

1. Vectors and Scalars:

- A scalar is a single numerical value.
- A vector is an ordered collection of scalars. It has both magnitude and direction.

2. Vector Operations:

- Vector Addition: Adding corresponding elements of two vectors.
- Scalar Multiplication: Multiplying a vector by a scalar.
- Dot Product (Inner Product): A binary operation that takes two equal-length sequences of numbers (usually vectors) and returns a single number. It's defined as the sum of the products of their corresponding components.

3. Matrices:

- A matrix is a 2-dimensional array of numbers, symbols, or expressions arranged in rows and columns.

4. Matrix Operations:

- Matrix Addition and Subtraction: Element-wise addition or subtraction of corresponding elements of two matrices of the same size.
- Scalar Multiplication of a Matrix: Multiplying every element of a matrix by a scalar.
- Matrix Multiplication: A more complex operation that involves the dot product of rows and columns.

5. Transpose of a Matrix:

- The transpose of a matrix flips it over its diagonal.

6. Matrix Inversion:

- The inverse of a square matrix A (denoted as A^{-1}) is another matrix such that when it's multiplied by A , the result is the identity matrix.

7. Eigenvalues and Eigenvectors:

- For a square matrix A , an eigenvector is a non-zero vector v such that Av is a scalar multiple of v . The corresponding scalar is called the eigenvalue.

8. Determinant:

- The determinant of a square matrix is a scalar value that can be computed from the elements of the matrix.

9. Solving Linear Systems:

- Linear algebra is used to solve systems of linear equations. This is particularly important in regression problems in machine learning.

10. Matrix Decompositions:

- Techniques like LU decomposition, QR decomposition, and Singular Value Decomposition (SVD) are used to factorize a matrix into simpler, more interpretable components.

11. Norms:

- A norm is a way of measuring the size of a vector. Common norms include the L1-norm (sum of absolute values), L2-norm (Euclidean norm), and infinity-norm (maximum absolute value).

12. Orthogonality:

- Vectors are orthogonal if their dot product is zero. A set of vectors is orthonormal if they are orthogonal and all have a unit norm.

Related posts:

1. What is Machine Learning ?
2. Types of Machine Learning ?
3. Applications of Machine Learning
4. Data Preprocessing
5. Data Cleaning
6. Handling Missing Data
7. Feature Scaling

8. Labeled data in Machine learning
9. Difference between Supervised vs Unsupervised vs Reinforcement learning
10. Machine learning algorithms for Big data
11. Difference between Supervised vs Unsupervised vs Reinforcement learning
12. What is training data in Machine learning
13. What is Ordinary Least Squares (OLS) estimation
14. Scalar in Machine Learning
15. Scalars in Loss Functions | Machine Learning
16. Supervised Learning
17. Top Interview Questions and Answers for Supervised Learning
18. Define machine learning and explain its importance in real-world applications.
19. Differences Between Machine Learning and Artificial Intelligence
20. Machine Learning works on which type of data ?
21. What is target variable and independent variable in machine learning
22. Machine Learning Scope and Limitations
23. What is Regression in Machine learning
24. Statistics and linear algebra for machine learning
25. Finding Machine Learning Datasets
26. What is hypothesis function and testing
27. Explain computer vision with an appropriate example
28. Explain Reinforcement learning with an appropriate example
29. Reinforcement Learning Framework
30. Data augmentation
31. Normalizing Data Sets in Machine Learning
32. Machine learning models
33. Unsupervised machine learning
34. Neural Network in Machine Learning

35. Recurrent neural network
36. Support Vector Machines
37. Long short-term memory (LSTM) networks
38. Convolutional neural network
39. How to implement Convolutional neural network in Python
40. What is MNIST ?
41. What does it mean to train a model on a dataset ?
42. Can a textual dataset be used with an openCV?
43. Name some popular machine learning libraries.
44. Introduction to Machine Learning
45. Some real time examples of machine learning
46. Like machine learning, what are other approaches in AI ?
47. Statistics and Linear Algebra for Machine Learning ?
48. What is convex optimization in simple terms ?
49. What is data visualization in simple terms ?
50. What is data preprocessing in machine learning ?
51. What are data distributions, and why are they important ?
52. What is data augmentation in machine learning ?
53. What is labelled and unlabelled data set in Machine Learning ?
54. What is neural networks in Machine Learning ?
55. How are convolutional neural networks related to supervised learning ?
56. Fundamentals of Neural Networks
57. Linearity vs non-linearity in Machine Learning ?
58. Machine Learning Short Exam Notes
59. Machine Learning Short Exam Notes – Quick and Easy Revision Guide