PS03EMCA38: Machine Learning

Tutorial 3

Unsupervised Learning

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Short / Objective Questions

1. **In _____training model has only input parameter values.**

a. Supervised learning
b. Unsupervised learning
c. Reinforcement learning
d. None of these

2. **Which of the following is type of unsupervised learning?**

a. Clustering
b. Classification
c. Both
d. Data wrangling

3. **____lies between Supervised and Unsupervised techniques.**

a. Supervised learning
b. Unsupervised learning
c. Association mining
d. Semi-supervised

4. **In _____little bit labelled and rest large portion of it is unlabeled.**

a. Clustering
b. Association
c. Semi supervised
d. Reinforcement

5. **In _____ model keeps on increasing its performance using a Reward Feedback to learn the behavior or pattern**

a. Clustering
b. Reinforcement learning
c. Semi supervised
d. Deep learning

6. **A _____ problem is when the output variable is a category**

a. Clustering
b. Reinforcement learning
c. Semi supervised
d. Classification

7. A _____ problem is when the output variable is a real value.

a. Regression
b. Reinforcement learning
c. Semi supervised
d. Classification

8. _____is computationally complex.

a. Unsupervised learning
b. Reinforcement learning
c. Semi supervised
d. Classification

9. _____is Less accurate.

a. Unsupervised learning
b. Reinforcement learning
c. Semi supervised
d. Classification

10. Which is FALSE regarding regression?

a. It may be used for interpretation
b. It is used for prediction
c. It discovers causal relationships
d. It relates inputs to outputs

11. Father of Machine Learning (ML) is _____.

a. Geoffrey Chaucer
b. Geoffrey Hill
c. Geoffrey Everest Hinton
d. None of the above

12. Successful applications of ML

a. Learning to recognize spoken words
b. Learning to drive an autonomous vehicle
c. Learning to classify new astronomical structures
d. Learning to play world-class chess
e. All of the above

13. Which of the following is not a supervised learning?

a. Naive Bayesian
b. Clustering
c. Linear Regression
d. Decision Tree

14. **What is Machine Learning?**
    - **Artificial Intelligence**
    - **Deep Learning**
    - **Data Statistics**

    a. Only (i)
    b. (i) and (ii)
    c. All
    d. None

15. **Which of the following is not type of learning?**

a. Unsupervised Learning
b. Supervised Learning
c. Semi-unsupervised Learning
d. Reinforcement Learning

16. **Real-Time decisions, Game AI, Learning Tasks, Skill Aquisition, and Robot Navigation are applications of which of the followings.**

a. Supervised Learning: Classification
b. Reinforcement Learning
c. Unsupervised Learning: Clustering
d. Unsupervised Learning: Regression

17. **Targetted marketing, Recommended Systems, and Customer Segmentation are applications in which of the followings.**

a. Supervised Learning: Classification
b. Unsupervised Learning: Clustering
c. Unsupervised Learning: Regression
d. Reinforcement Learning

18. **Fraud Detection, Image Classification, Diagnostic, and Customer Retention are applications in which of the followings?**

a. Unsupervised Learning: Regression
b. Supervised Learning: Classification
c. Unsupervised Learning: Clustering
d. Reinforcement Learning

19. **Which of the following is a widely used and effective machine learning algorithm based on the idea of bagging?**
    a. Decision Tree
    b. Random Forest (Bagging, boosting, and stacking are three techniques of random forests)
    c. Regression
    d. Classification

20. **Which of the following is a disadvantage of decision trees?**
    Decision trees are prone to be overfit
    Decision trees are robust to outliers
    Factor analysis
    None of the above

21. Define unsupervised learning.
22. List two methods/techniques of un-supervised leanring.
23. Give a major difference between supervised and unsupervised learning.
24. Give an advantage of unsupervised learning.
25. List name of two clustering methods.
26. Give full form of SOM.
27. Give an example architecture of SOM.
28. Give two applications of unsupervised machine learning.
29. If the value of k is 3, the k-means clustering algorithm divides the solution space into _____ clusters.
30. Combining two or more learning technologies or modern machine learning strategies is known as _____ learning.
31. Define hybrid learning.

Big Questions

32. Discuss hierarchical clustering in detail by taking an example.
33. Explain SOM by taking an example.
34. Divide the given data set W containing weights of people into two clusters using K means algorithms.
    W= {12, 16, 32, 33, 34, 43, 44, 50, 54, 55, 56, 57, 76, 78, 87}

35. Divide the given data set W containing weights of people into three clusters using K means algorithms.
    W= {12, 16, 32, 33, 34, 43, 44, 50, 54, 55, 56, 57, 76, 78, 87}