HW5.0 (50 points) REMEBER TO START SMALL THEN SCALE UP

TEXT CLASSIFICATION:

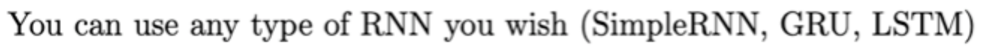
- Create a labeled dataset by selecting and downloading at least 3 novels from project Gutenberg (the label being the title of the book)
- Generate the following scripts

01-clean.py

- Write a script to clean the data and break the novels into chunks of text (each with the relevant label)
- Convert into a dataset similar to the IMDB format (feel free to do it differently if you prefer) **https://www.gutenberg.org**
    - You don't have to use the entire novel (especially when debugging)
- Save the processed data in HW5.0 so you don't have to pre-process every time you train

02-train.py

- Load the data from 01-clean.py and further process if needed (vectorize or use embedding layer)
- Train both a 1D CNN and a RNN model to predict the novel title (category) based on the fragments from the text



You can use any type of RNN you wish (SimpleRNN, GRU, LSTM)

- Try to maximize your accuracy using methods for the lecture and textbook
- Do K=1 validations (i.e just one split of training-test-validation)(fix the seed so you can recreate the validation set)
- Try to follow guidelines from the "universal ML workflow" used throughout the course
- Include some form of regularization (L1, L2, Dropout)
- Track multiple classification metrics including ROC or AUC
- MAKE SURE YOU SAVE TRAINING HISTORY PLOTS TO PNG FILES SO THE TA's DON'T HAVE TO RE-TRAIN
- WRITE A LOG FILE (log.txt) WITH TRAINING INFO AND FINAL METRICS
- Save your final trained model

03-evaluate.py

- Write a short second script to load the model and write important metrics (training, test, val) to the screen

- **Optional**: repeat but try to predict something else like genre or date written (would require many more more than 3 books)
- **Extra credit (+10 points):** Repeat the exercise but generate a labeled dataset (text, topic) using the Wikipedia API (see lecture codes) Then train both CNN and RNN models to predict the topic of a given webpage based on it's text (do in separate directory called WIKI)

IMPORTANT NOTE: I have scripts that I periodically run to compare every student's files to all other student files (copying code from another student in any way isn't recommended)

Reading Assignment