



A REPORT on

Futuristic Frontiers: AI & IoT Integration for advancing Signal Processing Development

Duration : 1st Decemberto 6th December, 2025

FDP on Futuristic Frontiers: AI &IoT Integration for advancing Signal Processing Development

AICTE-ATAL sponsored Faculty Development Programme was conducted from 1st December to 6th December 2025, to which 68 faculties had enrolled and of which 51 had actively participated from various Institutions of Telangana, Andhra Pradesh and Karnataka. The speakers for the 6-day FDP on “Futuristic Frontiers: AI &IoT Integration for advancing Signal Processing Development” were as follows:

This report presents a consolidated overview of all sessions, key technical highlights, inauguration, and valedictory events.

Dr. G. Mallikarjuna Rao, Scientist F, RCI/DRDO, Hyderabad.



Education

- PhD in Image Processing from JNTUH.
- Masters of Engg. From College of Engineering, Andhra University
- B.E.in Electronics and Telecommunication Engineering from Andhra University.

Experience

- Scientist G, RCI/DRDO, Hyderabad (21 years)

Awards Received

- JC Bhattacharyya Memorial Award.
- DRDO award for performance excellence 2011.
- DRDO award for performance excellence 2012.
- Technology Group Award.

Dr. J Ravi Kumar, Professor & HoD, NIT , Hyderabad.



Organization: National Institute of Technology Warangal.

Experience in Years: 26.

Topic to be taught: Optimization algorithms for building signal processing applications

Dr. P Suryanarayan, Scientist F & DGM, Hyderabad (rtd.)



Education : Ph . D

Organization: *SITAR/ GAETEC/DRDO ,Hyd.*

Experience in Years: 42.

Topic to be taught: Sensors and IoT implementation to signal Acquisition

Dr. P. Ashok Kumar, Associate Professor, Hyderabad



Education : Ph . D

Organization: *NNRG.*

Experience in Years: 16.

Topic to be taught: Deep Neural Networks for Speech Synthesis systems

Sri. Darsan Raju, Signaling Faculty, IRISET, Hyd



Education : M.Tech

Organization: *IRISET, Hyd.*

Experience in Years: 35.

Topic to be taught: Integration of Disruptive Technologies for Railway signalling

Dr.C Krishna Mohan, Professor and Dean, IIT, Hyd.



Organization: *IIT, Hyd.*

Experience in Years: 24.

Topic to be taught: Real-Time Aerial Tracker on Embedded Hardware Deployed on Ballistic Systems

Dr.T. Kishore Kumar, Senior Professor-ECE, NIT Warangal



Education

- PhD awarded from JNTUH in the year 2004
- M.Tech.degree in Digital Systems and Computer Electronics from JNTUH in the year 1996
- B.Tech. - ECE degree from Sri Venkateswara University, Tirupati in the year 1992

Experience

From 1999 – till date as Professor in the Dept. of ECE, NIT Warangal

Research Interests:

Artificial Intelligence and Machine Learning for Speech
Image and Medical Applications
AI in healthcare
Adaptive signal Processing
Advanced digital system design
Internet of Things
Real Time Embedded Systems

Dr. I. Earnest Paul, Assistant Professor-CSE, NIT Warangal.



Education

- PhD in CSE from IITH (2017)
- M.Tech.in CSE from IITK (2007)
- B.Tech. in CSE from JNTUH (2005)

Experience

- 6 years of Teaching Experience
- As an IT Manager in Morgan Stanley

Research Interests

- Visual Analytics
- Video content Analysis
- Computer vision
- Deep Learning and Soft Computing
- Machine Learning

Dr. C.V. Krishna Reddy, Director, NNRG, Hyderabad.



Education

- PhD in Analog CMOS VLSI Design from JNTU(2007)
- M.Tech.in Applied Electronics from PSG college of Technology(1997)
- B.Tech. in RVR JC College of Engineering (1989)

Experience

- Director at NNRG from 2011 to till date
- Dean at NNRG from 2010 to 2011
- Principal at VSM Engg. College, Hyderabad
- Associate Professor at Kakatiya Institute of Technology, Warangal.

