Homework 10: Convolutional Neural Networks with PyTorch

About

Due

Wednesday 5/1/19, 11:59 PM CST

Goal

In this homework set, you will extend from neural network with simple fully connected layers (as in Homework 8) and learn to use convolution layers, batch normailzation, and advanced features to improve the accuracy.

Code and External Libraries

The assignment must be done using **PyTorch platform and GPU**. Do all of your work in the provided iPython notebook.

The libraries you may need to have are in this requirements.txt (http://courses.engr.illinois.edu/cs498aml/sp2019/homeworks/hw8_requirements.txt) file.

Problems

Total points: 100

- Download the Python Notebook here (http://courses.engr.illinois.edu/cs498aml/sp2019/homeworks/AML_HW10.ipynb). Alternatively, you can access a **read-only version** on colab here (https://colab.research.google.com/drive/14dvlwBB_rAgs6tcmaIJOhf_XuUTn-nDA) (*update 4/19: added definition of Flatten class and train function in part 0*) of which you will need to make a copy.
- There are cells for you to input code, as well as text. Make sure to fill in all such cells before submission. Important information and sections are in **bold**.
- The report requirement is described in the notebook also. Please check the detail there.

Submission

Submission will be through gradescope (https://www.gradescope.com)

Deliverables

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Submission

1. Your python notebook renamed as *netid_HW10.ipynb*. *Submit this in the* ***HW10 Code*** *section.*
2. *Convert your python notebook with all outputs and questions answered into PDF format. Name it netid_HW10.pdf. Submit this in the* ***HW10 Report*** *section*

Note: *Make sure that your training plots are visible after converting to PDF. If this becomes difficult, save the plots as images and attach them to the end of your PDF submission.*