Quiz 3

EEE 4774 & 6777 Data Analytics

1 Generative Models for Classification

For a binary classification problem, you are given the input feature vectors $\{X_1, \ldots, X_N\}$ and the output class labels $\{y_1, \ldots, y_N\}$ of N independent training instances, where $y_i \in \{0, 1\}$. Given each class, use the Gaussian likelihood for data instances.

a) Write the posterior class probability using the Bayes theorem. In the posterior expression, label each term involved. [30 points]

b) Draw the graphical model for the generative model by denoting the class prior probability with π. Show also the likelihood parameters in the graph. [40 points]

c) Explain how to train the generative model, and how to classify a test instance. [30 points]