Spring 2022

ESE 588

Assignment 1

There are 1,000 input-output pairs, $\{(\mathbf{x}_n, y_n)\}_{n=1}^{N=1000}$, of available data for training. The input data, $\mathbf{x}_n$, are two-dimensional features and the outputs y_n are labels of the data, where $y_n \in \{-1, 1\}$. In other words, if $\mathbf{x}_n$ comes from class ω_1, $y_n = -1$; otherwise $y_n = 1$. There are also 250 test data.

1. Write a code that implements the Bayes classifier. Train the classifier on the 1000 training data and apply it on the test data.

2. Repeat with the naive Bayes method.

3. Repeat with the KNN method.

4. Repeat with the logistic regression method.

Upload your results on Blackboard as csv files. There should be 250 rows and four columns each with numbers -1 or 1 corresponding to the classified $\mathbf{x}_n$ from the test data. Each column represents the results of the respective machine learning methods.

Important: You should write your own programs for each of these methods and not *use packages available on the Internet. Please, upload your codes too.*