August-December 2016 Semester
CS669: Pattern Recognition
Programming Assignment 3

Date: 17th October, 2016

Datasets:

Dataset : Real world data set:

(a) Image dataset

(b) Consonant Vowel (CV) segment dataset (Speech)

Data of each class is given separately. For all data in Dataset, 75% of the examples of a class is to be used as training data for that class, and the remaining data is to be used as test data for that class.

Note: Each batch of students must use the datasets identified for that batch

Classifiers to be built:

1. Bayes classifier using *K*-nearest neighbour method for class-conditional density estimation using DTW distance.
2. Bayes classifier using Discrete HMM (DHMM)
3. Bayes classifier using Continuous Density HMM (CDHMM)

Perform the experiments on different values of *K* in *K*-nearest neighbour method, different number of codebooks & states for DHMM and different number of states & components of GMM in each state for CDHMM.

Consider ergodic HMM for image dataset and left-to-right HMM for CV segment dataset.

Report should include the results of studies presented in the following forms for each classifier and for each dataset:

1. Classification accuracy, precision for every class, mean precision, recall for every class, mean recall, F-measure for every class and mean F-measure on test data
2. Confusion matrix based on the performance for test data

Report should also include your observations about the performance.

Submit your code and report strictly in PDF form as one zip file via email. Name the zip file as Group<num>_Assignment3.zip. E.g. Group01_Assignment3.zip

Deadline for submission: 04.00PM, Saturday, 05 November 2016