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Short Term Training Program

The department of **Artificial Intelligence and Machine Learning** organised an **STTP** titled **Building AI agents using Generative AI** on **26-09-2025** and **27-09-2025** at **10:00 AM to 3:30 PM**, in **MVJCE, Bangalore**.

The following faculty members from the Department of AI & ML were present during the lecture:

- Prof. Susmitha M. N. – Head of Department
- Prof. Ankita Mishra – Assistant Professor
- Prof. Sanjivani Tipe – Assistant Professor
- Prof. Amit Kumar – Assistant Professor
- Prof. Suruthi S. – Assistant Professor

Objectives of the Event

- Provide participants with a strong foundational understanding of Machine Learning concepts, algorithms, and their applications.
- Introduce various supervised and unsupervised learning techniques used in real-world problem solving.
- Demonstrate the usage of popular ML libraries and tools essential for practical implementation.
- Build participant confidence in choosing appropriate algorithms, tuning models, and evaluating their performance effectively.
- Encourage hands-on learning and stimulate interest in advanced areas of AI and ML.

Day	Time	Session Details
Friday, September 26, 2025	10:35 am	Introduction to ML and Supervised Learning
Saturday, September 27, 2025	10:30 am	Advanced Techniques and Unsupervised Learning

Table 1: Schedule of the Event

Event Overview

The workshop spanned two intensive days, featuring theoretical sessions, demonstrations, and discussions on key Machine Learning algorithms and model development techniques. Experts from the field delivered sessions focusing on algorithmic intuition, mathematical underpinnings, and practical applications, ensuring a balance between conceptual clarity and implementation skills.

Machine Learning Algorithms

- Day 1 laid the groundwork by covering the core algorithms used in supervised learning along with their underlying principles, advantages, and limitations.
- Day 2 expanded on model tuning, evaluation, and more sophisticated methods like ensembles and unsupervised learning. Participants were also introduced to essential libraries that support ML workflows, enabling them to apply the concepts in practical scenarios

Figure 1: Lecture session

Day 1: Supervised Learning – Fundamentals

- Introduction to Machine Learning

- Types of Machine Learning
- Linear Regression
- Logistic Regression
- K-Nearest Neighbours (KNN)
- Support Vector Machines (SVM)
- Decision Tree Classifiers

Figure 2: Felicitation

Day 2: Advanced Techniques Unsupervised Learning

- Naïve Bayes Classifier
- Grid Search for Hyperparameter Tuning

- K-Fold Cross Validation
- Regularization Techniques
- Ensemble Models: Bagging, Boosting, Voting, Stacking
- Unsupervised Learning
- K-Means Clustering
- Dimensionality Reduction
- Principal Component Analysis (PCA)
- Overview of Useful ML Libraries

Outcomes and Impact

- Participants gained conceptual clarity on fundamental and advanced ML techniques. Regularisation and how to compare and select appropriate algorithms for various types of data and problems.
- Exposure to model optimisation and ensemble techniques enhanced their understanding of improving model performance. By the end of the workshop, participants were able to:
- Understand the theoretical basis of key ML algorithms.
- Evaluate models using cross-validation and hyperparameter tuning.
- Appreciate the role of unsupervised learning and dimensionality reduction in data analysis.
- Identify and use popular ML libraries for real-world tasks.
- The workshop successfully bridged the gap between theory and practice, inspiring participants to explore advanced topics further.

Conclusions

The two-day workshop on Machine Learning Fundamentals and Applications proved to be an insightful and impactful learning experience. By combining theoretical discussions with practical perspectives, the event empowered participants to approach machine learning problems with confidence. The broad coverage of supervised, unsupervised, and ensemble methods laid a strong foundation for future research, academic projects, and industry applications in the field of AI and Data Science.

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