Assignment (approx. time should be 10 hours). [Overall 40 marks]

1. You are given the iris dataset. 120 train examples. 30 test examples.
2. Create a simple softmax classifier with 3 neurons in output layer and no hidden layer using TensorFlow Core APIs. Save it as iris\_softmax.py. [5 marks]
3. Create an MLP classifier with 3 hidden layers of sizes 5, 10, 5 using tensorflow Core APIs. Save it as iris\_mlp\_tf.py. [10 marks]
4. Save the snapshot of the graph and loss function plot from tensorboard. Save it as iris\_graph.png and iris\_loss.png. [5 marks]
5. Create an MLP classifier with 3 hidden layers of sizes 5, 10, 5 using Keras. Save it as iris\_mlp\_keras.py. [10 marks]
6. Create a CNN classifier using tensorflow to classify the fashion MNIST dataset. The CNN should follow this architecture: CONV layer with 16 3x3 filters with pad 1 stride 1, RELU, POOL 2x2 with stride 2, CONV layer with 8 3x3 filters with pad 1 stride 1, RELU, POOL 2x2 with stride 2, Dense layer of size 64, RELU. Save it as fashion\_cnn\_tf.py. [10 marks].
7. Report accuracy for (2), (3), (5) and (6) above in the report. To report the accuracy, run each of these codes 10 times and report mean and standard deviation on the test set. Of course, you do not get marks for (2), (3), (5) and (6) above without reporting accuracy in the report. Name the report as FirstName\_LastName.docx or FirstName\_LastName.pdf. The report should also briefly describe how you solved the problem, with a max overall length of 2 pages.

Put all your files into a folder. Rename the folder as FirstName\_LastName. Marks will not be awarded if your name is missing.

This is an individual assignment.

 Submit your file on LMS by ***<<date>> EOD*** in the submission folder  **DL|Assignment Submission** created on LMS. Any late submission will attract a huge penalty.

 The Honor code for this Assignment is **2N-b**.