Eric Becerril-Blas

05/01/20

Professor Kang

CS 489 Machine Learning

Homework 5

For this homework assignment, I implemented a convolutional neural network. I also implemented a convolutional neural network for Homework 4 but I greatly improved upon it for this assignment. Instead of 200 epochs to get to about a 90 percent accuracy, this one only takes about 20 epochs to get to 98% accuracy.

To run this script, I used Python 2 and the Keras deep learning framework.

A quick summary of the model is below:

A screenshot of a cell phone

Description automatically generated

The Code for this model is as follows:

* A lot of these value were gathered by trial and error on my part. For example, for my last layer I had as a softmax. With softmax my training accuracies were very high but my testing accuracies came out very low. I then kept changing that function around and found that sigmoid was the best. For the Conv2D layer, I also did a bit trial and error. Starting from filters = ‘64’ I then tried ‘128’ and finally ‘256’. I found that 256 worked the best along with a 3x3 kernel size.

A screenshot of a cell phone

Description automatically generated

My learning curve is as follows:

A close up of a map

Description automatically generated

As a reminder here, is my learning curve from HW 4:

A close up of a map

Description automatically generated

Quite a big difference. A quick glance and you can already see that the script from HW4 was far slower and required more epochs to get to a good accuracy.