Assignment #3

Flower classification, Due on Nov 10, 11:59 pm

Overview

Image classification is a core and fundamental task in computer vision.
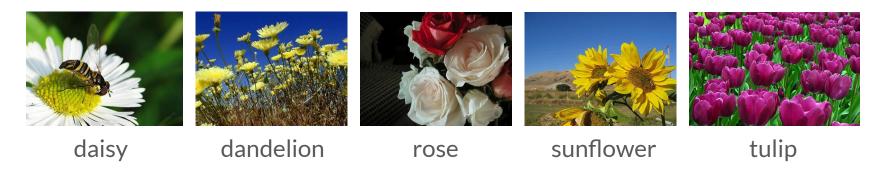
In the assignment, you will implement a multi-class image classifier to recognize flowers.

You will design and train a deep convolutional network from scratch to predict the class label of a flower image. This will help you gain experience with network design and get more familiar with PyTorch.

Please note that you're not allowed to use a pre-trained model.

Flower dataset

- The dataset is collected by Alexander Mamaev.
- It contains 4,323 images in 5 classes, with about 800 images per class.

| daisy | dandelion | rose | sunflower | tulip |

- The train/val/test splits are provided.
- Your model will be evaluated on the test set using the accuracy metric.

Your task

- Design a convolutional neural network to recognize the flowers. You must train your model from scratch.
- The images provided are of different resolutions. You'll need to resize the images into a fixed size of your own choice.
- To get a high accuracy, you'll need to experiment with different filter sizes, different number of layers, and other design principles discussed in class to figure out a network architecture that works best.
- You'll also need to try data augmentation, dropout, batch normalization as well as different optimizers and other tricks to boost performance.
- Again, you cannot use any pre-trained model in this part.

Things you cannot do

- You cannot submit results predicted by others.
- You cannot copy trained models from others.
- You cannot copy code from others, internet, github …
- You cannot collect more images to train your model in order to boost performance.

Any violation will result in 0 scores!

Submission

- Submit your predictions on the test images to Kaggle for evaluation.

- Submit your code + report to the CU.
- The report must include:
  - Your network architecture
  - What you have experimented for performance improvements. This could include experiments that work and those that do not work.
  - Other findings if any
- Grading on report will mostly depend on the report quality. Please show your effort.

Grading

- 60% competition
  - Bonus points to top 3 teams
  - Top 3 teams will share their approaches in class

- 40% report