Computer Vision
CSCI-UA.0480-001 2020
Assignment 2

February 6, 2020

Overview

The purpose of this assignment is for you to get experience with PyTorch, the machine learning python package we will be using throughout the course. This assignment can be done in your local machine but it's recommended to test your code in Prince or JupyterHub so you can have first hand experience with the HPC cluster environment.

Pytorch

PyTorch installation instruction can be found at https://pytorch.org/get-started/locally/. Read the official PyTorch tutorials (https://pytorch.org/tutorials/beginner/deep_learning_60min_blitz.html) up to Neural Networks section and the dataset tutorial (https://pytorch.org/tutorials/beginner/data_loading_tutorial.html). These tutorials will introduce you to how matrix manipulation, network defining, backpropagation and dataset works in PyTorch.

AlexNet

AlexNet model is the winner of 2012 ILSVRC (ImageNet Large Scale Visual Recognition Competition). It is one of the very first deep learning models that show the power of neural networks. In this assignment you will use pre-trained AlexNet to classify a small fraction of the ImageNet dataset, namely images of Persian cats and Eskimo dogs.

You should follow these steps:
- Install the Pillow package (https://pypi.org/project/Pillow/)
- Create a dataloader using the ImageNet dataset in starter code.
- Create a AlexNet with pre-trained weights. There is already an existing implementation of AlexNet in PyTorch: https://pytorch.org/docs/stable/_modules/torchvision/models/alexnet.html. You should call the alexnet function with the pretrained argument being True. It might take a while to download the weights.
- Evaluate pre-trained AlexNet with images in the *imagenet_12* folder and print out the accuracy.

- ○ Use *torch.argmax* to get the predicted label.
  - ○ Don't forget to change the model mode to eval
    (https://pytorch.org/docs/stable/nn.html#torch.nn.Module.eval).

Submit your work to nyu classes. Upload your python script and also report the accuracy in the NYU Classes submission text box. This assignment is due on **Tuesday February 18th** before class.

Grading

Deliverables	Points
DataLoader Setup	10
AlexNet Accuracy Evaluation	10
Total	20