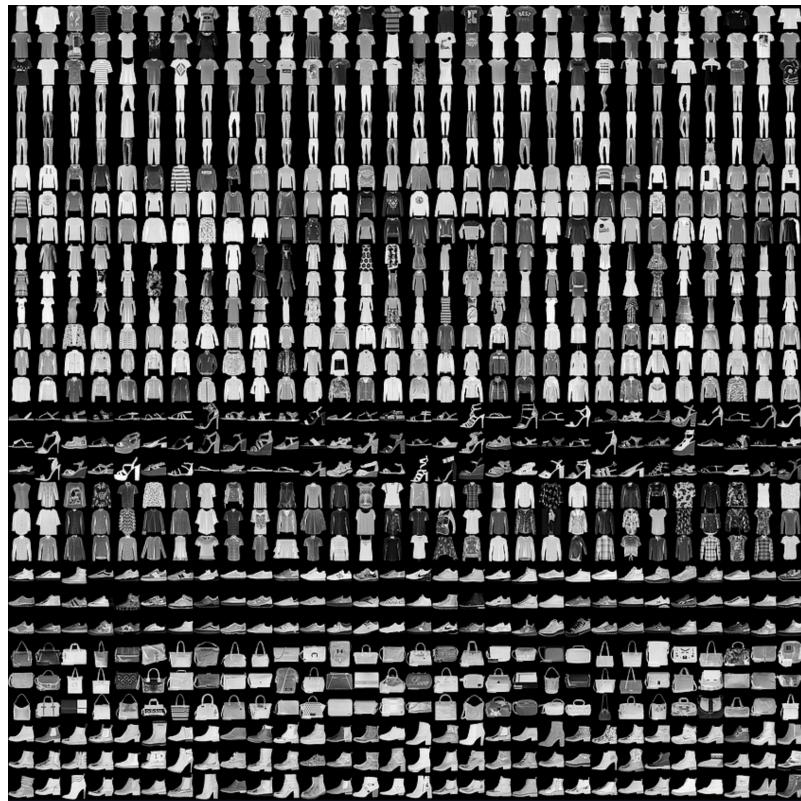


CS 682 Computer Vision

Multi-layer Networks



In this part of the assignment you will implement a multi-label image classifier on the multi-layer neural networks on the [Fashion-MNIST](#) dataset. You will design and train a neural network to predict a binary present/absent image-level label for each of the classes. This will help you gain experience with PyTorch.

Download the starting code [here](#).

The top-level notebook (`MP2_P1_fashion_mnist.ipynb`) will guide you through all the steps of the classifier. Detailed instructions are below.

You will be required to use a GPU for this assignment. **Since this is the only assignment requiring GPU, you can use Colaboratory**, as you have limited number of credit hours on COLAB.

Environment Setup (Local)

If you will be working on the assignment on a local machine then you will need a python environment set up with the appropriate packages. We suggest that you use Conda to manage python package dependencies (<https://conda.io/docs/user-guide/getting-started.html>).

Unless you have a machine with a GPU, running this assignment on your local machine will be very slow and is not recommended. If you will be completing the assignment on a local machine then you will need a python environment set up with the appropriate packages. The format of this assignment is inspired by the [Stanford CS231n assignments](#), and we have borrowed some of their data loading and instructions.

Environment Setup (Local)

We suggest that you use Anaconda to manage python package dependencies (<https://www.anaconda.com/download>). This guide provides useful information on how to use Conda: <https://conda.io/docs/user-guide/getting-started.html>.

Data Setup (Local)

Once you have unzipped the zip file, navigate to the fashion-mnist directory in assignment2 and execute the get_data.sh script provided:

```
$ cd fashion-mnist/fashion-mnist/  
$sh get_data.sh or $bash get_data.sh
```

Data Setup (For Colaboratory)

If you are using Google Colaboratory for this assignment you will need to do some additional setup steps.

Download the assignment zip file and follow the steps above to download Fashion-MNIST to your local machine. Next, you should make a folder in your Google Drive to hold all of your assignment files and upload the entire assignment folder (including the dataset you downloaded) into this Google drive file.

You will now need to open the Assignment IPython notebook file from your Google Drive folder in Colaboratory and run a few setup commands. However, we have condensed all the important commands you need to run into an [IPython notebook](#) (you can disregard the section on GPU setup for this assignment).

The assignment deliverables are as follows. If you are working in a pair, only one designated student should make the submission.

Submission Instructions

For this part of the assignment you will submit.

1. Upload your output file to the [Kaggle competition for the MNIST classifier](#).
2. All of your code (python files and ipynb file) **in a single ZIP file**. The filename should be **netid_hw5_code.zip**.
3. Your ipython notebook with output cells converted to **PDF format**. The filename should be **netid_hw5_output.pdf**.
4. A brief report **for this assignment** in PDF format using [this template](#). The filename should be
netid_hw5_report.pdf.