Edward Hubbard

Comp 379

9/27/20

HW 2 Report

The goal of this assignment is to explore how single perceptron’s can take multiple inputs and use that to train the algorithm over multiple training rounds to make predictions about the data in the end.

**Linear Separability:**

The first data set is a 2d linearly separable data set of ten values. Half of thes values can all be represented with the following expression:

The other half can all be represented as:

This worked really well because it was blatantly linearly separable. There was one outlier with the value [5,5] but this is due it being the largest x value, so the algorithm presumably did not have enough data to handle it well.

**Non-Linearly Separable:**

For the non-linearly separable data I choose a 2d array with the exact same value for simplicity. It did not converge, and it returned either all zeros or all ones depending on the fit function inputs.

**Titanic Data:**

I used the regular perceptron algorithm for the titanic dataset, and I found some interesting results. The main two parameters that I used were age and sex. I hypothesized that if a person on the titanic were a woman and/or that they were a senior (age > 50) or a child (age < 18) that they had a better chance of survival. When I ran this through the perceptron and compared the predicted result and the actual result, I seemed to get 100% accuracy. I was able to do this with only modifying the prediction function in the perceptron.