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Hierarchical Clustering

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Hierarchical Clustering Quiz

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Due Mar 3, 11:59 PM IST

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1. What is the primary goal of hierarchical clustering analysis in machine learning? **1 / 1 point**

- To identify outliers and remove them from the dataset.
- To classify data points into predefined classes.
- To predict the target variable for each data point.
- (selected) To group data points into a hierarchical structure of nested clusters based on their similarities.

Correct
Correct! The main goal of hierarchical clustering analysis is to group data points into a hierarchical structure of nested clusters.

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2. What is the main difference between agglomerative and divisive hierarchical clustering? **1 / 1 point**

- (selected) Agglomerative clustering starts with each data point as a separate cluster and then merges them iteratively, while divisive clustering starts with all data points in a single cluster and then divides them into smaller clusters.
- Agglomerative clustering always produces a binary tree-like hierarchy, while divisive clustering produces a multi-level hierarchy.
- Agglomerative clustering is computationally more efficient than divisive clustering.
- Agglomerative clustering can handle datasets with a large number of features, while divisive clustering is limited to a small number of features.

Correct
Correct! Agglomerative clustering starts with each data point as a separate cluster and merges them iteratively, while divisive clustering starts with all data points in a single cluster and divides them into smaller clusters.

3. Which of the following statements about dendrograms is correct? **1 / 1 point**

- Dendrograms are used to visualize the clusters at each level of the hierarchy.
- (selected) Dendrograms show the merging or splitting of clusters at different levels of the hierarchy.
- Dendrograms are used to identify outliers in the dataset.
- Dendrograms are used to determine the optimal number of clusters in hierarchical clustering.

Correct
Correct! Dendrograms display the merging or splitting of clusters at different levels of the hierarchy, helping to visualize the hierarchical relationships.

4. What does the agglomerative hierarchical clustering algorithm do at each step? **1 / 1 point**

- It assigns data points to the nearest cluster center based on a distance metric.
- It creates a binary tree-like hierarchy by repeatedly splitting clusters into two.
- (selected) It merges the two closest clusters based on a linkage criterion until all data points belong to a single cluster.
- It divides the dataset into subsets based on the number of clusters specified.

Correct
Correct! The agglomerative hierarchical clustering algorithm merges the two closest clusters iteratively until all data points belong to a single cluster.

5. Which of the following is a disadvantage of hierarchical clustering compared to k-means? **1 / 1 point**

- Hierarchical clustering is more sensitive to the initial placement of centroids.
- Hierarchical clustering cannot handle datasets with a large number of features.
- Hierarchical clustering is computationally more efficient for large datasets.
- (selected) Hierarchical clustering can be computationally more expensive for large datasets compared to k-means.

Correct
Correct! Hierarchical clustering can be more computationally expensive, especially for large datasets, compared to k-means.