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CSE 474 Project Group 12 Report

\*\*\*Explanation with supporting figures of how to choose the hyper-parameter for Neural Network

\*\*\*Accuracy of classification method on the handwritten digits test data

\*\*\*Accuracy of classification method on the Ai Quick Draw data set

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| --- | --- | --- | --- | --- | --- | --- |
| TensorFlow | Hidden Layers | Time | Training Loss | Training Accu. | Test. Loss | Test. Accu. |
| Trial 1 | 3 | 52 m 34 s | .59973 | .80000 | .92152 | .71548 |
| Trial 2 | 5 | 69 m 23 s | .71856 | .78000 | .90061 | .71232 |
| Trial 3 | 7 | 85 m 29 s | .96851 | .69000 | .94656 | .69756 |

Above is the data acquired from TensorFlow Trials. As more Hidden Layers were added, the time increased at each trial. Trial 1 to 2 shows a 24% increase overall. Trial 2 to 3 shows an 18% increase overall. The training loss increased with more hidden layers, increasing by 16% and 26%. The training accuracy decreased (consequential of Training Loss) at 2.5% and 13.1%. The testing loss shows an anomalous improvement of 2%, but then shows a loss of 4%. Testing accuracy decreases by .4% then by 2%.