**MACHINE LEARNING ASSIGNMENT 5**

**Student Name: DEVI SATYASRI GUNDUMOGULA**

**Student ID: 700742085**

**GitHub Link**: <https://github.com/DXG20850/ML-ASSIGNMENT-5>

**Video Link:** <https://drive.google.com/file/d/1NgcxNhP_lAYBCWY0dH5YybY39WiB0ZLk/view?usp=share_link>

Question 1:

1. Principal Component Analysis a. Apply PCA on CC dataset.

b. Apply k-means algorithm on the PCA result and report your observation if the silhouette score has improved or not?

c. Perform Scaling+PCA+K-Means and report performance.

🡪Import the required libraries

Graphical user interface, text

Description automatically generated

🡪Load the Credit Card Data using read\_csv

Graphical user interface, text, application, email

Description automatically generated

🡪Apply PCA on the CC dataset

Graphical user interface, text, application, email

Description automatically generated

🡪Convert the string values to float and standardize the data to have mean of 0 and a variance of 1

Graphical user interface, text, application

Description automatically generated

🡪Save components to a dataframe

Graphical user interface, text, application, email

Description automatically generated  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
Plot the number of clusters   
Chart, line chart

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated

Table

Description automatically generated with medium confidence

Graphical user interface, text, application

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated

The silhouette score has improved.

Table

Description automatically generated

Graphical user interface, text, application

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated

* 1. 2. Use pd\_speech\_features.csv a. Perform Scaling
  2. b. Apply PCA (k=3)
  3. c. Use SVM to report performance

Table

Description automatically generated with medium confidence

Text, table

Description automatically generated

Table

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated

Table

Description automatically generated

3. Apply Linear Discriminant Analysis (LDA) on Iris.csv dataset to reduce dimensionality of data to k=2.

Table

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated

Chart, scatter chart

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated

Graphical user interface, text, application

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated