Eckovation AIML: Programming Exam

Consider the problem of classification of Shouted and Normal Speech. A common approach is to extract the MFCC features from the speech signal. These features are extracted from overlapping frames of tagged speech intervals. The two MFCC feature data files MFCC_N_2500.npy and MFCC_S_2500.npy respectively store 2500 MFCC features of normal and shouted speech.

1. Load the two datasets MFCC_N_2500.npy and MFCC_S_2500.npy into arrays ***N*** and ***S*** respectively using *np.load(* filename *).*
2. Append these two arrays to form the Dataset **D=[N,S]**
3. Subject **D** to K-Means clustering with ***K = 100***
4. Let $P_S[j]$ and $P_N[j]$ ($P_S[j] + P_N[j]=1$) be the respective proportions of shouted and normal feature points in each cluster ***j*** (***j=1,…K***). Report the plots of $P_S[j]$ and $P_N[j]$ against **j=1,…K** in two different colors (say, Red and Blue).

   NOTE: This is an example usage of Training Data Distribution Analysis using Unsupervised Methods.