100 Interview Questions

Most asked for Machine Learning

100 Most Asked Machine Learning Interview Questions

Practical Applications

1. How would you handle imbalanced datasets?
2. What is anomaly detection?
3. Describe a use case for clustering algorithms.
4. How do you deploy a machine learning model?
5. What is A/B testing and how is it used in machine learning?
6. Explain the concept of a recommendation system.
7. How would you approach building a spam detection system?
8. What are the ethical considerations in machine learning?
9. What is the importance of model interpretability?
10. How do you ensure the privacy of data in machine learning applications?

Tools and Libraries

1. What is TensorFlow?
2. Describe the use of PyTorch.
3. What is Scikit-Learn and what are its main features?
4. How do you use Keras in deep learning?
5. What is the purpose of the Pandas library in data science?
6. Explain the use of NumPy in machine learning.
7. What is Matplotlib used for?
8. How do you use Jupyter Notebooks in your workflow?
9. What is Apache Spark and how is it used in machine learning?
10. Describe the use of Docker in deploying machine learning models.

Industry Knowledge

1. What is a data pipeline?
2. How do you manage big data in machine learning projects?
3. What are some challenges in deploying machine learning models in production?
4. Explain the role of a data scientist in a machine learning project.
5. What is MLOps and why is it important?

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Deep Learning

1. What is a neural network?
2. Explain the concept of backpropagation.
3. What are activation functions, and why are they used?
4. Describe the ReLU activation function.
5. What is a convolutional neural network (CNN)?
6. Explain the architecture of a CNN.
7. What is a recurrent neural network (RNN)?
8. How do LSTM networks work?
9. What are generative adversarial networks (GANs)?
10. Explain the concept of transfer learning.
11. What is a dropout in neural networks?
12. What is batch normalization?
13. Describe the concept of a learning rate.
14. What are vanishing and exploding gradients?
15. Explain the architecture of a Transformer model.

Feature Engineering

1. What is feature selection?
2. Explain the concept of feature extraction.
3. What are some common techniques for feature scaling?
4. Describe one-hot encoding.
5. What is dimensionality reduction?
6. Explain Principal Component Analysis (PCA).
7. What is t-SNE and how is it used?
8. Describe the importance of feature engineering.
9. How would you handle missing data in a dataset?
10. What are categorical features and how do you handle them?

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Basic Concepts

1. What is machine learning and how does it differ from traditional programming?
2. Explain the difference between supervised, unsupervised, and reinforcement learning.
3. What is overfitting and how can you prevent it?
4. What is underfitting in machine learning?
5. Explain the bias-variance tradeoff.
6. What is a confusion matrix, and how is it used?
7. Define precision and recall.
8. What is the F1 score and how is it calculated?
9. What is a ROC curve?
10. Explain the difference between classification and regression.
11. What is cross-validation and why is it important?
12. Describe the k-nearest neighbors (KNN) algorithm.
13. What is the difference between a parametric and a non-parametric model?
14. Explain the concept of a decision boundary.
15. What are some common distance metrics used in machine learning?

Algorithms and Models

1. Describe the working of a decision tree.
2. What is ensemble learning and give an example?
3. Explain the random forest algorithm.
4. What is boosting and how does it work?
5. Describe the gradient boosting algorithm.
6. Explain the difference between bagging and boosting.
7. What is a support vector machine (SVM)?
8. Explain the kernel trick in SVM.
9. What is logistic regression?
10. How does linear regression work?
11. Explain the concept of regularization and its types.
12. What is L1 regularization?
13. What is L2 regularization?
14. Describe the Naive Bayes classifier.
15. Explain the k-means clustering algorithm

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Evaluation and Metrics

1. What is cross-entropy loss?
2. How do you evaluate a regression model?
3. Explain the concept of the coefficient of determination (R^2).
4. What is mean squared error (MSE)?
5. What is mean absolute error (MAE)?
6. Explain the purpose of a validation set.
7. What is the difference between a training set and a test set?
8. How do you perform model selection?
9. What are hyperparameters and how do you tune them?
10. Describe grid search and random search.

Advanced Topics

1. What is an autoencoder?
2. Explain the concept of reinforcement learning.
3. What is Q-learning?
4. Describe the concept of Markov decision processes (MDP).
5. What is Monte Carlo simulation?
6. Explain the Bellman equation.
7. What are embeddings in NLP?
8. What is Word2Vec?
9. Explain the difference between bag-of-words and TF-IDF.
10. What are attention mechanisms in neural networks?