January-May 2022 Semester

CS691: Fundamentals of Deep Learning

Programming Assignment II

Date: **18th March, 2022**
Deadline for submission of PDF file of report: **Monday, 4th April, 2022**

Datasets:

1. 48-dimensional color histogram feature vectors extracted from color images
2. Color image data

Task 1: Dimension reduction on Dataset 1 using (a) PCA and (2) AANN. Use the reduced dimension representation as input to a MLFFNN based single-label multi-class classification model.

Task 2: Stacked Autoencoder (with 3 autoencoders) based pre-training of a DNN based classifier for Dataset 1

Task 3: Image classification for Dataset 2, using a MLFFNN with Deep CNN features for an image as the input to the MLFFNN, with (a) VGGNet as Deep CNN and (b) GoogLeNet as Deep CNN.

Task 4: Image classification for Dataset 2, using a CNN with CL1, PL1, CL2 and PL2 as the layers. Use kernels of size 3x3, stride of 1 in the convolutional layers. Use the mean pooling with a kernel size of 2x2 and stride of 2 in the pooling layers. Use 4 feature maps in CL1. The number of feature maps in CL2 is a hyperparameter.

Report should include details of experimental studies, results, observations and analysis of results.