

Chapter Five - Review Question

Select the best answer from the given alternatives for each of the following multiple-choice questions:

1. Which type of machine learning technique involves providing labeled examples as input to the model?
 - A. Supervised learning
 - B. Unsupervised learning
 - C. Reinforcement learning
 - D. Semi-supervised learning
2. Which probabilistic model is commonly used for clustering in machine learning?
 - A. Gaussian Mixture Model (GMM)
 - B. Hidden Markov Model (HMM)
 - C. Bayesian Network
 - D. Markov Random Field (MRF)
3. Which type of knowledge in AI is concerned with "how-to" knowledge and procedures?
 - A. Descriptive knowledge
 - B. Procedural knowledge
 - C. Acquaintance knowledge
 - D. None of the above
4. Which machine learning task involves predicting a continuous output variable?
 - A. Classification
 - B. Regression
 - C. Clustering
 - D. Dimensionality reduction
5. Which clustering method aims to divide the data into a predefined number of clusters?
 - A. K-Means clustering
 - B. Density-based clustering
 - C. Hierarchical clustering
 - D. Fuzzy clustering
6. Which type of machine learning technique combines labeled and unlabeled data for training?
 - A. Supervised learning
 - B. Unsupervised learning
 - C. Reinforcement learning
 - D. Semi-supervised learning

7. Which linear classification model is based on the concept of decision boundaries?
- A. Logistic Regression
 - B. Naive Bayes
 - C. Support Vector Machines (SVM)
 - D. Linear Discriminant Analysis (LDA)
8. Which machine learning technique is based on learning from rewards and punishments?
- A. Supervised learning
 - B. Unsupervised learning
 - C. Reinforcement learning
 - D. Semi-supervised learning
9. Which technique in machine learning aims to reduce the number of input features while preserving important information?
- A. Clustering
 - B. Dimensionality reduction
 - C. Anomaly detection
 - D. Feature learning
10. Which type of knowledge in AI is acquired through sensory perception and experience?
- A. Descriptive knowledge
 - B. Procedural knowledge
 - C. Acquaintance knowledge
 - D. None of the above
11. Which of the following is a sub-branch of Machine Learning that uses mathematical functions to map input to output?
- A. Supervised Learning
 - B. Deep Learning
 - C. Unsupervised Learning
 - D. Reinforcement Learning
12. What is the main difference between Machine Learning and Deep Learning?
- A. Machine Learning requires labeled data, while Deep Learning does not.
 - B. Deep Learning can process unstructured data, while Machine Learning cannot.
 - C. Machine Learning is computationally expensive, while Deep Learning is not.
 - D. Deep Learning requires human intervention for data preprocessing, while Machine Learning does not.

13. Which type of Neural Network is primarily used for tasks related to computer vision or image processing?

- A. Artificial Neural Network
- B. Convolutional Neural Network
- C. Recurrent Neural Network
- D. Generative Adversarial Network

14. What is one of the limitations of Deep Learning?

- A. Deep Learning models require a lot of data to learn well.
- B. Deep Learning models lack the ability to process unstructured data.
- C. Deep Learning models are computationally inexpensive.
- D. Deep Learning models are capable of multitasking.

15. What is the main advantage of using semi-supervised learning?

- A. It requires a small amount of labeled data.
- B. It provides accurate predictions without the need for labeling data.
- C. It is computationally inexpensive.
- D. It can process unstructured data effectively