Assignment 05

Total marks: 10

Instructions:

1. Compile into a single PDF (Figures.pdf) the relevant plots and their inferences, if any.
2. Plots should be labeled clearly.
3. Do not use any library until it is specified. You may use `numpy`, `matplotlib` and `SciPy`.

1 Convolution Neural Network [10 Marks]

Consider the problem for classifying the MNIST Handwritten Digit Classification Dataset. Apply a CNN-based architecture with a softmax layer to classify the dataset into respective classes. Use nine filters of size 3×3 and stride of 1 without padding for the convolution layer, and a 2×2 kernel with a stride of 2 for the maxpooling.

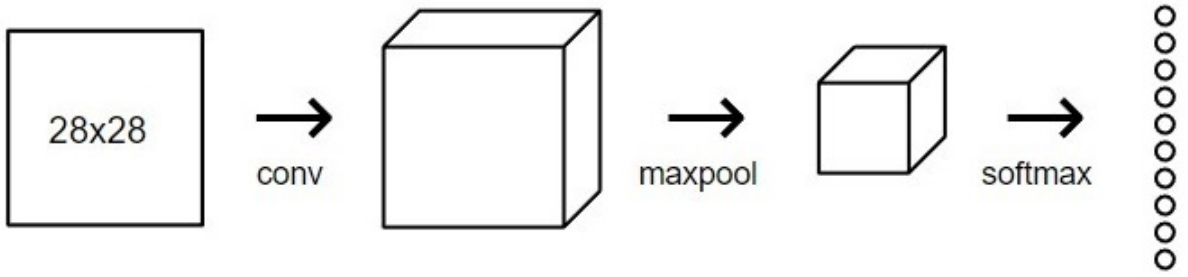

Figure 1: CNN architecture for multiclass classification.

1. Classify the dataset using CNN-based multiclass classification algorithm and calculate the training set accuracy for the model. [8 Marks]
2. Apply the trained model algorithm on the test dataset and predict the testing accuracy of the model. [1 Mark]