Final Project Proposal
Due October 25 11:59pm

Submit the following information in PDF form to Blackboard. Your answers can be concise as you like, as long as you give us a clear idea of what you're doing.

Team. List all members of your team. Your **teammate should submit an identical proposal** to Blackboard, and will lose points if they forget to do this. This semester, you can have at most a **team of 2** but working solo is also allowed.

Elevator Pitch. Describe what you want to do in one sentence. Here are some examples from prior runs of the course:

* Train a convolutional neural network working with spectrograms to recognize whether the word "Jarvis" is present in some audio
* Collect new images of shoes, and train a neural network to recognize the shoe type
* Use text from news stories to make predictions about stock price in time series
* Train a neural network to generate new music from MIDI files
* Train a generative adversarial network (GAN) to generate pictures of clothing
* Compare the performance of Monte Carlo Tree search to minimax with alpha-beta pruning, on a new game
* Implement something like AlphaGo's MCTS-with-neural-networks for a new game
* Train a Q-learning reinforcement learning agent with a neural network backend to perform a novel task, varying the state and reward structure to try to get better results

These were all 1- and 2- person projects, and as an incentive for you to try working in a group, there is no difference in expectations for these two group sizes. Choose a project that you think will take roughly as much work as these.

Context. If you are interacting with a technology we may not have heard of, a game we may not have played, or any other kind of jargon or specialized knowledge relevant to your project, provide links or descriptions here. (If you think the rest of your proposal is self-explanatory, you don't need to say anything here.)

Methods. Explain what AI/ML methods you will try to tackle the problem. As opposed to the elevator pitch, here you should be specific: yes, it's a neural network, but is it a convolutional neural network, a ResNet architecture, a transformer?

Existing resources. What existing code, libraries, or tutorials will you build on? What training data already exists, if applicable? Anything coming from the web, a book, or generative AI that you plan to use, should be mentioned here. *You can notify us later if you add more resources, but final submissions that "borrow" code without warning us will face stiff penalties and possibly a plagiarism case (do not pass off web or GPT code as your own!). Please be very frank with us so that we can work to make this a*

meaningful and interesting project. It is fine to use such resources as long as we're clear on your own contributions (see "What's New" below).

What's new. Explain very clearly what part of the code will come from you instead of the "existing resources." In addition, mention any additional planned effort on your part that we should consider when deciding whether the project does enough that's new - like gathering a new dataset, for example. *If there isn't enough work mentioned here, then in the feedback, we will assign you a list of extra suggested tasks that would be necessary for an A. (You could counteroffer at that point, but it's better to just have a project you can get started on right away.)*

Plan. Describe a reasonable plan to finish your project by the deadline (Dec 11 for F '23). Include at least 2 milestones (dates & deliverables), and take into account that you will need to write a short summary paper and do a "lightning talk" in one of the last two days of class.

Milestones will not be turned in, but we recommend trying to hit your own milestones, and we will suggest revisions if they don't seem reasonable.

Proposed demonstration or evaluation. How will we know which aspects of your project work well? Describe at least one experiment that would evaluate performance.

Variation. Identify at least **one** thing about your setup that you can vary and measure with your evaluation, so you can potentially make a claim at the end of "X works better than Y." This could be varying a parameter, or changing the task a bit, or changing a neural network architecture, or even comparing performance to a totally different algorithm. (Additional variations beyond the first will help count toward the work being measured for the "what's new" section, above.)

Have fun brainstorming!