Research Interests

- VLSI design
- Embedded Design
- Signal processing

Schedule of ATAL BASIC OFFLINE FDP

FDP Application Number : **1743181401**

Title of the FDP : **Futuristic Frontiers: AI &IoT Integration for advancing Signal Processing Development**

FDP Start Date : **2025-12-01** FDP End Date: **2025-12-06**

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
9:00 – 9:30 Inauguration					
9:30 – 12:00 Session 1 1. Name of the Expert : <i>Dr.GMallikarjuna Rao.</i> 2. Designation : <i>SC – G, Group Director</i> 3. Organization: <i>RCT/DRDO,Hyd.</i> 4. Experience in Years: <i>24.</i> 5. Topic to be taught: <i>AI for RADAR Seekers</i>	9:30 – 12:00 Session 3 1. Name of the Expert : <i>Dr. P Suryanarayan</i> 2. Designation : <i>Scientist F & DGM</i> 3. Organization: <i>SITAR/ GAETEC/DRDO,Hyd.</i> 4. Experience in Years: <i>42.</i> 5. Topic to be taught: <i>Sensors and IoT implementation to signal Aquisition</i>	9:30 – 12:00 Session 5 1. Name of the Expert : <i>Sri. Darsan Raju</i> 2. Designation : <i>Signaling Faculty</i> 3. Organization: <i>IRISET, Hyd.</i> 4. Experience in Years: <i>35.</i> 5. Topic to be taught: <i>Integration of Disruptive Technologies for Railway signaling</i>	9:30 – 12:00 Industrial visit 1. Name of the Organization: <i>ATAL Incubation Center, CCMB</i> 2. Complete address with pincode : <i>3rd Floor, CCMB Medical Biotechnology Complex, IDA Uppal, Habsiguda, Hyderabad, Telangana 500039</i> 3. Industry Type: <i>ATAL Incubation Center, CCMB</i> 4. Area of specification : <i>entrepreneurship in life sciences, supporting startups in Health, Pharmaceuticals and Biotechnology</i>	9.30-12.00 Session 7 1. Name of the Expert : <i>Dr. I Earnest Paul</i> 2. Designation : <i>Assistant Professor.</i> 3. Organization: <i>National Institute of Technology, Warangal.</i> 4. Experience in Years: <i>Input from User.</i> 5. Topic to be taught: <i>Generative Adversarial Network</i>	9:30 – 12:00 Session 9 1. Name of the Expert : <i>Dr.C.V.Krishna Reddy</i> 2. Designation : <i>Director</i> 3. Organization: <i>NNRG</i> 4. Experience in Years: <i>29</i> 5. Topic to be taught: <i>NEP 2020</i>
12:00 – 1:00 Article Discussion 1. Title of the Research Paper : <i>Real-Time Driver Drowsiness Detection and Classification on Embedded Systems Using Machine Learning Algorithms</i> 2. Name of the journal: <i>Traitement du Signal</i> 3. Year of Publication: <i>2023</i>	12:00 – 1:00 Article Discussion 1. Title of the Research Paper : <i>Integrated swarm intelligence and IoT for early and accurate remote voice-based pathology detection and water sound quality estimation</i> 2. Name of the journal: <i>Healthcare Analytics</i> 3. Year of Publication: <i>2023</i>	12:00 – 1:00 Article Discussion 1. Title of the Research Paper : <i>Integrated swarm intelligence and IoT for early and accurate remote voice-based pathology detection and water sound quality estimation</i> 2. Name of the journal: <i>Healthcare Analytics</i> 3. Year of Publication: <i>2023</i>		12:00 – 1:00 Article Discussion 1. Title of the Research Paper : <i>AI-Enabled Sensing and Decision-Making for IoT System.</i> 2. Name of the journal: <i>Hindawi Complexity</i> 3. Year of Publication: <i>2021</i>	12:00 – 1:00 Article Summary
1:00 – 2:00 Lunch	1:00 – 2:00 Lunch	1:00 – 2:00 Lunch	1:00 – 2:00 Lunch	1:00 – 2:00 Lunch	1:00 – 2:00 Lunch
1.30-4.00 Session 2 1. Name of the Expert : <i>Dr. J Ravi Kumar</i> 2. Designation : <i>Professor.</i> 3. Organization: <i>National Institute of Technology warangal.</i> 4. Experience in Years: <i>26.</i> 5. Topic to be taught: <i>Optimization algorithms for building signal processing applications</i>	1.30-4.00 Session 4 1. Name of the Expert : <i>Dr. P. Ashok Kumar</i> 2. Designation : <i>Associate Professor.</i> 3. Organization: <i>NNRG.</i> 4. Experience in Years: <i>16.</i> 5. Topic to be taught: <i>Deep Neural Networks for Speech Synthesis systems</i>	1.30-4.00 Session 6 1. Name of the Expert : <i>Dr. C. V.Krishna Reddy</i> 2. Designation : <i>Director</i> 3. Organization: <i>NNRG</i> 4. Experience in Years: <i>29</i> 5. Topic to be taught: <i>Signal Processing</i>	1:00 – 4:00 Industrial visit 1. Name of the Organization: <i>ATAL Incubation Center, CCMB</i> 2. Complete address with pincode : <i>3rd Floor, CCMB Medical Biotechnology Complex, IDA Uppal, Habsiguda, Hyderabad, Telangana 500039</i> 3. Industry Type: <i>ATAL Incubation Center, CCMB</i> 4. Area of specification : <i>entrepreneurship in life sciences, supporting startups in Health, Pharmaceuticals and Biotechnology</i>	2:00 – 4:30 Session 9 1. Name of the Expert : <i>Dr. T Kishore Kumar.</i> 2. Designation : <i>Professor.</i> 3. Organization: <i>National Institute of Technology warangal.</i> 4. Experience in Years: <i>26.</i> 5. Topic to be taught: <i>AI and IoT for Biomedical Signal Processing</i>	2:00 – 4:00 Session 10 1. Name of the Expert : <i>Dr.C Krishna Mohan.</i> 2. Designation : <i>Professor and Dean</i> 3. Organization: <i>IIT,Hyd.</i> 4. Experience in Years: <i>24.</i> 5. Topic to be taught: <i>Real-Time Aerial Tracker on Embedded Hardware Deployed on Ballistic Systems</i>
4:30 – 5:30 Hands on training /Labs	4:30 – 5:30 Hands on training /Labs	4:30 – 5:30 Hands on training /Labs	4:30 – 5:30 Hands on training /Labs	4:30 – 5:30 Hands on training /Labs	4:00 – 5:00 Valedictory Session

