

# Pattern Recognition (COM511)

## Project - Coding: Matlab/Python

**Submission Deadline: July 12**

**Note:**

1. Students solve the problem which are assigned to your group only.
2. Do not copy as you will be assigned marks based on your peers performance.
3. Do not use anyother models than CNN.
4. You can use inbuilt libraries like Keras, pytorch, theano, tensorflow, packages from deeplearning toolbox(Matlab), etc.

**Problem Assignment:**

1. Group 1 to 5
2. Group 6 to 11
3. Group 12 to 15, 17, 18
4. Group 19 to 23
5. Group 24 to 28
6. Group 29 to 34
7. Group 35 to 39

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1. **Multi-class classification of natural scenes using CNN**

**Number of Instances(N):** 17,000+ (Training: 14,000+ ,Testing: 3,000+)

**Input:** A natural scene image

**Target Output:** 1 out of 6 classes (Building, Forest, Glacier, Mountain, Sea, Tree)

**Note:** Do not use "seg\_pred" folder.

**Dataset Size:** 300 MB (approx)

**Dataset Link:** <https://www.kaggle.com/puneet6060/intel-image-classification>

2. **Predict the correlation score from images using CNN**

**Number of Instances(N):** 1,50,000 (Training: 80% ,Testing: 20%)

**Input:** A image containing datapoints(Some x plotted against y)

**Target Output:** A continuous correlation value between -1 and 1

**Dataset Size:** 166 MB (approx)

**Dataset Link:** <https://www.kaggle.com/athosdamiani/guess-the-correlation>

3. **Digit classification from hand signs using CNN**

**Number of Instances(N):** 700 (Training: 80% ,Testing: 20%)

**Input:** An image with a hand sign

**Target Output:** 1 out of 10 classes (0, 1, 2, 3, 4, 5, 6, 7, 8, 9)

**Note:** Download images only needed for your specific task (0 to 9 folders only)

**Dataset Size:** 10 MB (approx)

**Dataset Link:** <https://www.kaggle.com/ayuraj/asl-dataset>

4. **English Alphabet classification from hand signs using CNN**

**Number of Instances(N):** 1820 (Training: 80% ,Testing: 20%)

**Input:** An image with a hand sign

**Target Output:** 1 out of 26 classes (a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, x, y, z)

**Note:** Download images only needed for your specific task ( 'a' to 'z' folders only)

**Dataset Size:** 20 MB (approx)

**Dataset Link:** <https://www.kaggle.com/ayuraj/asl-dataset>

5. **Classify Input dance image into respective Indian classical dance style using CNN**

**Number of Instances(N):** 364 (Training: 80% ,Testing: 20%)

**Input:** Image with a classical Indian dance style

**Target Output:** 1 out of 8 classes (manipuri, bharatanatyam, odissi, kathakali, sattriya, kuchipudi, kathak, mohiniyattam)

**Note:** Download images only needed for your specific task (all images from train folder and train.csv file)

**Dataset Size:** 20 MB (approx)

**Dataset Link:** <https://www.kaggle.com/souravkgoyal/identify-the-dance-form>

6. **CIFAR-10 Classification using CNN**

**Number of Instances(N):** 60,000 (Training: 50,000 ,Testing: 10,000)

**Input:** Image (32 x 32)

**Target Output:** 1 out of 10 classes (airplane, automobile, bird, cat, deer, dog, frog, horse, ship, truck)

**Dataset Size:** 170 MB (approx)

**Dataset Link:** <http://www.cs.toronto.edu/~kriz/cifar.html>

7. **Classification of digits from handwritten characters using CNN**

**Number of Instances(N):** 70,000 (Training: 60,000 ,Testing: 10,000)

**Input:** Image (28 x 28)

**Target Output:** 1 out of 10 classes (0, 1, 2, 3, 4, 5, 6, 7, 8, 9)

**Dataset Size:** 20 MB (approx)

**Dataset Link:** <http://yann.lecun.com/exdb/mnist/>