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Neural Networks

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Assignment 1

The assignment asked for the testing of two different datasets and training on them until we were able to get good efficiencies. On the first dataset, there was only a need for one layer in order for the accuracy to be high. Using that one layer and 50 epochs to train on the accuracy went to 96%. The testing was fairly straight-forward and only a little manipulation of the data was needed. I believe since the data was fairly simple with few outputs and the data had a good correspondence we were able to classify it fairly easily. The training set needed to be a larger portion of the overall data that we look at but besides that the correlation was linear so there was not much we needed to do on that front.

On the second dataset there were a few more steps than what we had before. In this one I tried a few different combinations of layers and sizes and there were only a few things that were able to show a significant relationship between the dataset and the points. The highest that was able to be extracted was 85% and I believe that was sheer luck of how the data was randomized. It seemed that Adagrad as an optimization method worked better on this data than SGD. The reason possibly has to do with having an optimization model without momentum but I cannot be 100% sure on this front. In the end Adagrad showed the best consistent performance of all the

optimizers and having a few layers helped as well. In the end the most reproducible result had around a 65% accuracy.

I am happy with how flexible the model is. I also tested it on some e coli data and the same basic framework was a good launching point for everything I wanted to do.