

Assignments due on 20/03/2022

Assignment 6a

- a) In this assignment, we run train and test the classification of CIFAR 10 datasets using VGG 16
- b) Download the VGG 16 architecture pytorch code.
- c) Use the pretrained weights.
- d) Discard the FC layers. Then after the last convolution layer (feature map 7X7X512), add global average pool layer (GAP layer).
- e) After the GAP layer, the feature vector will be 1X1X512. Add a FC layer with output neurons = 10. Add Softmax layers to convert the outputs as probability.
- f) Write codes to train the VGG 16 - GAP model with train dataset from CIFAR. Use 5,000-10,000 randomly chosen images from training as validation set in each epoch.
- g) Draw the plots for validation loss and training loss vs epoch
- h) Draw the plots for validation loss and training accuracy vs epoch
- i) Accuracy and F1-score on the test set. Compare it with the original VGG 16 model performance
- j) Print Confusion Matrix

Assignment 6b

- a) Now we will use the trained model for producing the CAM images
- b) Produce and save 1000 CAM images (for the winning class) from the test set. You should randomly choose 100 images from each class here.
- c) Now draw a plot for each of the test image. Two sub figure will be there vertically. The top one will be the input image. The bottom one will be the CAM image (heatmap image). On the top three information will be there. Ground truth class name, predicted class name, the probability. Put all plots in a folder.
- d) Separate 50 images (5 images from each class) that are wrongly classified. Keep them in separate folder. We will go through them visually and try to understand why they were misclassified by examining where the neural network paid it's attention.