15.563/6.4150 Spring 2024 Syllabus

Course Description

AI and data-driven technologies are increasingly important in business contexts. What makes an AI deployment successful? Great engineering, of course, is instrumental here. But this isn't the whole story; the success of AI systems depends heavily on choosing or curating an environment in which AI can work well. There are plenty of courses that will teach you how to be a great engineer. This course will prepare you to design AI environments.

While this course touches on technical material and concepts, our primary focus will be on the application of those concepts to real-world problems. We will give you the tools to reason about how AI will interact with a particular context and how to design environments that best leverage the strengths of AI while compensating for its weaknesses. Homework assignments will be primarily written. No prior experience with programming or AI is required.

Staff

Instructor: Manish Raghavan (mragh@mit.edu). Office hours by appointment
TA: TBD.

Schedule

Tuesdays and Thursdays, 2:30-4pm. Room TBD.
Note: Enrollment for 6.4150 is limited to 15 students. A lottery may be necessary.

Resources

All course materials will be posted on Canvas.

Grading

Activity	Percentage
Final project	35%
Homework	50%
Participation	15%

Topics covered

- Basics of AI & Machine Learning
    - Supervised machine learning
    - Generative AI
- Programming through data
    - Task definition
    - Measurement gaps
- Identifying AI opportunities
    - Heuristics for AI
- Evaluating AI systems
    - Data evaluation
    - Measurement
- Designing AI environments
    - Selective labels
    - Human in the loop systems
    - Adversarial behavior
- Responsible AI
    - Discrimination & bias
    - Privacy