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CMSC 409 – Fall 2017

Dr. Milos Manic

Assignment 1

The overall workload was distributed in the fashion of:

* Aditya wrote the program to generate males and females that would more accurately represent the population than a completely random entry approach would.
* Jordan and Andrew worked together on plotting data and estimating a regression line.
* Andrew wrote the program to find true positive and true negatives, as well as false positive and false negatives. This includes calculations for error and accuracy.
* Jordan wrote the report.

Scenario A:

* When only considering the height, based on our, we determined the decision function to be x = 66.25. The weight of this equation is simply 1. Compared to the artificial counterpart of a biological neuron, our approach will most likely fair well against since there is only a single value that can be determined by the function. We decided to allow any data that falls on the line to be accepted as a true positive. The error received was 17.17%, with an accuracy of 82.83%. Our True Positive rate was 84.45% and True Negative rate sitting at 81.2%. The False Positive rate was 1.88% and the False Negative was much higher at 15.55%.

Scenario B:

* When observing both the height and weight, we determined the decision function to be y = (5/3) x + 31.5. The weights of this equation is w1 = -5, w2 = 3, and the bias = -94.5. While the guess we created was able to give us an accuracy of 92.35%, our approach under separate data would most likely not give nearly as accurate with much more precise decision types. We again decided to allow any data that falls on the line to be accepted as a true positive. The error received we received was only 7.32%. Our True Positive rate was 86% and True Negative rate sitting at 99.35%. The False Positive rate was 0.65% and, once again, the False Negative was much higher at 14%.