# MOTHER THERESA INSTITUTE OF ENGINEERING AND TECHNOLOGY

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING


Report-On

## "IoT & Machine Learning using MATLAB"

(18-04-2023 to 20-04-2023)

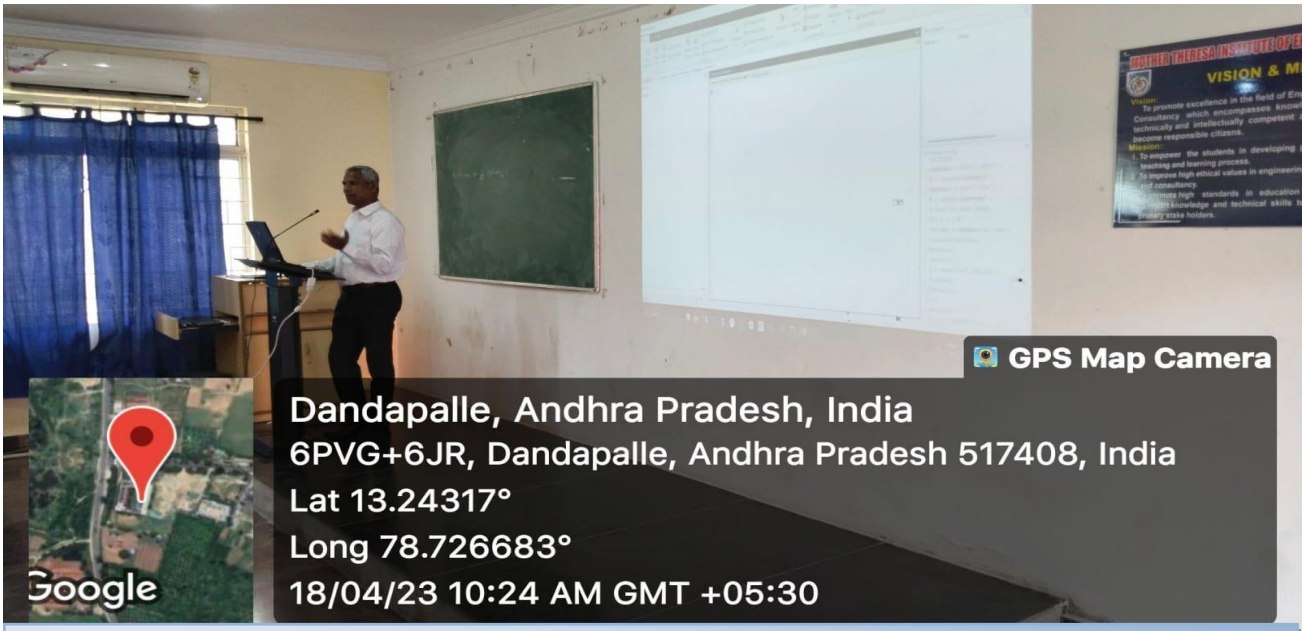
As the Department of EEE conducting the One week National level workshop on " **IoT & Machine Learning using MATLAB** "organized for students of III Year & II Year EEE on 18th April to 20th April 2023 to explore the working of the Copter in association with Pranav Solutions, Krishnagiri. The technical team has given mix of theory and practical knowledge on Solar PV design.

This program was organized by Mr. K Krishna Reddy, Head of the department with the co-ordination of Mr N V Kishore, Associate Professor, EEE Department.

As the emerging Internet of Things (IoT) brings a massive population of multi-modal sensors in the environment, there is a growing need in developing new Machine Learning (ML) techniques to analyze the data and unleash its power. A data-driven IoT ecosystem forms the basis of Ambient Intelligence, i.e., smart environment that is sensitive to the presence of humans and can ultimately help automate human life.

IoT data are highly heterogeneous, involving not only the traditional audio-visual modalities, but also many emerging sensory dimensions that go beyond human perception. For example, a single smartphone embeds 10+ sensors, including microphone, loudspeaker, camera, Lidar, IMU, GPS, proximity sensor, touch sensor, biometric sensor (e.g., optical heart sensor, blood oxygen sensor), wireless sensor (e.g., WiFi, Bluetooth, UWB, mmWave, Ultrasound), etc. Originally designed for communication or user interaction, these sensors are recently found to be more versatile, showing strong potentials to enable rich perception and support advanced ambient intelligent utilities, such as automatic detection of user activities, in-time recognition of hazard in environment, and other augmented cognition applications.

The rich IoT sensing paradigms pose vast new challenges and opportunities that call for coordinated research efforts between the ML and IoT communities. On one hand, the IoT data require new ML hardware/software platforms and innovative processing/labeling methods for efficient collection, curation, and analysis.




Resourse Person Explaining about IoT & ML

The objective of this workshop is to bring together leading researchers in the ML/IoT industry and academia to address these challenges. The workshop will also solicit benchmark IoT datasets, as a basis for ML researchers to design and benchmark new modeling and data analytic tools.

Topics of interest include but are not limited to:

- IoT dataset collection, annotation, and benchmark.
- ML platforms for IoT data generation and curation
- ML-enhanced IoT sensing hardware (e.g., neuromorphic sensors)
- Multi-modal and transfer learning across IoT modalities
- Large-scale self-supervised learning on IoT data with limited annotations
- Distributed ML (e.g., federated learning, split ML) on decentralized IoT devices
- Methods of leaking, detecting, and preserving privacy in IoT
- Security for ML-IoT
- Novel cross-disciplinary applications of ML-IoT, e.g., augmented cognition, mobile health


Students @ IoT & Machine Learning using MATLAB