LIST OF PARTICIPANTS

S. No	Name	Institute Name	Email	Phone
1	Mrs. K.Shiva prasanna	shivaprasanna441@gmail.com	9908380860	NNRG Hyderabad
2	Dr. SANDHYA BOLLA	sansriindu@gmail.com	8106542529	VFSTR,DEEMED TO BE UNIVERSITY, HYDERABAD
3	Mrs. Durga Devi T	durgadevi.t@bvrithyderabad.edu.in	9963555439	BVRIT Hyderabad College of Engineering for Women
4	Mr. Alampally Aravind	aravindalampally89@gmail.com	9014760354	NNRG Hyderabad
5	Miss G Soumya Reddy	soumya481@gmail.com	8919107360	NNRG Hyderabad
6	Mr. pilli seetha ramaiah	pillisidhu13@gmail.com	9110732980	Knrcer
7	Mr. SRINIVASA RAO THAMANAM	sthamana@gitam.edu	8801956465	GITAM(Deemed to be University)
8	Mr. KOUSTUBH KULKARNI	koustubhkulkarni12@gmail.com	9652453098	NNRG Hyderabad
9	Mr. K NARSIMHA REDDY	simha.vce@vardhaman.org	9032180918	Vardhaman College of Engineering
10	Mrs. LAVANYA NALLA	reddy409lavanya@gmail.com	9391832343	NNRG Hyderabad
11	Dr. R. suneetha Rani	suneetharavi.rayapati@gmail.com	9182598402	BVRITHYDERABAD College of Engineering for Women
12	Mr. SURESH NALLA	sureshnalla44@gmail.com	9032695772	NNRG Hyderabad
13	Mrs. SOLIPURAM ALIVELU MANGAMMA	alivelu.ece@nmrec.edu.in	9959066590	Nalla Malla Reddy Engineering College
14	Dr. Ashok kumar Konduru	akkonduru@gmail.com	9949123762	Bhoj Reddy Engineering College for Women
15	Mrs. INDURI PAVANI	ipavani.436@gmail.com	7382152205	BRILLIANT INSTITUTE OF ENGINEERING AND TECHNOLOGY
16	Mrs. RAVULA VIJAYA	vijaya.ravula@gmail.com	9849604663	BRILLIANT INSTITUTE OF ENGINEERING AND TECHNOLOGY
17	Mrs. DANDA LOHITHA	lohitha1649@gmail.com	9581226876	BRILLIANT INSTITUTE OF ENGINEERING AND TECHNOLOGY
18	Mr. P SANTHOSH	santhosh.mvsrec@gmail.com	9000073130	Hyderabad Institute of Technology and Management
19	Dr. SUNKARABOINA SREENU	sreenu.sunkaraboina@gmail.com	9640648110	Vardhaman College of Engineering, Hyderabad
20	Dr. PRADEEP KUMAR REDDY SANGALA	pradeepkumarreddys@gmail.com	9440268380	VIDYA JYOTHI INSTITUTE OF TECHNOLOGY
21	Mr. Santosh Kumar	sbejugam@gitam.edu	9949393844	Gandhi Institute of Technology and Management
22	Mr. Mittakanti Vinod Kumar	m.vinod4b7@gmail.com	9989863476	Brilliant Institute of Engineering and Technology
23	Mr. Marimgamti Nikhil Sitharam	m.nikhil4ece@gmail.com	9491543208	Kasireddy Narayanreddy College of Engineering & Research
24	Mr. LAKAVATH	ravichandar2010@gmail.com	8074813013	Kasireddy narayanareddy college of engineering and research

	RAVICHANDAR			
25	Mr. VISHNU VARDHAN LAKKARAJU	vardhan.lakkaraju@gmail.com	9701619585	KASIREDDY NARAYAN REDDY COLLEGE OF ENGINEERING AND RESEARCH
