Artificial Intelligence and Machine Learning (AIML) - 100 Questions

Section 1: Fundamentals of AI & ML

1. What is Artificial Intelligence?
2. What are the main types of AI?
3. Define Machine Learning.
4. What are the types of Machine Learning?
5. Explain Supervised Learning with an example.
6. Explain Unsupervised Learning with an example.
7. What is Reinforcement Learning?
8. What is a Model in Machine Learning?
9. What is a Dataset?
10. Define Training and Testing in ML.

Section 2: Machine Learning Algorithms

11. What is a Decision Tree?
12. Explain the concept of Overfitting.
13. How does the k-Nearest Neighbors (KNN) algorithm work?
14. What is Logistic Regression?
15. Explain the Naive Bayes algorithm.
16. What is Support Vector Machine (SVM)?
17. What is the difference between Regression and Classification?
18. What is the Gradient Descent algorithm?
19. Explain the working of Random Forest.
20. What is the role of a Cost Function in ML?

Section 3: Neural Networks & Deep Learning

21. What is an Artificial Neural Network (ANN)?
22. Explain the structure of a Neural Network.
23. What is an Activation Function?
24. Name some common Activation Functions.
25. What is the role of Backpropagation?
26. Explain the concept of a Convolutional Neural Network (CNN).
27. What is the difference between CNN and ANN?

28. What is Recurrent Neural Network (RNN)?
29. What are Long Short-Term Memory (LSTM) networks?
30. How does Batch Normalization help in Deep Learning?

Section 4: Natural Language Processing (NLP)

31. What is NLP?
32. What are the main applications of NLP?
33. What is Tokenization in NLP?
34. What is Lemmatization?
35. What is the difference between Lemmatization and Stemming?
36. What is Word Embedding?
37. Explain the concept of Named Entity Recognition (NER).
38. What is the purpose of Stop Words removal?
39. What is the TF-IDF technique?
40. Explain the BERT model.

Section 5: Computer Vision

41. What is Computer Vision?
42. What are the applications of Computer Vision?
43. What is Image Processing?
44. Explain Edge Detection in Image Processing.
45. What is Object Detection?
46. What is the role of OpenCV in AI?
47. What is Image Segmentation?
48. What is the difference between Object Detection and Object Recognition?
49. Explain the YOLO algorithm.
50. What is Feature Extraction in Image Processing?

Section 6: AI Ethics & Applications

51. What are the ethical concerns in AI?
52. Explain the concept of Bias in AI.
53. How can AI be misused?
54. What are AI's contributions to healthcare?
55. How is AI used in autonomous vehicles?

56. What is Explainable AI?
57. What are the limitations of AI?
58. How does AI impact cybersecurity?
59. What is the future of AI in business?
60. Explain the role of AI in recommendation systems.

Section 7: Advanced Concepts in AI & ML

61. What is Transfer Learning?
62. What is Federated Learning?
63. Explain Reinforcement Learning in robotics.
64. What is GAN (Generative Adversarial Network)?
65. What are Transformer Models?
66. Explain Few-shot Learning.
67. What is Meta Learning?
68. What is Zero-shot Learning?
69. What is the difference between AI, ML, and Deep Learning?
70. What is a Hyperparameter in Machine Learning?

Section 8: AI Frameworks & Libraries

71. What is TensorFlow?
72. What is PyTorch?
73. What is Scikit-Learn used for?
74. Explain the use of Keras in Deep Learning.
75. What are the advantages of using Jupyter Notebook for AI?
76. What is OpenAI's GPT model?
77. What is the difference between PyTorch and TensorFlow?
78. Explain the role of Matplotlib and Seaborn in ML.
79. What is the purpose of Pandas in Data Science?
80. What is the function of NumPy in AI?

Section 9: Optimization Techniques

81. What is Hyperparameter Tuning?
82. What is Cross-validation in ML?
83. What is the purpose of Dropout in Neural Networks?

84. Explain Data Augmentation in Deep Learning.
85. What is Feature Selection?
86. What is Principal Component Analysis (PCA)?
87. How does Feature Scaling improve ML models?
88. What is the Adam Optimizer?
89. What is the difference between Batch and Stochastic Gradient Descent?
90. How do you handle imbalanced datasets?

Section 10: AI in Real-world Applications

91. How is AI used in fraud detection?
92. How does AI contribute to stock market predictions?
93. Explain AI's role in personalized marketing.
94. What is the impact of AI on automation?
95. What are some AI-driven chatbots?
96. How is AI used in the medical field?
97. What is the role of AI in gaming?
98. How does AI help in speech recognition?
99. How is AI used in social media platforms?
100. What are the latest trends in AI research?

This document contains 100 important questions for AIML concepts and is useful for interviews, exams, and general knowledge improvement.