

# 2-CLASS CLASSIFICATION USING BAYES CLASSIFIER

Linear Algebra and Random Processes (CS6015)  
Assignment 3

## 1 Problem Statement

Given  $N$  (number of samples in each class),  $D$ -dimensional data points for 2 classes, classify the data and report the training and validation accuracies based on maximum likelihood estimate (Bayes Theorem).

## 2 Input

- $N = 7k, 70k$  (for each class)
- $D = 10, 50$

Input contains data from three different distributions for each of the two combinations of  $N, D$  given above.

Look into the table attached, to see the allotment of input data. **The assignment will not be evaluated if different data (not corresponding to the respective roll no.) is used.**

## 3 Output

Classification accuracy using training and validation set.

**The submitted code will be evaluated against the test data which will not be known to you (like in real-life scenarios).**

## 4 Note

**No inbuilt function which can directly implement the Bayes classifier is allowed. All the steps should be coded on your own.**

This assignment requires additional knowledge on maximum likelihood estimate and bayes classification details of which you can view in the reference section.

## 5 References

- Richard O. Duda, Peter E. Hart, David G. Stork. Pattern Classification. Second Edition. Chapter-2.
- Christopher M. Bishop. Pattern Recognition and Machine Learning. Section 2.3