

Assignment #2

1- Scene classification using Convolutional Neural Network and training from scratch

The scene dataset contains about ~25k images from a wide range of natural scenes from all around the world. The task is to identify which kind of scene the image can be categorized into. It is a 6 class problem buildings, forests, mountains, glacier, street, sea.

Download the scene image data set from following link:

A- Change the size of the images to 60 x 60.

B- Design a convolutional neural network model with convolution and max pooling layers, that you specify the number and order of them.

C- Display plots of loss and accuracy on training and validation data. Determine the best epoch for this problem.

D- Predict the model with unseen data (seg_pred folder).

Use the dropout or weight regularization in your implementation.

E- Repeat steps A to D using the data augmentation technique and report the results.

2- You come up with a CNN classifier. For each layer, calculate the number of weights, number of biases and the size of the associated feature maps.

The notation follows the convention:

- CONV-K-N denotes a convolutional layer with N filters, each them of size $K \times K$,

Padding and stride parameters are always 0 and 1 respectively.

- POOL-K indicates a $K \times K$ pooling layer with stride K and padding 0.
- FC-N stands for a fully-connected layer with N neurons.

Layer	Activation map dimensions	Number of parameters
INPUT	224*224*3	0
CONV-9-32		

POOL-2		
CONV-5-64		
POOL-2		
CONV-5-64		
POOL-2		
FC-3		