Assignment 3: Linear Discriminant Analysis

Steps:

(i) Load the required libraries.

(ii) Import the database of dataset

(iii) Encode categorical class labels

(iv) Standardize features by removing the mean and scaling to unit variance

(v) Construct within-class covariant Scatter Matrix

(vi) Construct between-class scatter Matrix

(vii) Calculate sorted Eigen values and Eigen Vectors of Inverse of (within class scatter matrix b/w class scatter matrix).

(viii) Project original features onto the new feature space.

(ix) Save the reduced dataset as Reduced_Manual.

(x) Load the LinearDiscriminant() Model.

(xi) Load the original Dataset (for sci-kit learn)

(xii) Train the dataset over model to obtain the reduced dimensionality dataset.

(xiii) Save it as Reduced_Scikit_learn.

(xiv) To check the accuracy of an algorithm (say KNN classifier) train the KNN classifier model over Original Dataset, Reduced_Manual and Reduced_Manual scikit-learn datasets seperately

(xv) Calculate the Accuracy of each dataset.