CSE4214 Pattern Recognition Lab

Experiment No 3

Implementing Minimum Error Rate Classifier

Problem Description:

Design a minimum error rate classifier for a two class problem with given data (assuming they follow normal distribution):

1. Split the given data into train set and test set in a 60:40 ratio.
2. Calculate Mean, Co-variance and Probability of each class from the training set.
3. Classify the sample points from the test set using Gaussian distribution. Also, calculate the accuracy of the model.
4. Plot the classified samples with different colored markers according to the assigned class label.

You can not use any library for directly calculating values from normal distribution. Use the formula below instead.

Normal Distribution Formula:

$$N_k(\mathbf{x}_i|\boldsymbol{\mu}_k, \boldsymbol{\Sigma}_k) = \frac{1}{\sqrt{(2\pi)^D|\boldsymbol{\Sigma}_k|}} e^{\left(-\frac{1}{2}(\mathbf{x}_i-\boldsymbol{\mu}_k)^T\boldsymbol{\Sigma}_k^{-1}(\mathbf{x}_i-\boldsymbol{\mu}_k)\right)}$$

Marks Distribution:

Task	Mark
1	2
2	2
3	4
4	2

Sample Output: