<u>Neuro 140/240: Biological and Artificial Intelligence</u>

<u>Project Timeline and Credits</u>

Total points: 100

Deliverable 1: Code/Environment/Software setup
- Credit: 5 points
- <mark>Due: 02/09/2021, noon ET</mark>
- Approximate expected load: 2-3 hours
- Goal: Ensuring students don't have "Code-not-running" issues one day before future deadlines. Students are only expected to install packages and test functionality for this
- To Dos

  Track A (beginners):
    - Install Conda/PyTorch + other packages
    - Clone github repo
    - Run test code (pre-written) to ensure things run on your own system. Submit output of test code.

  Track B (connoisseurs): Provide evidence that you can run machine learning code (e.g., github repo of code that you have written, a report that you have written, code that you have ran for another course)

Deliverable 2: Standard MNIST example + Declare Project
- Credit: 5 points
- <mark>Due date: 02/23/2021, noon ET</mark>
- Approximate expected load: 4 hours
- Goal: Understanding building blocks of a deep learning pipeline. Data loading, model files, training/inference, evaluation.
- To Dos:

  Track A (beginners):
    - Run a given ipython notebook in the repo which is annotated to explain students all the parts.
    - Complete short questions which are minor modifications in pre-written files to get some experience.

  Track B (connoisseurs): Provide evidence that you can run machine learning tasks. Submit code to do classification of MNIST digits and a figure showing performance as a functio of the number of training examples.

  Track A+B: Declare what project you will be working on. Submit project description.
  Length: 0.5 page.

Deliverable 3: Mid term report
- Credit: 20 points
- <mark>Due date: Friday 03/12/2021, noon ET</mark>

- Goal: Ensuring students have: (1) Literature review, (2) a clear plan, (3) Initial progress on project
- To Dos (both Track A and Track B):
    - Project Proposal
    - Suggested length: 3 pages
    - Suggested structure for midterm report:
        - What is the hypothesis? Or What is the question?
        - Literature review. How people have addressed this question
        - Steps explaining how you plan to set up the project. A diagram here is great. Pseudocode also works very well here.
        - What code-base will you be using?
        - What are the key papers that you will be relying on?
        - What dataset / datasets are you going to be using?
        - Do you foresee any challenges or stumbling blocks and how do you plan to address them?
        - Preliminary progress
        - What do you expect to observe and how would you interpret the results?

Deliverable 4: Progress made
- Credit: 5 points
- Due: 04/13/2021, noon, ET
- Goal: Ensuring students don't come one day before the final deadline with things that are not working. Make sure students have made substantial progress on their projects. Answer questions, help students move along with their projects. Major issues should have been identified.
- ToDo:
    - A one-on-one brief presentation of what progress they have made so far.
    - Demonstrate what has been done, show code and figures
    - Any issues?
    - What remains to be done?
    - What is the plan?

Deliverable 5: Final project presentation
- Credit: 65 points
- Due: 05/05/2021, noon, ET
- Final Deliverables:
    - Project report + link to code (e.g., github repository)
    - Suggested length: 6-8 pages
    - Extra Credit: Demos? A video explaining the work?
    - Suggested structure for the final report
        - Hypothesis/Question
        - Brief literature review.
        - Methods and steps taken with links to code. Describe which code YOU wrote, and which code was taken from other sources (include citations).

Describe datasets that you have collected and which ones were taken from other sources (include citations). Cite key papers that your work relies on.
- Describe your results. The results should include figures documenting the observations, performance, challenges, etc.
- Discuss the results and their implications