30 Sept 2019

**Attendance: 10%, Continuous evaluation: 70%, Viva-20%**

***Assignment No. 4***

i. Download and extract the flower image dataset from https://www.kaggle.com/alxmamaev/flowers-recognition.

ii. The dataset contains five classes of flower images of variable size namely chamomile, tulip, rose, sunflower, dandelion. Resize all images to 80*80 pixel and convert all colour images to grey images.

iii. Randomly shuffle all images to create training, test set with ratio of 90: 10, respectively. (Reduce the training size by 1/ 5 if computation resources are limited).

iv. Train a Convolutional neural network with max pooling and a fully connected layer at the top, to classify the flower images. Now run the network by changing the following hyper-parameters:

| Hidden Layers | Convolution stride | Convolution size | Regularization |
|---|---|---|---|
| 1 | (5*5, 4*4, 3*3) | [ 16,32, 64] | Dropout of 0.8 after each layer |
| 2 | (5*5, 4*4, 3*3) | [ 16,32, 64] | Batch normalization after each layer (except the first) |
| 3 | (5*5, 4*4, 3*3, 3*3) | [ 16,32, 64, 96] | Batch normalization after each layer (except the first) |

v. Plot the graph for loss vs epoch and accuracy(train, test set) vs epoch for all the above cases. Also plot the accuracy for all set.

vi. Repeat the experimentation for colour images. And visualise the test result.

Submit a report with results.