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**Machine learning**

**ASSIGNMENT \_ 5(**CS5710**)**

**Github repository:** <https://github.com/MadhuriGadaboina/ML_Assignment5_700741049>

**Video link:** [**https://1drv.ms/v/s!Aop0EI3vQ-HIgmLmTwl2F4PFO4JK?e=WFngBA**](https://1drv.ms/v/s!Aop0EI3vQ-HIgmLmTwl2F4PFO4JK?e=WFngBA)

**#Question1**

1. Principal Component Analysis
2. Apply PCA on CC dataset.
3. 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.

**Graphical user interface, text, application, email

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I have applied PCA on the CC dataset, transformed them and scaled them, then used K-means with 2 clusters and have reported the silhouette score before and after applying PCA.The above is the screenshot of running the file to obtained the required result.

**#Question2**

2. Use pd\_speech\_features.csv

a. Perform Scaling

b. Apply PCA (k=3)

c. Use SVM to report performance

**Graphical user interface, text

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I have applied PCA on the CC dataset, transformed them and scaled them, then used K-means with 2 clusters and have reported the silhouette score before and after applying PCA.I have also obtained classification report,accuracy and confusion matrix.

**#Question3**

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

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Above screenshot shows how LDA converts the Iris dataset to represent with 2 components by fitting class conditional densities to the data.

4. Briefly identify the difference between PCA and LDA

PCA is an unsupervised learning algorithm while LDA is a supervised learning algorithm. This means that PCA finds directions of maximum variance regardless of class labels while LDA finds directions of maximum class separability.