

**A Report on Five-day Faculty Development Programme on
"Modern Machine Learning and AI Techniques Using MATLAB for Engineering and Industry"
Organized by Department of Electronics & Communication Engineering
Sponsored by MITs IEEE ComSoc Student Branch
from : 27.01.2025 to 31.01.2025**



MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE
(UGC-AUTONOMOUS INSTITUTION)
Madanapalle - 517325, Annamayya Dist., Andhra Pradesh, India

**Five - days Faculty Development Program on
"Modern Machine Learning and AI Techniques Using MATLAB for
Engineering and Industry"**

Organized by
Department of Electronics and Communication Engineering (ECE)

Sponsored by
MITs & MITs IEEE ComSoc Student Branch

Date : 27th - 31st January 2025 Time : 10.00AM to 05.00PM Venue : Scale up room

Resource Person
Mr. Prem Kumar
Product Manager,
Capricot Technologies Pvt. Ltd

Chief Patron Dr. N. Vijaya Bhaskar Choudary Secretary & Correspondent	Patron Mrs. Keerthi Nadella Executive Director	Chief Coordinator Dr. C. Yuvaraj Principal	Chair person Dr. P. Ramanathan Vice Principal	Convener Dr. S. Rajasekaran Head, ECE Department	Coordinator Dr. Suman Saurav Assistant Professor/ECE	Co-Coordinator Dr. Devashish Assistant Professor/ECE
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Brochure:



<p>Chief patron Dr. N. Vijaya Bhaskar Choudary, Ph.D. Secretary & Correspondent</p> <p>Patron Mrs. Keerthi Nadella Executive Director</p> <p>Chief Coordinator Dr. C. Yuvaraj, Ph.D. Principal</p> <p>Chairperson Dr. P. Ramanathan, Ph.D. Vice Principal, MITs</p> <p>Convener Dr. S. Rajasekaran Head, ECE Department</p> <hr/> <p>Coordinator Dr. Suman Saurav, Ph.D. Asst. Prof., Dept of ECE, MITs</p> <p>Co-Coordinator Dr. Devashish, Ph.D. Asst. Prof., Dept of ECE, MITs</p>	<p align="center">Resource Persons</p> <p>Mr. Prem Kumar Product Manager, Capricot Technologies Pvt. Ltd.</p> <p align="center">Program Schedule</p> <p>Day 1: Introduction to ML & MATLAB Basics •Fundamentals of MATLAB for ML & AI •Overview of AI in Engineering & Industry</p> <p>Day 2: Supervised Learning •Regression & Classification Techniques •Model Evaluation Metrics (Accuracy, Precision, Recall) •Hands-on: Implementing & Optimizing Models</p> <p>Day 3: Unsupervised Learning & Feature Engineering •Clustering (K-Means, PCA) & Dimensionality Reduction •Hand-on : Feature Selection Techniques •Case Study: Data Segmentation</p> <p>Day 4: Deep Learning & Neural Networks •ANN, CNN for Image Processing, RNN for Time-Series •Hand-on : Building & Evaluating Deep Learning Models •Case Study: Image Classification</p> <p>Day 5: AI Deployment & Applications •Model Deployment (Edge & Cloud AI) •Industrial Applications & Ethical Considerations •Hand-on : End-to-End Project & Certification Distribution</p>	<p align="center">MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE (UGC-AUTONOMOUS INSTITUTION)</p>  <p align="center">Organised By Department of Electronics and Communication Engineering</p> <p align="center">Five-days Faculty Development Program "Modern Machine Learning and AI Techniques Using MATLAB for Engineering and Industry"</p> <p align="center">Sponsored by MITs & MITs IEEE ComSoc Student Branch</p> <p align="center">27th - 31st January 2025 (Hybrid Mode)</p>
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Report Submitted by: Dr. Suman Saurav, Assistant Professor, Department of Electronics & Communication Engineering.

Event Coordinators: Dr. Suman Saurav, Assistant Professor, Department of Electronics & Communication Engineering; Dr. Devashish, Assistant Professor, Department of Electronics & Communication Engineering.

Resource person Details: Mr. J. Prem Kumar, Product Manager, ARKANCE Hyderabad (formerly Capricot Technologies Private Limited).

Mode of Conduct: Hybrid Mode

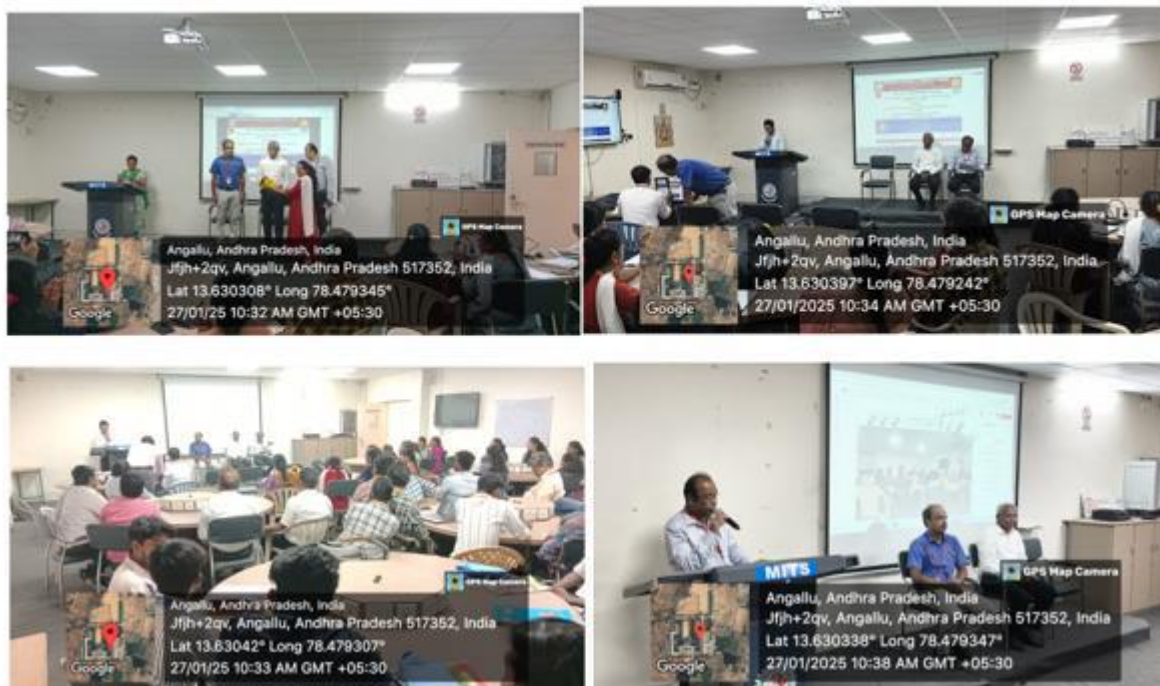
Participants: 60 Participants from outside the host college. 42 Participants from the host college.

Report Received on 01.02.2025.

Venue and Time: Scaleup and 10:00 AM -5:00 PM

The Department of Electronics and Communication Engineering hosted a **Five-Day Faculty Development Program (FDP)** titled “*Modern Machine Learning and AI Techniques Using MATLAB for Engineering and Industry*”. Conducted at **Madanapalle Institute of Technology & Science**, the FDP took place over five days and witnessed active participation from **102 attendees**, including **60 external participants** and **42 from the host institution**. External participants were from all over India.

The program commenced at **10:10 AM** with an **inaugural session**. **Dr. Suman Saurav, Assistant Professor in the Department of ECE**, provided a detailed overview of the FDP schedule. This was followed by a warm welcome address by **Dr. S. Rajasekaran, Head of the Department of ECE**, who emphasized the increasing relevance of **Machine Learning (ML) and Artificial Intelligence (AI) in engineering and industry**. The **Principal and the Head of the ECE Department** officially inaugurated the event, highlighting the importance of AI and ML in modern technological advancements. Concluding the inauguration, **Dr. Devashish, Assistant Professor in the Department of ECE**, introduced the distinguished resource persons for the sessions.



Day 1: Inauguration & Fundamentals of Machine Learning

The program commenced with an **inaugural session** featuring welcome remarks from the organizing committee. The inauguration program was conducted by the **Principal Sir and the Head of the ECE Department**. The keynote address emphasized the importance of **Machine Learning (ML) and Artificial Intelligence (AI) in modern engineering and industry applications**.

Program Schedule:

Day	Session 1 (10.10 - 12.30)	Session 2 (2:00-4:30)
Day 1 (27-01-2025)	Algorithm Development with MATLAB	

	<ol style="list-style-type: none"> 1. Fundamentals of MATLAB 2. Algorithm Development with MATLAB 3. Application Development with MATLAB-App-Designer 4. Comparison Between MATLAB and Python 5. Hardware Integration with MATLAB 6. New Features in MATLAB 2024B 7. Dynamic System Modelling with Simulink 	<ol style="list-style-type: none"> 1. Introduction to Simulink 2. Dynamic System Modelling 3. Solvers Selection and Advantages of Auto Solver 4. Embedding MATLAB Code into Simulink 5. Comparing MATLAB and Simulink 6. Hardware Integration with Simulink
Day 2 (28-01-2025)	Machine Learning with MATLAB	
	<ol style="list-style-type: none"> 1. Introduction to Machine Learning 2. Dataset Availability with MATLAB 3. Supervised Learning for Classification 4. Introduction to Classification Learner App 5. Engineering Applications for Machine Learning with MATLAB 	<ol style="list-style-type: none"> 1. Engineering Applications for Machine Learning in Academics using MATLAB 2. Introduction to Self-Paced Online Courses 3. Machine Learning Onramp
Day 3 (29-01-2025)	Artificial Intelligence with MATLAB and Simulink	
	<ol style="list-style-type: none"> 1. Introduction to Artificial Intelligence 2. Understanding Artificial Neural Network Architecture 3. Supervised Learning with Artificial Neural Networks 4. Comparison between Supervised Learning and Unsupervised Learning 5. Engineering Applications of Artificial Intelligence with MATLAB and Simulink 	<ol style="list-style-type: none"> 1. Artificial Intelligence Concepts with Simulink 2. Engineering Applications of Artificial Intelligence in Academics using MATLAB and Simulink 3. Comparison between Machine Learning and Artificial Intelligence
Day 4 (30-01-2025)	Deep Learning with MATLAB and Simulink	
	<ol style="list-style-type: none"> 1. Introduction to Deep Learning 2. Understanding Convolutional Neural Networks 3. Supervised Learning with Deep Learning 4. Comparison between Shallow Networks and Deep Networks 5. Engineering Applications for Deep Learning with MATLAB and Simulink 	<ol style="list-style-type: none"> 1. Deep Learning Concepts with Simulink 2. Engineering Applications for Deep Learning in Academics using MATLAB and Simulink 3. Comparison between Machine Learning and Deep Learning 4. Deep Learning Onramp

Day 5 (31-01-2025)	Reinforcement Learning with MATLAB	
	<ol style="list-style-type: none"> 1. Introduction to Reinforcement Learning 2. Advantages of Reinforcement Learning 3. Applications for Reinforcement Learning 4. MathWorks Resources for Academics 	Valedictory session with certificate distribution and participant feedback.



Conclusion:

The FDP successfully provided a **deep understanding of modern ML and AI techniques using MATLAB**. Participants gained hands-on experience and explored real-world applications. The sessions were interactive, engaging, and well-received by all attendees.

Outcome of the Program:

- Participants acquired fundamental and advanced knowledge of ML and AI techniques.
- Hands-on exposure to MATLAB for implementing ML models.
- Improved understanding of supervised, unsupervised, and deep learning methods.
- Ability to apply AI techniques to real-world engineering and industrial problems.
- Enhanced research opportunities and potential collaborations in AI and ML fields.
- Strengthened skills in using reinforcement learning for industrial applications.
- Practical experience with case studies and predictive maintenance models.

This FDP enhanced participants' skills and opened new research and industrial collaboration opportunities in Machine Learning and AI.