26	Mr. M VARASUNDAR	m.varasundar@gmail.com	8328218530	Kasireddy narayanareddy college of engineering and research
27	Mrs. Swathi Chiluka	cswathi002@gmail.com	9666544439	kasireddy Narayanreddy college of engineering and Research
28	Mrs. L PRATHIMA	prathima.likki@gmail.com	9704894531	kasiredy narayan Reddy college of engineering
29	Mrs. NAELA HUSNA	faaz.falaah@gmail.com	9985511461	Brilliant Institute of Engineering and Technology
30	Mrs. Mahalakshmi	mahalakshmiy1995@gmail.com	8919367325	KNRR
31	Mr. T SHASHIBHUSHAN	shashibushan.t@natcopharma.co.in	8105958080	NATCO PHARMA LTD
32	Dr. S REKHA	rekhaprivate23@gmail.com	9442993602	NNRG Hyderabad
33	Mr. ABRAHAM THOMAS	abukunnil@gmail.com	8281688950	NNRG Hyderabad
34	Mrs. Dharavath Vinoda	dvinodajntu@gmail.com	9493112036	BRILLIANT INSTUTUTE OF ENGINEERING AND TECHNOLOGY
35	Mrs. subhashini	sagarsubhashini99@gmail.com	7675904660	Brilliant institute of engineering and technology
36	Mrs. N SALMASULTHANA	nsalma2106@gmail.com	9642180682	OSMANIA UNIVERSITY
37	Dr. G Deepthi	deepthigurijala23@gmail.com	6305369913	Samskruti College of Engineering and Technology
38	Dr. MADHURI GUMMINENI	drgm_cse@vignan.ac.in	8341659845	Vignan's Foundation for Science Technology and Research(VFSTR),Deemed to be University
39	Mr. PABHATHI SWAMY	swamy04321@gmail.com	8790957502	Princeton institute of technology for women
40	Mr. SRIKANTH PRASAD NALLABELLI	nsp.vit2020@gmail.com	9391049134	Methodist College of Engineering & Technology
41	Dr. BATTULA BALNARSAIAH	battulabalnarsaiah.cse@nmrec.edu.in	9963977281	NMREC HYDERABAD
42	Dr. MADDULURI SUNEETHA	suneethasivakrishna@gmail.com	8142003997	Sri Harshini College of Engineering and technology for women
43	Mr. SIVAKRISHNA P	sivakrishna535@gmail.com	8464962689	Rise Krishna Sai Prakasam Group of Institutions
44	Mrs. SHETTY SRAVANTHI	shettysravanthi18@gmail.com	9550303400	NNRG Hyderabad
45	Dr. J Prasanth Kumar	prasanthkumarjsir@rcee.ac.in	6303418618	Ramachandra College of Engg
46	Mr. Srikanth Veeram	veesamsrikanth@gmail.com	8106047091	Princeton Institute of Engineering and Technology for Women
47	Mrs. ANURADHA K	kanuradha06@gmail.com	9703959644	NNRG Hyderabad
48	Miss K VIJAYA BHARATHI	keesara.bharathireddy@gmail.com	9866065900	MALLAREDDY COLLEGE OF ENGINEERING
49	Mrs. Karnati Bhargavi	karnati.bhargavi475@gmail.com	9704311245	TEEGALA KRISHNA REDDY ENGINEERING COLLEGE
50	Mrs. B.REKHA	rekhab0611@gmail.com	9908899104	TEEGALA KRISHNA REDDY ENGINEERING COLLEGE
51	Mrs. Madhavi	myna.madhu@gmail.com	9949223506	NNRG Hyderabad

