CMPT412 Assignment_1 Report

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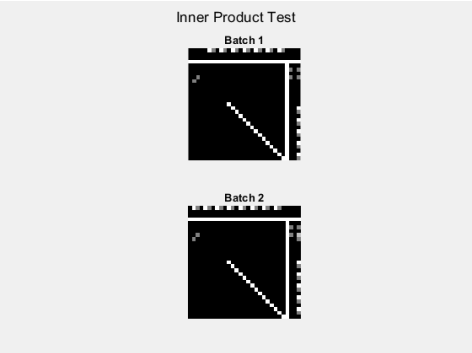
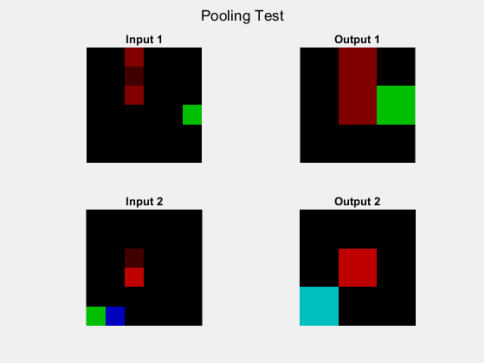
One free late day used

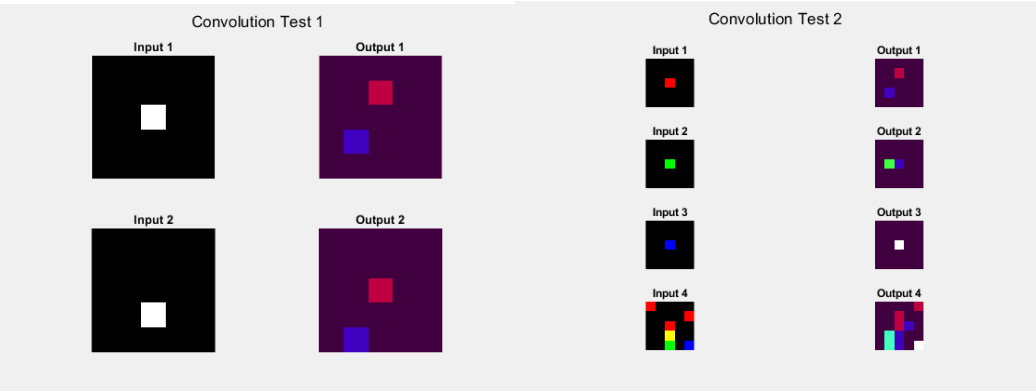
Q 1.1: Shows in code



Q 1.2: Shows in code



Q1.3: Shows in code



Q1.4: Shows in code

Q 2.1: Shows in code

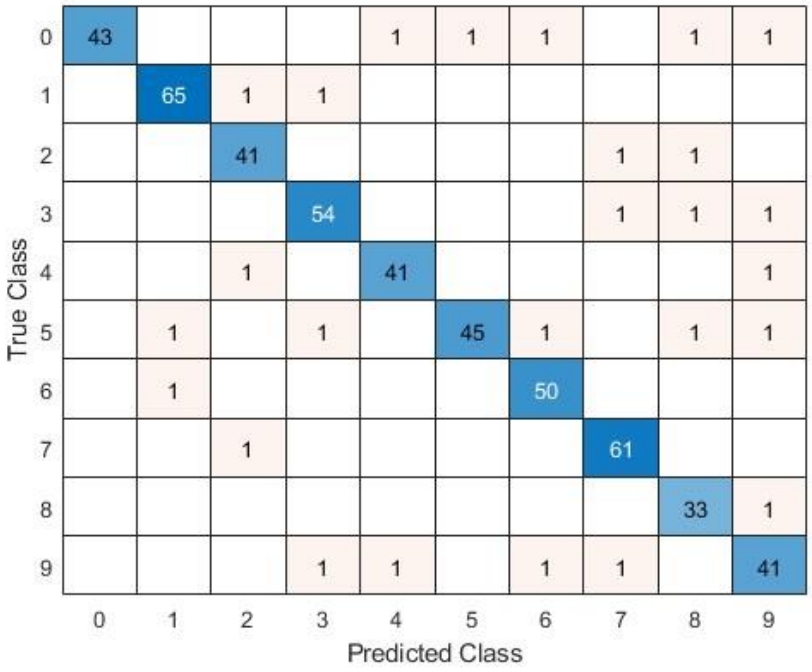
Q 2.2: Shows in code

Q 3.1: Shows in code, the output is following

```
>> train_lenet
cost = 0.273491 training_percent = 0.910000
cost = 0.279565 training_percent = 0.910000
cost = 0.176619 training_percent = 0.920000
cost = 0.127344 training_percent = 0.950000
cost = 0.191895 training_percent = 0.960000
test accuracy: 0.944000

cost = 0.192910 training_percent = 0.930000
cost = 0.131836 training_percent = 0.970000
cost = 0.115812 training_percent = 0.970000
cost = 0.103636 training_percent = 0.970000
cost = 0.124224 training_percent = 0.980000
test accuracy: 0.960000

cost = 0.111115 training_percent = 0.960000
cost = 0.113216 training_percent = 0.940000
cost = 0.134874 training_percent = 0.960000
cost = 0.067548 training_percent = 0.990000
cost = 0.095426 training_percent = 0.980000
test accuracy: 0.966000

cost = 0.086685 training_percent = 0.980000
