Project phase 2

Individual assignment - 2 tasks -
Deadline 19/12 - 11:59 PM

Task 1

Requirements:
1- Choose a dataset: Select a dataset suitable for regression.

2- Algorithms Implementation:

- Implement the linear regression algorithm on your dataset.

3- Models Evaluation:

- Apply the Root Mean Square Error (RMSE).

Task 2

Requirements:
1- Choose a dataset: Select a dataset suitable for clustering.

2- Algorithms Implementation:
You should Implement k-means clustering and agglomerative clustering.
Follow these steps:

- Apply agglomerative clustering and draw the dendrogram..
- Use the resulting clusters as initial centroids for the K-Means clustering algorithm.

3- Models Evaluation:
Evaluate the models as follows:

- **Clustering Models using Distance:**
  - Calculate the average intra-cluster distance for each iteration.
  - Track the results for different cluster numbers and visualize the change in intra-cluster distance.
- **Implement a For Loop with a Stop Condition:**
  - Utilize a for loop to run the clustering algorithm iteratively.
  - Set a stop condition when the intra-cluster distance stabilizes for more than three clusters.

IMPORTANT NOTES:

1. Discussions for this phase will be on the following dates:
    - Wednesday labs 20/12.
    - Thursday labs 21/12.
    - Sunday lab 24/12.

There are no excuses to discuss after these days.

2. The grades will be based on **THE DISCUSSION ONLY** , No one will take any grades if he did not discuss on the due date.

3. The discussion will be based on **THE SUBMITTED FILES ONLY** , so make sure to submit the correct files as required.

How to submit:

You should upload the following:

1- Your datasets files.
2- your code as a .py file.
3- document contains description of your dataset , Screenshots of your codes.