DS-GA 1008: Deep Learning, Spring 2019
Homework Assignment 3

Due: 6pm on Friday, Mar 15, 2019

`If you get, give. If you learn, teach. Maya Angelou (1928 - 2014)`

1. Fundamentals

1.1. Dropout

Dropout is a very popular regularization technique.

(a) [2 pts] List the `torch.nn` module corresponding to 2D dropout.

(b) [8 pts] Read on what dropout is and give a short explanation on what it does and why it is useful. You might find these references helpful:

1. Section 7.12 of the Deep Learning Book by Ian Goodfellow et al: https://www.deeplearningbook.org/contents/regularization.html.
2. Original paper: link

1.2. Batch Norm

(a) [2 pts] What does mini-batch refer to in the context of deep learning?

(b) [8 pts] Read on what batch norm is and give a short explanation on what it does and why it is useful. You might find these references helpful:

1. This blog post: https://towardsdatascience.com/batch-normalization-in-neural-networks-1ac91516821c
2. Original paper: link

2. Programming

Complete exercises in `DS-GA-1008-HW_assignment_3.ipynb` [80 pts].

3. Submission

You are required to write up your solutions to Part 1 using LaTeX.
Submit the following files to **NYU Classes** by the deadline (6pm on Friday, March 15, 2019):

- `First-name_Last-name_netID_A3.pdf` file for Part 1 (containing a read-only link to your Overleaf project for Part 1)

- `First-name_Last-name_netID_A3.tex` file for Part 1
- `First-name_Last-name_netID_A3.ipynb` file for Part 2

4. Disclaimers

You are allowed to discuss problems with other students in the class but have to write up your solutions on your own.

As feedback might be provided during the first days, the current homework assignment might be undergoing some minor changes. We'll notify you if this happens.