The FDP inauguration was held on 1ST December 2025 at 10:00 am in the Conference Hall of NNRG-School of Engineering. The Chief Guest of the program was *Dr. G Mallikarjuna Scientist-F, Group Director, RCI/DRDO, Hyd* and the Guest of Honors were Dr. C.V. Krishna Reddy (Director – NNRG), DR G. Janardhana Raju (Dean – School of Engineering, NNRG), Deans and the coordinator of the FDP was Dr. Ravi Bolimera (Associate Professor and Head – ECE, NNRG). The FDP was commenced by welcome address delivered by Dr B. Ravi followed by Dr. C.V. Krishna Reddy (Director – NNRG), Deans of Engineering addressed the gathering and shared the insights about college and the management. The chief guest of the program *Dr. G Mallikarjuna Rao* had delivered the Inaugural speech and motivated the participants. The glimpses of the Inaugural occasion are displayed below.



Inaugural Programme on 1ST December 2025 commenced with lighting of the Lamp

The summary of the talk is a **RADAR seeker** is a critical subsystem in guided missiles and autonomous defense systems that detects, tracks, and homes in on a target using reflected radio waves. The integration of **Artificial Intelligence (AI)** significantly enhances the performance, accuracy, and adaptability of modern radar seekers.

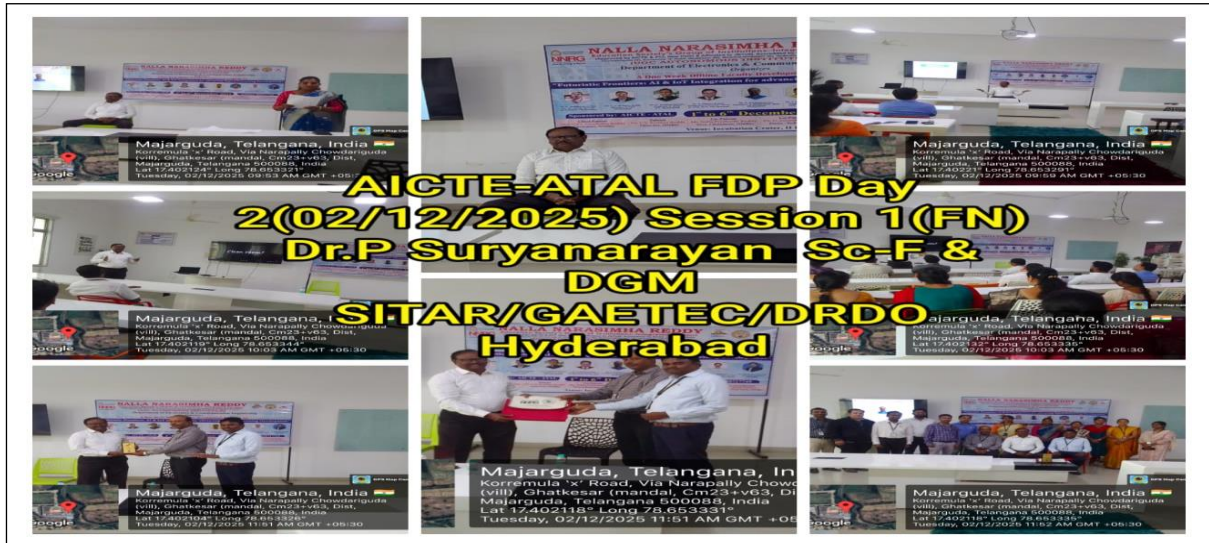


Group photo of the Participants along with the delegates



