

**Assignment # 3**  
**Machine Learning**  
**Bayesian Decision Theory**  
**Submission Deadline: 23 Aug 2014**

Bayesian decision rule is normally based on prior probabilities, likelihoods and posteriors. The likelihoods are calculated by assuming that the data comes from a normal distribution. Use the medical dataset which were given to you for assignment-1. That data consists of 6 features and two classes.

You are required to classify this data using Bayesian classifier and give average result after applying **three fold cross** validation. You have to **build your own generic code** for application of this classifier. Your implementation should calculate class wise mean vectors, covariance matrix and likelihood followed by posteriors. You can use other MATLAB function but cannot use any direct function for Bayes.

Other than this, plot graphs for likelihood and posterior in one, two and three dimensions.

- For one dimension, draw curves for likelihood and posterior probability for each feature individually
- For two dimension, make any set of two features only. No need to make all sets. Just 3 will be enough
- For three dimensions, combine any three features. Again make any 3 combinations only.

Refer to Duda and Harts book chapter-2 for understanding of these graphs.

Mail softcopy of your assignment (word or pdf) and code at **machinelearningeme@gmail.com** and submit hard copy in my office

**Note: i. Plagiarism leads to zero marks for both parties**

**ii. No marks for late submissions**