A Report on One-Day Seminar on
"Harnessing Machine Learning for Breakthroughs in Electrical and Electronic Engineering"
Organised by Department of CSE-Artificial Intelligence & Machine Learning
on 24.09.2024

Report Submitted by: Dr. E. Sandhya, Assistant Professor, Department of CSE(AI&ML)
Resource Person Details: Dr. A. V. Pavan Kumar, Professor & Head, Department of EEE
Participants: II Year CSE – AI & ML and CSE- Networks
Venue: Seminar Hall A
Mode of Conduct: Offline
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Department of Computer Science & Engineering – AI & ML has organized a Seminar to the students titled "One Day Seminar on Harnessing Machine Learning for Breakthroughs in Electrical and Electronic Engineering" on 24.09.2024 (Tuesday).

Welcome Address:

The event commenced with a cordial and engaging welcome address to all by Dr. E. Sandhya, Asst. Professor, Department of CSE – AI & ML, Madanapalle Institute of Technology & Science (MITS), Madanapalle. The event's objective was to offer a keen comprehension of the most recent research, innovations, and trends in this interdisciplinary field. The seminar illustrates the distinctive opportunities for innovation and advancement that are emerging as a result of the integration of electrical and electronic engineering with machine learning.

Keynote Address

Dr. S. Padma, Associate Professor and Head of the Department of CSE – AI & ML at Madanapalle Institute of Technology & Science (MITS), Madanapalle, greeted the resource persons in her keynote address and encouraged the students to further their education. Madam has provided a note on the integration of AI&ML into the applications of electrical and electronic engineering to optimise power systems, enhance control and automation, improve signal processing, enable smart grids, and advance renewable energy management.

Dr. Ramanathan, Vice Principal of Academics of MITS, Madanapalle, elucidated the significance of AI and ML in Electrical and Electronic Engineering. He inspired the students to educate themselves through the Seminar. Sir has provided a memorandum on how machine learning facilitates the identification of optimal methods for the storage and distribution of renewable energy, as well as how artificial intelligence approaches can forecast faults in power electronic components, hence improving maintenance and minimising downtimes.

Resource Person Lecture:

Dr. A. Pavan Kumar, Professor and Head of the Department of Electrical and Electronic Engineering at MITS, Madanapalle, highlighted the integration of machine learning and artificial intelligence within the field of electrical and electronic engineering.

The resource person shared the following points in the Seminar:

- Evolution of artificial intelligence and machine learning
- AI and ML enhance system efficiency through real-time monitoring, predictive maintenance, and adaptive control in various EEE applications.
- AI algorithms analyse large datasets to forecast energy demands, detect faults, and optimize performance in power systems and renewable energy.
- AI and ML models can predict electricity demand accurately, allowing better grid management and load balancing.
- Machine learning algorithms optimize energy distribution and storage for smart grids, integrating renewable energy sources efficiently.

He then explained about Power Systems

1. Data Collection and Pre-processing: Gather data from sensors, smart meters, and historical records, then clean and normalize it for analysis.
2. Model Training and Testing: Use machine learning algorithms (e.g., regression, neural networks) to train models for tasks like load forecasting, fault detection, and energy optimization.
3. Deployment and Real-time Monitoring: Implement trained models in the grid for real-time prediction, fault identification, and adaptive control of energy distribution.
4. Optimization and Continuous Learning: Continuously update models based on new data for improved performance and efficiency in power management.

Vote of thanks:

The Seminar officially ended with a vote of gratitude presented by Dr. E. Sandhya, Assistant Professor in the Department of CSE - AI & ML. She conveyed sincere gratitude to the resource expert for sharing his expertise. She expressed her gratitude to the Head of Department, Principal, and Management for their assistance in organising the Seminar.

Outcomes:

At the end of Seminar, Students will be able to

1. Understanding the processes involved in gathering, organizing, and refining data for accurate modelling and analysis in power systems.

2. Gain knowledge on the process of training predictive models to accurately forecast power system loads using historical data and machine learning techniques.

3. Comprehend the methods and techniques used for predicting energy demand and supply in real-time to optimize energy distribution and grid stability.

4. Understanding strategies and techniques for optimizing power management to enhance efficiency, reliability, and cost-effectiveness in energy systems.