

6.806 / 6.864: Advanced Natural Language Processing

Generating and understanding human language remains one of the most exciting (and challenging) frontiers in artificial intelligence research. In this class, we'll survey contemporary prediction problems involving human language data, and introduce probabilistic modeling and representation learning tools that can be used to tackle them.

1 Meetings

Lectures: Tuesday / Thursday (posted online).

Office Hours: Saturday 4–5, Tuesday 7–8:30 (online).

Recitation: Friday 10am, 4pm (online).

2 Online resources

Piazza:
piazza.com/mit/spring2020/68066864
(for class discussions)

Stellar:
<https://stellar.mit.edu/S/course/6/sp20/6.864>
(notes, assignments, etc.)

3 Course staff

Instructors

Jacob Andreas	jda@mit.edu
Jim Glass	glass@csail.mit.edu

TAs

Yu-An Chung	andyyuan@mit.edu
Tianxing He	cloudygoose@csail.mit.edu
Hongyin Luo	hyluo@mit.edu
Faraaz Nadeem	faraaz@mit.edu
Zihao Xu	zihaox@mit.edu

4 Important dates

March 19: Midterm exam

May 5: Final projects due

Two makeup midterms will be organized:

- one the same week as the regular midterm (details to be announced in March)
- one during MIT's spring break (tentatively at our normal class time on Tuesday)

5 (Tentative) lecture plan

Feb 4: Introduction

Feb 6: Text classification

Feb 11: Distributional semantics

Feb 13: Word embeddings,
estimated HW1 release

Feb 18: (no class)

Feb 20: Hidden Markov models

Feb 25: Conditional random fields

Feb 27: Recurrent neural networks,
HW1 due, HW2 released

March 3: Attention mechanisms

March 5: Transformers

March 10: Pretraining

March 12: Context free grammars & struct. pred.

March 17: (class canceled)

March 19: (class canceled)

(spring break)

March 31: Advanced LMs (guest: Tianxing!)
HW2 due, HW3 and midterm release

April 2: Machine reading and question answering

April 7: NLP and social science (guest: Deb Roy)
project proposals due

April 9: Dialogue

April 14: Interpretability (guest: Yonatan Belinkov)

April 16: Speech processing

HW3 and midterm due, HW4 release

April 21: Human lang. proc. (guest: Roger Levy)
project status reports due

April 23: Logical semantics

April 28: Grounded language learning

April 28: Social and ethical considerations

May 5: Project presentations

May 7: Project presentations cont.
project due

We'd love to hear your thoughts on how we can do this better!

If a personal issue comes up during the semester, please let us know as soon as possible and we'll do our best to help. Students with an accommodation letter from SDS: please drop it off with one of the instructors (or arrange via email to do it some other time).

6 Assignments and grading

All students will complete 3 homework assignments (a mix of written work and code) and a takehome "midterm" assignment. Students in 6.806 will complete one additional homework assignment. Students in 6.864 will instead submit a final group project (details to be posted midway through the course).

You are encouraged to work together on homework assignments, but all submitted writeups and code must be done on your own.

Assignments will be assessed on a complete / incomplete basis; all reasonable attempts will receive full credit. Due dates listed on the syllabus are guidelines, and we'll continue to accept all work until the end of the semester.

6.806: 18% hw1, 18% hw2, 18% hw3, 18% hw4, 20% "midterm", 8% peer review

6.864: 13% hw1, 13% hw2, 13% hw3, 15% "midterm", 40% project, 6% peer review

Grade scale: Pass [70, 100]; No record [0, 70]

7 Accommodations etc.

We're committed to maintaining a comfortable and welcoming classroom environment for all everybody.