YONSEI UNIVERSITY
Department of Computer Science

CSI4108-2 Artificial Intelligence, SPRING 2018

Assignment 3

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We will do MNIST classification using machine learning framework. The network structure uses LeNet.

- Environment
- Detail description of each line of code (you should write a description of each function definition and role. For example, if you use MSELoss then you should explain about MSELoss.
- Screenshot result output
- Analysis of training process and result

1 Environment

I used the Tensorflow library with Google Colab as my processor.

2 Detail description of each line of code

This is included in the main.py file attached to this assignment

3 Screenshot of result output

```
Train set: Epoch: 1 , Average loss: 1.771 , lr:0.0001
Train set: Epoch: 2 , Average loss: 0.446 , lr:0.0001
Train set: Epoch: 3 , Average loss: 0.326 , lr:0.0001
Train set: Epoch: 4 , Average loss: 0.260 , lr:0.0001
Train set: Epoch: 5 , Average loss: 0.216 , lr:0.0001
Train set: Epoch: 6 , Average loss: 0.184 , lr:0.0001
Train set: Epoch: 7 , Average loss: 0.161 , lr:0.0001
Train set: Epoch: 8 , Average loss: 0.144 , lr:0.0001
Train set: Epoch: 9 , Average loss: 0.129 , lr:0.0001
Train set: Epoch: 10 , Average loss: 0.119 , lr:0.0001

Test set: Average loss:  0.3756 , Accuracy:  53212 / 55000  ( 96.75 %)
```

4 Analysis of training process and result

As it appears, there is a very large jump in the average loss from Epoch 1 and 2 and I attribute that to my learning rate. The accuracy might be slightly higher than other LeNet creations due to the adam's optimizer that I include in the code. Outside of this, there isn't much to say. It's just LeNet with the only tweak being the adam optimizer.