

LIST OF PRESENTATION TOPICS

Machine Learning | Summer 2023-2024

1. Supervised Learning Algorithms
 - A detailed look at algorithms like linear regression, logistic regression, and support vector machines.
2. Unsupervised Learning Techniques
 - Exploration of clustering (K-means, hierarchical) and dimensionality reduction (PCA, t-SNE).
3. Neural Networks and Deep Learning
 - Basics of neural networks, introduction to deep learning, and popular architectures like CNNs and RNNs.
4. Natural Language Processing (NLP)
 - Overview of NLP, key techniques, and applications such as sentiment analysis and language translation.
5. Computer Vision
 - Introduction to computer vision, common techniques, and applications like image recognition and object detection.
6. Reinforcement Learning
 - Basics of reinforcement learning, key algorithms (Q-learning, deep Q-networks), and applications.
7. Model Evaluation and Validation
 - Techniques for evaluating machine learning models, such as cross-validation, precision, recall, and F1 score.
8. Bias and Fairness in Machine Learning
 - Discussion on biases in data and algorithms, methods to detect and mitigate bias, and ethical considerations.
9. Feature Engineering
 - Importance of feature engineering, techniques to create and select features, and impact on model performance.
10. Ensemble Methods
 - Overview of ensemble methods like bagging, boosting, and stacking, and their advantages over single models.
11. Time Series Analysis
 - Introduction to time series data, forecasting methods, and applications in finance and economics.
12. Anomaly Detection
 - Techniques for identifying outliers and anomalies, and their applications in fraud detection and network security.
13. Transfer Learning
 - Concept of transfer learning, its benefits, and examples of its application in NLP and computer vision.

14. AutoML and Model Optimization

- Introduction to AutoML, tools available, and techniques for hyperparameter tuning and model optimization.

15. Explainable AI (XAI)

- Importance of model interpretability, methods to explain models (e.g., SHAP, LIME), and applications.

16. Ethical AI and Responsible AI Development

- Principles of ethical AI, responsible AI practices, and case studies of ethical dilemmas in AI.

17. Machine Learning in Healthcare

- Applications of machine learning in healthcare, challenges, and potential benefits.

18. Data Preprocessing and Cleaning

- Importance of data preprocessing, common techniques, and their impact on model performance.

19. Graph-based Machine Learning

- Introduction to graph theory, graph neural networks, and their applications in social networks and biology.

Guidelines:

1. Maximum time for presentation is 10 minutes including question answers (8 minutes + 2 minutes)
2. The presentation slides and reports must be submitted a day before your presentation schedule. Submission link will be provided on timely manner.
3. The report must contain appropriate references for the information you provide in IEEE referencing format.
4. The plagiarism count should be below or equal to 25% and AI generated content should be below or equal to 45%.
5. The Naming format of the slide should be “yourName_ID_Section.pptx”
6. Select your presentation topic by filing up the google form from the following link or scanning the QR, <https://forms.gle/MdTQ7T1wixB6C2FV7>

