Theory and Practice of Deep Learning
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Coding Homework # 4 Report

Notes:

All experiments were done with all the 2500 images.

The classification loss and accuracies for different tasks are included in this report.

Console output of all experiments included as a html file.

Using precomputed mean and standard deviation of data for all experiments. The function used to obtain these values is data_loader.py/get_mean_and_std

Task 1

1. Experiment without pixel normalization
   Loss = 1.9473, Accuracy = 0.562 (1406/2500)
2. Experiment with pixel normalization
   Loss = 0.9621, Accuracy = 0.757 (1892/2500)

Task 2 (Results below are reported for experiments with pixel normalization. But the source code includes experiments without pixel normalization as well for better understanding)

1. Experiment with Five Crops
   Loss = 0.8579, Accuracy = 0.774 (1934/2500)
2. Experiment with Ten Crops
   Loss = 0.8487, Accuracy = 0.779 (1948/2500)

Mirroring for datasets is bad if the mirroring process destroys the context that has to be learned by the network. For eg: Street sign images, images that contain useful text information (like picture of an ambulance, name board of a school) etc.

Task 3 (Results below are reported for experiments with pixel normalization. But the source code includes experiments without pixel normalization as well for better understanding)

1. Experiment with pretrained ResNet50 (330x330 image)
   Loss = 1.0458, Accuracy = 0.770 (1924/2500)
2. Experiment with pretrained InceptionV3 (330x330 image)
   Loss = 1.0117, Accuracy = 0.782 (1955/2500)