Homework 2

Haocong Wang

I chose Tenserflow and Pytorch as my framework and built two networks.

The following is the result of the network finished with Tensorflow:

```
Epoch 1/10
1875/1875 [==============================] - 2s 693us/step - loss: 0.3805 - accuracy: 0.8842
Epoch 2/10
1875/1875 [==============================] - 1s 697us/step - loss: 0.1744 - accuracy: 0.9523
Epoch 3/10
1875/1875 [==============================] - 1s 695us/step - loss: 0.1460 - accuracy: 0.9593
Epoch 4/10
1875/1875 [==============================] - 1s 707us/step - loss: 0.1383 - accuracy: 0.9628
Epoch 5/10
1875/1875 [==============================] - 1s 695us/step - loss: 0.1224 - accuracy: 0.9684
Epoch 6/10
1875/1875 [==============================] - 1s 695us/step - loss: 0.1082 - accuracy: 0.9720
Epoch 7/10
1875/1875 [==============================] - 1s 696us/step - loss: 0.1023 - accuracy: 0.9738
Epoch 8/10
1875/1875 [==============================] - 1s 694us/step - loss: 0.0948 - accuracy: 0.9756
Epoch 9/10
1875/1875 [==============================] - 1s 697us/step - loss: 0.0958 - accuracy: 0.9770
Epoch 10/10
1875/1875 [==============================] - 1s 695us/step - loss: 0.0955 - accuracy: 0.9754
The training takes 13.400141954421997 s.
313/313 - 0s - loss: 0.1659 - accuracy: 0.9660
```

The next one is the result of the network finished with Pytorch:

```
Train Epoch:10[52480/60000(87%)]      Loss:0.199182
Train Epoch:10[53760/60000(90%)]      Loss:0.253609
Train Epoch:10[55040/60000(92%)]      Loss:0.090426
Train Epoch:10[56320/60000(94%)]      Loss:0.151663
Train Epoch:10[57600/60000(96%)]      Loss:0.202710
Train Epoch:10[58880/60000(98%)]      Loss:0.179630


Test set: Average loss:-8.8454,Accuracy:9502/10000 (95%)


Training and Testing total excution time is: 99.4200291633606 seconds
```