

CS-GY 9223 / Deep Learning

Fall 2020

Objectives

Upon successful completion of this course, you will be able to:

- grasp the mathematical basics of deep learning,
- formulate practical machine learning problems arising in a variety of practical applications,
- implement software prototypes of deep learning-based solutions to these problems,
- and test these prototypes on real-world datasets.

Pre-requisites

- CS-GY 6923 (Machine Learning) or equivalent grad-level course
- Mathematical maturity (esp. linear algebra and optimization)
- Familiarity with Python programming

Outline (tentative)

- Deep learning fundamentals
- Algorithmic aspects (including optimization methods, backpropagation, and autograd)
- Convolutional neural networks
- Recurrent neural networks and their extensions
- Generative models
- Deep reinforcement learning
- Applications in computer vision, NLP, visualization, and robotics

A weekly schedule (tentative) is posted [here](#).

Reading material

The primary text will be the course lecture notes (posted online before each week). We will be loosely following the structure listed in the (excellent) online textbook “Dive Into Deep Learning” available at [d2l.ai](#).

Grading policy

- 60% - Homework assignments (expect one assignment every two weeks)
- 40% - Final project (details in the “Project” folder in NYUClasses Resources)

Expect a homework assignment every two weeks. Homework will consist of a mix of theory and programming assignments.

Late submissions will be penalized! We will cut 25% off your total score for every day that is late, up to a maximum of 3 days.

Late submissions to project deliverables will be similarly penalized.

Contact info

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Course times

Lectures: Tuesdays 2-4:30pm (location: Pfizer Auditorium, 5MTC)

Recitations via Zoom: Thursdays 11am (Pardo), Fridays 9am (Srivatsa)

Office hours via Zoom: Thursdays 9-10am (Hegde)

Course format

This course is offered in blended mode, with lectures provided both in-person and broadcast live (with recordings available for review).

Moses Center statement of disability

If you are a student with a disability who is requesting accommodations, please contact NYU’s Moses Center for Students with Disabilities at 212-998-4980 or mosescsd@nyu.edu. You must be registered with CSD to receive accommodations. Information about the Moses Center can be found [here](#). The Moses Center is located at 726 Broadway on the 2nd floor.