

Artificial Intelligence: 25-Topic Curriculum

1. Overview of AI and its fundamental concepts using python
2. Various domains where AI is applied today
3. Different data types and the significance of clean, reliable data
4. Core statistical principles relevant to AI (mean, variance, probability)
5. Introduction to machine learning and its primary categories
6. Understanding linear regression for predictive modelling
7. Basics of logistic regression for classification problems
8. Structure and functioning of decision tree algorithms
9. Ensemble learning with Random Forest models
10. Key performance metrics for evaluating ML models
11. Techniques for transforming and selecting useful features
12. Introduction to clustering methods such as K-Means and hierarchical clustering
13. Principles of dimensionality reduction with methods like PCA
14. Foundations of neural networks and common activation functions
15. How deep learning models learn through backpropagation and optimization
16. Understanding CNNs and their role in image analysis
17. Application of RNNs and LSTMs for sequential data
18. Methods to prevent overfitting in machine learning models
19. Fundamental concepts of Natural Language Processing
20. Basics of computer vision and image-based AI systems

21. Techniques used in forecasting and time-series modelling
22. Introduction to reinforcement learning and agent-based systems
23. Steps involved in developing an AI project
24. Ethical considerations, fairness, and data privacy in AI
25. complete AI project from start to finish