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 files MFCC_N.npy and MFCC_S.npy respectively store the features of normal and shouted speech.

1. Load the two datasets MFCC_N.npy and MFCC_S.npy into arrays **N** and **S** respectively. Use the python function *np.load(* filename *).*
2. Compute centroids (m_n , m_s) and covariance matrices (C_n, C_s) of both arrays.
3. Compute the optimal direction vector $\widehat{\omega}$ (unit vector) for LDA.
4. Project the vector data in arrays **N** and **S** to generate the respective array of scalars **zN** and **zS.**
5. Plot the normalized histograms of **zN** and **zS** in two different colors (red and blue).