Int. To Deep Learning –HW#2

About the Assignment

The main aim of the assignment is to make you familiar with a traditional classifier by using KNN. Contributions of this lab are;

- Learning the K-NN classification method.
- Understanding the idea behind the classification task.

Submit the Assignment

Send your code and pdf document as zipped and rar.

Ex: Name_Surname.zip

Hint

Look at the example in lecture notes.

Step1:

Read train images from train folder and convert images to vector format by writing a snipped code. It means that an image with 256x256x3 channels, must be converted to grayscale as 128x128 format. Then take derivative of image. Later, convert gradient of image to 1x16384 vector. Vector must be float16. There are 47 ***cellphone*** images, 53 ***flamingo*** images and 194 ***motorbikes*** images in train folder.

Step2:

Write a KNN function send the parameters of

```
def KNN(x_train, y_train, sample_test, k )
return 0
```

x_train holds image data related to ***cellphone (1)*** , ***flamingo (2)*** and ***motorbikes (3).***

y_train holds labelsrelated to ***cellphone (1)*** , ***flamingo (2)*** and ***motorbikes (3).***

Sample_test is an image from test folder.

k is the nearest neighbor size and it is equal to 5.

The KNN function should return the most similar class name for sample_test. In case of computing the similarity, you are expected to use the Euclidean distance, which is explained in lecture notes by Teacher in class.