

Assignment - 2

MACHINE LEARNING

Q1 to Q11 have only one correct answer. Choose the correct option to answer your question.

- 1. Movie Recommendation systems are an example of: i) Classification
- ii) Clustering
- iii) Regression Options: a)
2 Only
- b) 1 and 2
- c) 1 and 3
- d) 2 and 3

Answer : 2 Only (Clustering)

- 2. Sentiment Analysis is an example of:
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- i) Regression
- ii) Classification
- iii) Clustering
- iv) Reinforcement

Options:

- a) 1 Only
- b) 1 and 2
- c) 1 and 3
- d) 1, 2 and 4

Answer : d) 1,2 and 4

3. Can decision trees be used for performing clustering?

- a) True
- b) False

Answer : a) True

— 4. Which of the following is the most appropriate strategy for data cleaning before performing clustering analysis, given less than desirable number of data points:

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- i) Capping and flooring of variables
- ii) Removal of outliers Options:

- a) 1 only
- b) 2 only
- c) 1 and 2
- d) None of the above

Answer: a) 1 only

— 5. What is the minimum no. of variables/ features required to perform clustering?

- a) 0
- b) 1
- c) 2
- d) 3

Answer : b) 1

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6. For two runs of K-Mean clustering is it expected to get same clustering results?

- a) Yes
- b) No

Answer : b) No

7. Is it possible that Assignment of observations to clusters does not change between successive iterations in K-Means?

- a) Yes
- b) No
- c) Can't say
- d) None of these

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Answer : a) Yes

- 8. Which of the following can act as possible termination conditions in K-Means?
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- i) For a fixed number of iterations.
- ii) Assignment of observations to clusters does not change between iterations. Except for cases with a bad local minimum.
- iii) Centroids do not change between successive iterations.
- iv) Terminate when RSS falls below a threshold. Options:

- a) 1, 3 and 4
- b) 1, 2 and 3
- c) 1, 2 and 4
- d) All of the above

Answer : d) All of the above

9. Which of the following algorithms is most sensitive to outliers?

- a) K-means clustering algorithm
- b) K-medians clustering algorithm
- c) K-modes clustering algorithm
- d) K-medoids clustering algorithm

Answer : a) K-means clustering algorithm

— 10. How can Clustering (Unsupervised Learning) be used to improve the accuracy of Linear Regression model (Supervised Learning):

- i) Creating different models for different cluster groups.
- ii) Creating an input feature for cluster ids as an ordinal variable.
- iii) Creating an input feature for cluster centroids as a continuous variable.
- iv) Creating an input feature for cluster size as a continuous variable. Options:

- a) 1 only
- b) 2 only
- c) 3 and 4
- d) All of the above

Answer : d) All of the above

11. What could be the possible reason(s) for producing two different dendrograms using agglomerative clustering algorithms for the same dataset?

- a) Proximity function used
- b) of data points used
- c) of variables used
- d) All of the above

Answer : d) All of the above

Q12 to Q14 are subjective answers type questions, Answers them in their own words briefly

12. Is K sensitive to outliers?

Answer : Mean is used in K-Means algorithms and mean is highly affected by outliers hence the K algorithms are sensitive to outliers.

13. Why is K means better?

K means is faster than hierarchical algorithms and if the number of clusters are known but their groups are not known then the algorithm performs better. Hence it is better.

14. Is K means a deterministic algorithm?

Answer : No the K Means algorithm is not deterministic as the selection of centroid initially done by the algorithm randomly and based on the selection of centroids the algorithm may give different results in multiple runs on same set of data. Hence it can be said that the K means algorithm is not deterministic.