Derek Hu

COEN 140

Professor Fang

February 3, 2018

Homework 2 Report

2. Build an LDA classifier based on the training data. Report the training and test errors for your classifier.

Using the LDA classifier I built, there was a training error of 10% and a testing error of 0%.

3. Build a QDA classifier based on the training data. Report the training and test errors for your classifier.

Using the QDA classifier I built, there was a training error of 6.67% and a testing error of 0%.

4. Is there any class linearly separable from other classes? Explain your answer based on your experiments.

From the results of the LDA classifier, the errors indicate some classes are not linearly separable. Looking closer the error came from classifying Versicolor and Virginica data. Because the Setosa data had 0 errors, this suggests that the Setosa class may be linearly separable.

5 Are any of the variables not important in classifying iris type? Explain your answer based on your experiments.

Removing one variable from the data set at a time, the classifiers were still able to classify with 100% accuracy. The exception to this is when petal width was removed there was an error of 3.33% for both the LDA and QDA classifiers.

6. Assume the features are independent, i.e., ∑ is a diagonal matrix. Repeat 2 and 3, and report your results.

With the assumption of independent features, both LDA and QDA classifier had 0% error.