

## **Spring 2023 5710 Machine Learning: Assignment 5**

### **Programming elements:**

Clustering & Dimensionality reduction

### **In class programming:**

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.
2. Use pd\_speech\_features.csv
  - a. Perform Scaling
  - b. Apply PCA (k=3)
  - c. Use SVM to report performance
3. Apply Linear Discriminant Analysis (LDA) on Iris.csv dataset to reduce dimensionality of data to k=2.
4. Briefly identify the difference between PCA and LDA

### **Submission guideline:**

- Make a report, containing screenshots of your results.
- Provide brief description with each screenshot to elaborate the output results.
- Push your code to github and provide link in your report.
- Also make 1-3 mins video demonstrating your results (Exemption of video submission if demonstrated in class).

**Note:** *Cheating, plagiarism, disruptive behavior and other forms of unacceptable conduct are subject to strong sanctions in accordance with university policy.*