Assignment-8

Total: 30 marks

1. Classify the MNIST image datasets using deep convolution neural network.
    a) Identify the optimal number of convolution layer and report a graph by varying the number of convolution layer (1 to 5) against accuracy.
    b) Use Fully connected layer: You can use 1 to 3 number of the fully connected layer and examine the changes in accuracy.
    c) For classification, you are allowed to use the softmax classification layer.
    d) Implement the 50% dropout technique in your fully-connected layer.
    e) Give some optimal mini-batch size and learning rate.
    f) Save your trained model.

    [*Note: For implementation details please click here*]

2. Classify CALTECH-101 image dataset by finetuning the pre-trained Alexnet model.

    a) To download the dataset click here
    b) To download the deep learning toolbox model for AlexNet network click here (Please install the package)
    c) You need to change the last fully connected layer of the pre-trained model to fine tune it with the above mention dataset.
    d) Implement the 50% dropout technique in your fully-connected layer.
    e) Give some optimal mini-batch size and learning rate.

    [*Note: For implementation details please click here*]

3. Classify the MNIST image dataset after using stacked autoencoder.

    a) Identify the optimal number of autoencoder for stacking and report a graph by varying the number from 1 to 4 against accuracy.
    b) Use the softmax classification layer as the classifier.
    c) Plot the confusion matrix and calculate the average and overall accuracy on the test part of the dataset.
    d) The number of hidden node in each autoencoder should be less than the number of node in the input layer.

    [*Note: For implementation details please click here*]