Dr J Ravi Kumar , Professor , NIT ,Warangal addressing the gathering on Optimization algorithms for building signal processing applications

Optimization algorithms are mathematical techniques used to find the best possible solution (minimum error or maximum performance) under given constraints. In **signal processing applications**, optimization plays a vital role in improving accuracy, efficiency, and robustness of systems such as filtering, detection, estimation, compression, and communication systems.



Dr. P.Suryanarayan ,SC-F&DCM ,SITAR/GAETEC/DRDO, Hyderabad delivering talk on Sensors and IoT implementation to signal Aqizition

Signal acquisition is the process of collecting real-world physical signals and converting them into electrical signals for processing, analysis, and decision-making. **Sensors** and **Internet of Things (IoT)** technologies play a crucial role in enabling efficient, real-time, and remote signal acquisition systems.



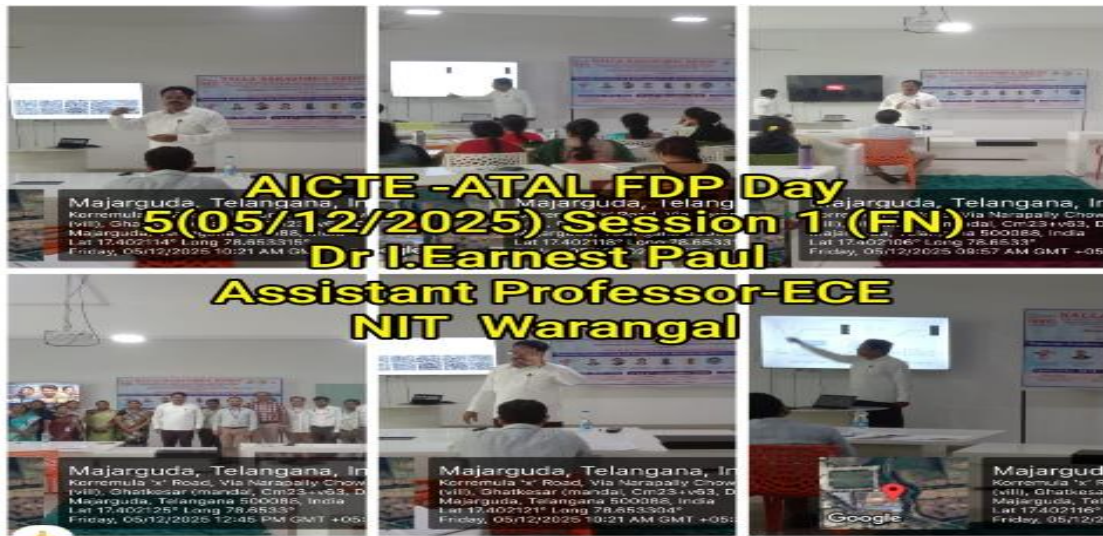
Sri. D. Raju is discussing the application of technologies for controlling train separation, timing, and speed. The integration of disruptive technologies such as Artificial Intelligence (AI), Internet of Things (IoT), big data analytics, advanced communication systems, and automation is transforming conventional railway signalling into intelligent and smart systems.