cost = 0.106186 training_percent = 0.950000
cost = 0.034245 training_percent = 1.000000
cost = 0.048397 training_percent = 1.000000
cost = 0.060728 training_percent = 0.970000
test accuracy: 0.968000

cost = 0.069977 training_percent = 1.000000
cost = 0.068312 training_percent = 0.980000
cost = 0.063643 training_percent = 0.980000
cost = 0.084625 training_percent = 0.960000
cost = 0.083214 training_percent = 0.980000
test accuracy: 0.970000

cost = 0.083081 training_percent = 0.970000
cost = 0.026531 training_percent = 1.000000
cost = 0.044653 training_percent = 0.980000
cost = 0.056298 training_percent = 0.980000
```

cost = 0.049833 training_percent = 0.990000
test accuracy: 0.970000

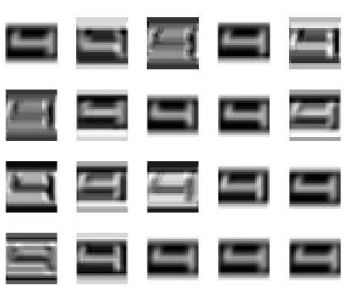
Q 3.2: Shows in code, the output is following.

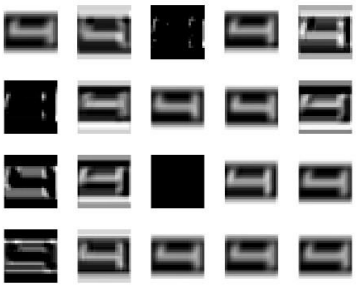


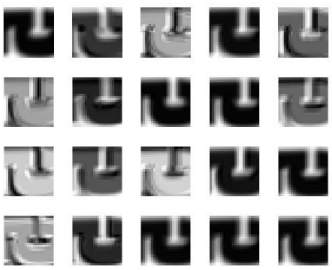
By calculating the result, we can have the two most confusing pair :
The class 8 : 33 and 4 outliner (89%),
The class 2 : 41 and 5 outliner (89%).

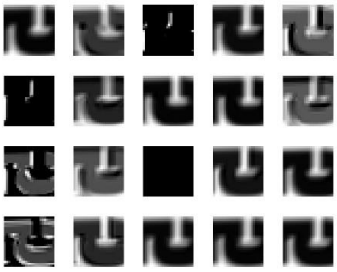
Because they has the lowest percentage, it means the prediction does not match the actual well, it makes confusion to other features.
The training models are tend to have more False Positive or True Negative.

