Task 18

Machine Learning

Upload the .py or .ipynb extension file to GitHub public repo “100DaysofBytewise" and share the link in the submission form by August 2, 2024.

Dataset : Wholesale Customers Dataset

1. **K-Means Clustering for Customer Segmentation**

Task: Use K-Means clustering to segment customers in the Wholesale Customers dataset based on their annual spending in different categories. Visualize the clusters.

2. **Evaluating the Optimal Number of Clusters**

Task: Determine the optimal number of clusters for the Wholesale Customers dataset using the Elbow Method and Silhouette Score. Visualize the results and justify your choice.

3. **Cluster Analysis and Interpretation**

Task: Interpret the clusters formed in the Wholesale Customers dataset. Identify the characteristics and differences among the clusters based on spending behavior.

4. **Hierarchical Clustering: Dendrogram and Cluster Formation**

Task: Apply hierarchical clustering to the Wholesale Customers dataset and visualize the dendrogram. Compare the cluster assignments with those obtained from K-Means.

5. **Comparison of Clustering Results**

Task: Compare the effectiveness of K-Means and hierarchical clustering on the Wholesale Customers dataset. Discuss the results in terms of cluster cohesion and separation.