Frequently Asked Questions

Fraida Fund

I have questions about the Jumpstart program

You may find this list of frequently asked questions about the Jumpstart program helpful: Jumpstart FAQs

What are the dates of this course?

Most of this course takes place during Summer 2021, from June 7 to August 20. We will have weekly course meetings, homework assignments, etc. during this time.

During the Fall 2021 semester, you'll work on a project for this course. We won't have weekly meetings during this time, but you should expect to devote some time towards completing the project.

Do I need a computer with a GPU? Will I have to install some software on my computer?

In this course, we will use the Google Colab environment for practical programming demos and exercises. Colab is a free browser-based environment for Python programming. You don't need to install anything to use Colab - you'll just need a browser.

Do I need previous experience with machine learning for this course?

This is an introductory graduate level course and no prior machine learning knowledge will be assumed. If you already have significant ML experience, there is no need to take this class.

Do I need a textbook for this course?

You won't need to buy a textbook - all of the materials you'll need will be posted on the course site.

Will we have live meetings? When?

We will hold live meetings on Zoom twice a week: once for a short "chalk talk", and once for a short programming/demo session. The days and times for these meetings are still TBD - once enrollment is finalized, I will poll the class to find times that work for as many students as possible. These meetings will be recorded, so if you can't attend live, you can watch them at your convenience.

We will also hold online "study group" sessions, in which you can work on homework assignments together with your peers, and get help from a teaching assistant. The days and times are TBD. We'll arrange several sessions throughout the week, and you can attend whichever one is most convenient for you.

How will my work in this course be graded?

Your course grade will be based on the following graded assessments:

- weekly homework assignments during the summer (50% of course grade),
- a take-home open-notes exam in August (20% of course grade), and
- a project (30% of course grade) that you'll work on during the fall semester.

Can I do the project on whatever topic I want?

Not exactly. For your project, I'm going to ask you to replicate and then build on a recently published result from a top machine learning conference. I'll give you a list of published papers (with code!) to choose from, in several different areas of ML:

- Understanding images
- Generating images
- Understanding text
- Generating text
- Audio (speech)
- Audio (music and other sounds)
- Security and robustness
- Reinforcement learning
- ML and society: Fairness, privacy, explainability

You'll choose your project from that list of papers.

What are the prerequisites for this course?

This course is mathematically oriented, and undergraduate-level knowledge of probability and linear algebra is required.

If you want to brush up, you can review:

- Review of probability theory (http://cs229.stanford.edu/section/cs229-prob.pdf)
- In Boyd & Vandenberghe "Introduction to Applied Linear Algebra" (http://vmls-book.stanford.edu/vmls.pdf), these sections:
  - Section I, Chapter 1 (Vectors): vectors, vector addition, scalar-vector multiplication, inner product (dot product)
  - Section I, Chapter 3 (Norm and distance): Norm of a vector, euclidean distance
  - Section II, Chapter 5 (Matrices): matrix notation, zero and identity matrices, sparse matrices, matrix transposition, matrix addition, scalar-matrix multiplication, matrix norm, matrix-vector multiplication
  - Section II, Chapter 8 (Linear equations): systems of linear equations
  - Section II, Chapter 10 (Matrix multiplication): matrix-matrix multiplication
  - Section II, Chapter 11 (Matrix inverses): Inverse, solving a system of linear equations
  - Also a quick optimization review: Appendix C (Derivatives and optimization)

There will be a significant programming component to this course, and class and homework exercises will be in Python. You do not need to know Python a priori, but you should know basic programming concepts and have some experience programming in some programming language.