DSE 3159 Week-3 Batch 4 – Weekly Exercises

Q) Train, Test and plot the performance curves for the following architectures over the MNIST dataset as well as the CIFAR-10 dataset.

1. Design a CNN with:

a) One Convolution layer which uses 32 kernels each of size 5x5, stride = 1 and, padding =0
b) One Pooling layer which uses MAXPOOLING with stride =2.
c) One hidden layer having number of neurons = 100

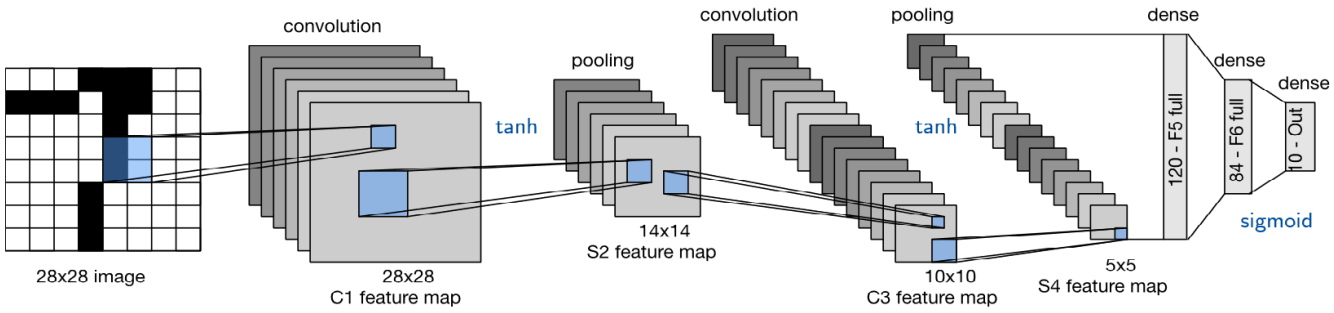
Note: use ReLU activation function after each convolution layer.

2. Design a CNN with:

a) Two back-to-back Convolution layers which uses 32 kernels each of size 3x3, stride = 1 and, padding =0
b) One Pooling layer which uses MAXPOOLING with stride =2.
c) One hidden layer having number of neurons = 100

Note: use ReLU activation function after each convolution layer.

3. Design the LeNet-5 architecture (see fig below)



4. Compare the performances of the above three architectures with respect to the two datasets.

5. Modify the architectures/hyperparameters to improve to performance.