policy seeks to restructure school curricula and pedagogy in a new '5+3+3+4' design, so that school education can be made relevant to the needs and interests of learners at different developmental stages – a 'Foundational Stage' (five years), a 'Preparatory Stage' (three years), a 'Middle Stage' (three years) and the 'High Stage' (four years, covering grades nine, 10, 11 and 12). It aims to achieve „universal foundational literacy and numeracy“ in primary schools by 2025. For this, the Ministry of Human Resource Development shall set up a National Mission on Foundational Literacy and Numeracy. Public and private schools – except the schools that are managed, aided or controlled, by the central government – will be assessed and accredited on the same criteria, benchmarks, and processes.



Speaker lecturing in detail on objective, need and importance of NEP,2020

❖ **ONLINE TEST :**

The participants of the FDP had participated in the 'Online Test' which was of Multiple Choice Questions (MCQs) type organized on 13th May, 2023 (Saturday) after the end of all lecture sessions of FDP. The test was arranged online through the Google form link which was of 20 minutes time duration. The questions were based on the topics selected from all the content of speakers lecture sessions. All the participants actively participated in test and expressed their feedback and suggestions about the conduct and organization of FDP.

❖ **PROGRAM OUTCOME :**

The Faculty Development Program (FDP) had given many insights into the subject, basics & the applications of Artificial Intelligence (AI) and Machine Learning (ML), with their roots connected to the cloud of things in Internet of Things (IoT) which are used in the form of services and applications in one's life and society. The overall outcome of the program was good, as many participants expressed their gratitude by sharing their valuable feedback on the valedictory day. The organizing team of FDP thanked the NITW management and NNRESGI management for providing the platform for making such a technological trendy program happen on a success note.

GOOGLE is not a synonym for RESEARCH, it's *unique* !

FDP Co-coordinator



Dr. Ravi Bolimera
Associate Professor, ECE

Convenor, FDP



Dr. S. Ravi Chand
Professor & Head, ECE

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