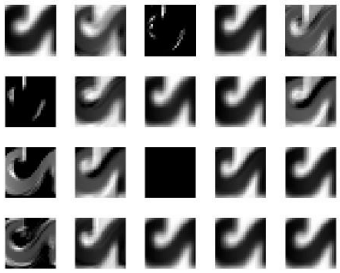
Q 3.3: These output are process from 5 own pictures by Convolution/Relu

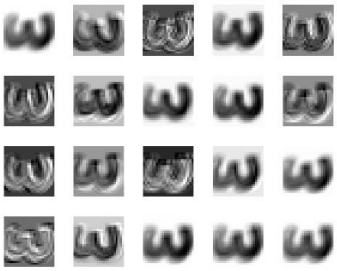


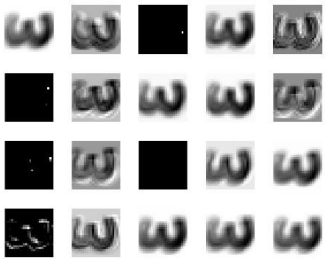


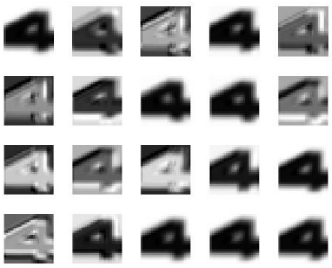


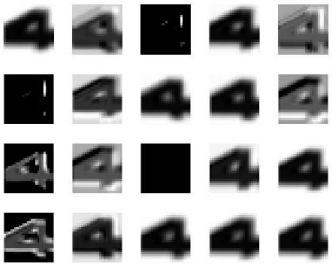


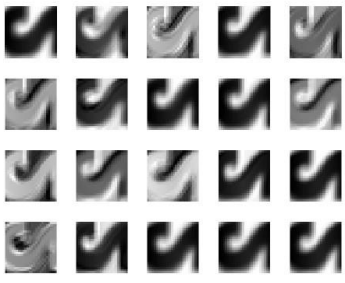




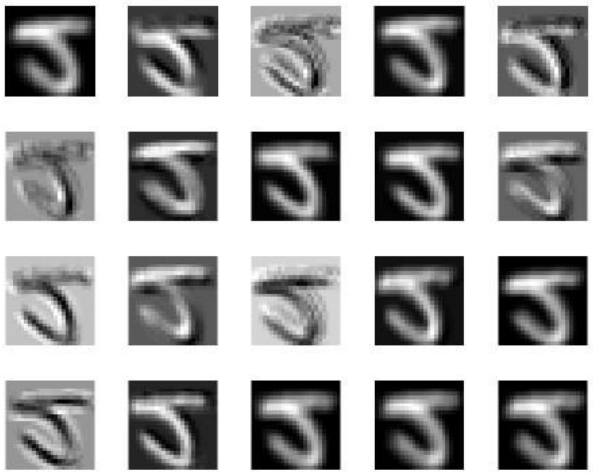


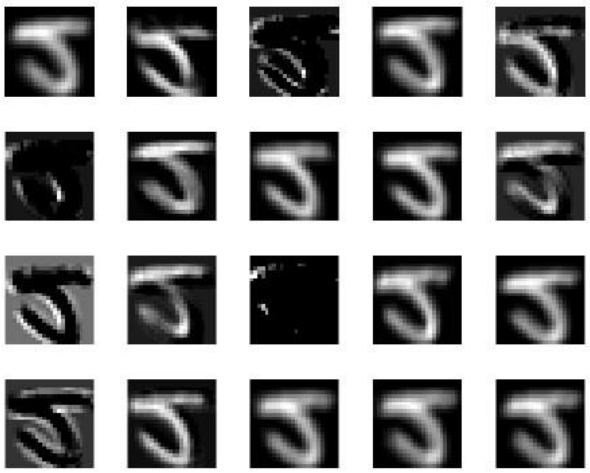






Q 4.1: CONV layer and ReLU layer





4.2:

Conv: Comapre with the original picture, Some features of the images are emphasized, making the processed picture more obvious to these features. (The picture is more abstract) Other features except from this become blurred.

Relu: Relu make some area become black. Because some are have negative value after the Conv, and Relue make all of them to be 0.