Written Questions

1) The suggested parameter values were very helpful when determining the values of hidden layer sizes, batch sizes, learning rates, and the number of hidden layers. We first tried a network with one hidden layer, and we tweaked the layer width, and batch size, and learning rate until we were able to get some points on the autograder in reasonable time. Once we were able to get some points relatively quickly, we added another hidden layer of the same size. If we needed to, we tweaked that hidden layer, as well as the original, until we saw better performance. We continued this process until we were able to get desired performance from our networks. If we could start over, we would run our networks on one of our desktops with more advanced processing units instead of our laptops. This would have dramatically reduced that amount of time it took to run our networks and test our performance.
2) The architecture of our regression network greatly impacted the architecture of our hidden layers for our other models. Once we finished our regression model we used a similar architecture for our digital classification network. We first tried using the exact same learning rate, batch size, number of hidden layers, and the length of our hidden layers. From there, we just tweaked those values until we got a working model. From there, we did the same thing for our RNN model, and we didn't have to tweak our hidden layers. If we started each model completely from scratch, it would have taken us significantly more time, starting with just one hidden layer.

Self Analysis - James Kauffman (u1466212)

1) The hardest part was determining the architecture of the regression model since it's hard to determine what parameters to tweak to get the model to work.
2) The easiest was implementing the perceptron, since we didn't use a neural network at all and most of the functions were just one line code.
3) Problems 2-4 helped me understand neural networks a lot more. I feel like getting hands-on experience is a lot better than just looking at the slides and trying to comprehend how neural networks work.
4) I don't think any of the problems were tedious, since they all involved different supervised learning problems.
5) No feedback, I thought this was a really good project.

Self Analysis - Tony Zhang

1) The hardest part for me was implementing the recurrent neural network, as it was difficult for me to grasp conceptually.
2) Implementing the perceptron.
3) Problem 4 was the most useful for me as I haven't had experience with RNNs before.
4) 1-3 wasn't very helpful for me as I had already seen these in other classes such as ML and DL but they were good refreshers.
5) N/A