Glimpses of Industrial visit as a part of the workshop

Industrial Visit at CCMB, Hyderabad is **Atal Incubation Centre – Centre for Cellular & Molecular Biology (AIC-CCMB)** is a premier **biotechnology and life-sciences incubator** located at the *Centre for Cellular & Molecular Biology (CCMB)* in Hyderabad, Telangana. It was established in **2017** as part of the **Atal Innovation Mission (AIM)** of NITI Aayog, Government of India to promote and support deep-science startups, especially in **healthcare, biotechnology, pharmaceutical and allied sectors**.

AIC-CCMB is a **government-backed, life-science incubator** that nurtures deep-tech startups by providing **research infrastructure, funding pathways, mentorship, and industry linkages** — playing a key role in translating biotechnology research into **commercially viable innovations** that can impact healthcare, industry, and society.



Dr. I Earnest Paul, Assistant Professor, NIT Warnagal delivering talk on Generative Adversarial Network

Generative Adversarial Networks (GANs) are a class of deep learning models used to generate realistic synthetic data. When combined with **Artificial Intelligence (AI)** and the **Internet of Things (IoT)**, GANs enhance data quality, system intelligence, and robustness of smart, connected applications.



Dr. T Kishore Kumar, Professor, NIT Warnagal delivering talk on AI and IoT for Biomedical Signal Processing

Biomedical signal processing involves the acquisition, analysis, and interpretation of physiological signals such as ECG, EEG, EMG, blood pressure, and oxygen saturation. The integration of Artificial Intelligence (AI) and the Internet of Things (IoT) enables intelligent, real-time, remote, and automated healthcare monitoring systems.



Director-NNRG Dr C V Krishna Reddy delivering talk on NEP 2020

National Education Policy (NEP) 2020, approved by the **Government of India**, aims to transform India's education system to meet the needs of the **21st century**. It replaces the **NEP 1986** and focuses on **holistic, flexible, multidisciplinary, and skill-oriented education** from school to higher education.

Key Objectives of NEP 2020

- Provide **universal access to quality education**
- Promote **critical thinking, creativity, and innovation**
- Reduce rote learning and exam stress
- Integrate **skills, values, and ethics** in education
- Make India a **global knowledge hub**



Dr C Krishna Mohan , Professor and Dean , IIT Hyderabad delivering talk on Real-Time Aerial Tracker on Embedded Hardware Deployed on Ballistic Systems

Real-Time Aerial Tracker is a critical subsystem in ballistic and guided weapon systems used to detect, track, and predict the trajectory of aerial targets such as aircraft, drones, missiles, or incoming threats. When deployed on embedded hardware, the system operates under strict constraints of latency, power, size, and reliability, while delivering high-speed and accurate tracking performance.

Feedback given by one of the Participants of the FDP

Date: 06-12-2025

I am so pleased to attend the AICTE-ATAL sponsored FDP on " **Futuristic Frontiers: AI &IoT Integration for advancing Signal Processing Development** " at NNRG-School of Engineering from 1st to 6th December 2025. I thank the Management of NNRG College and program coordinators for conducting such programme in the most emerging domain. It was really a nice experience to be part of this FDP programme and I definitely gained knowledge and motivated to do research in this field. The way of conduction of FDP, the sessions organized and speakers are so amazing. I wish them to organize many more in the coming future for the benefit of the faculties and students.

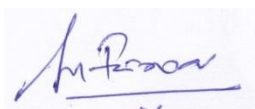
Thanks for the opportunity given to share my thoughts.



Dr. R. Suneetha Rani
Associate Professor
Dept. of ECE
BVRITH

It was a great Initiative by ATAL Academy to conduct FDP for faculty members of technical institute of India at free of cost. The Program coordinators are thankful to AICTE for giving me this opportunity.

FDP Co-Coordinator



Dr. Shaik Fairouz
Associate Professor, ECE

FDP Coordinator



Dr. Ravi Bolimera
Associate Professor & Head, ECE