Hybrid Format for fall 2020

The class is *very big (120+ enrolled), so*

All lectures virtual over Zoom
All office hours virtual over Zoom (for now)

Required in-person component
- 1 *safe* in-person chat with course staff
- Details on Piazza soon (end of Sept.)
- Will accommodate *any* student over Zoom

FAQ for Fall 2020

What is our top priority? **Your physical and mental health.**

Can I take course fully remote? **Yes**.

Do I need to attend live class? **Highly recommended**. Not required.

- If you must miss class: We'll record main session. But you will miss key content in breakout sessions (we can't record). Get notes from a friend.

What if I have extended absence?

- Message instructor as you can. We'll try to be flexible within reason. (We plan to drop lowest quiz, drop lowest HW, etc.)

Prerequisites to take this class

Programming: Students should be comfortable with writing non-trivial programs (e.g., COMP 15 or equivalent). We will use Python, a popular language for ML applications that is also beginner friendly.

Please consult our Python Setup Instructions page to get setup a Python environment for COMP 135.

- By the first homework (HW0), students will be expected to do the following without much help:
- - Load and transform datasets with numpy
- - Perform vector mathematical operations in numpy (computing inner products, multiplying matrices, inverting matrices, etc.)
- - Create line plots in matplotlib

Essential Mathematics background: Familiarity with multivariate calculus (esp. derivatives and vector derivatives) is essential.

Useful Mathematics background: Prior experience with linear algebra and probability theory will also be useful.

With instructor permission, diligent students who are lacking in a few of the useful (but not essential) areas will hopefully be able to catch-up on core concepts via self study and thus still be able to complete the course effectively. Please see the community-sourced Self-Study Resources Page for a list of potentially useful resources for self-study.

How will we spend our semester?

		If I want more?
Supervised Learning	10 weeks 5 homeworks 2.5 projects	COMP 137 – Deep Neural Networks COMP 136 – Statistical Pattern Recognition
Unsupervised Learning	2 weeks 0.5 projects	COMP 136 – Statistical Pattern Recognition COMP 150 - Bayesian Deep Learning
Reinforcement Learning	1 week	COMP 137 – Reinforcement Learning

Units of Knowledge

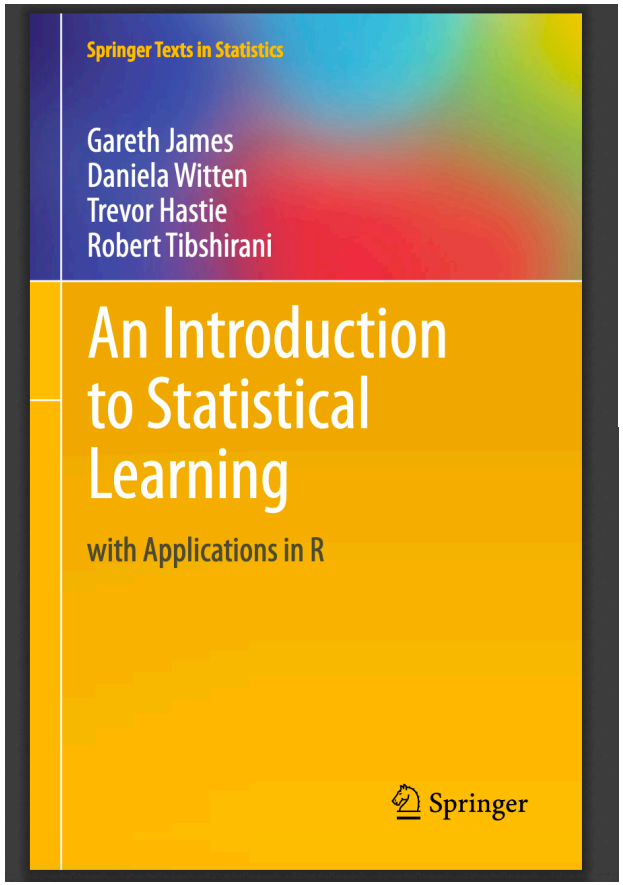
Each one covers ~2 weeks of class

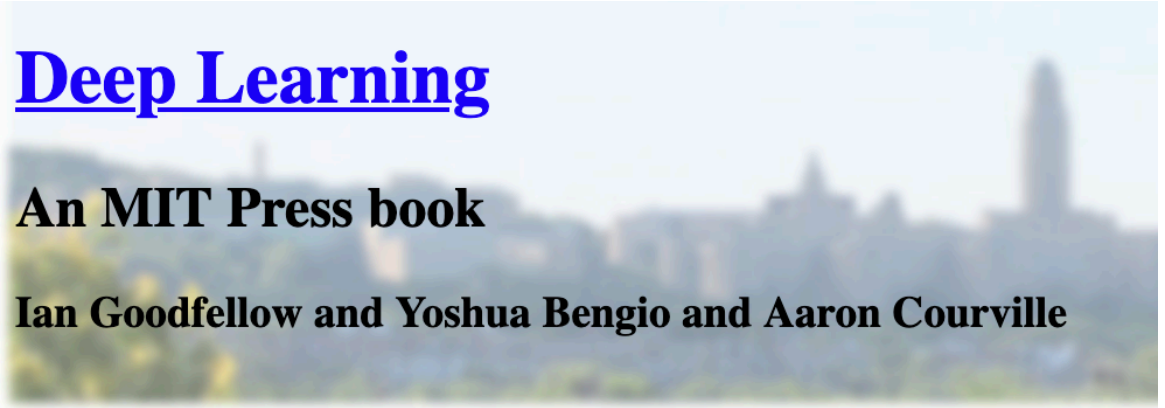
- Unit 1: Regression with linear and neighbor methods
- Unit 2: Classification with linear and neighbor methods
- Unit 3: Neural networks
- Unit 4: Trees and ensembles
- Unit 5: Kernel methods
- Unit 6: PCA and Recommendation Systems
- Unit 7: Frontiers of ML and Reinforcement Learning

What happens each unit?

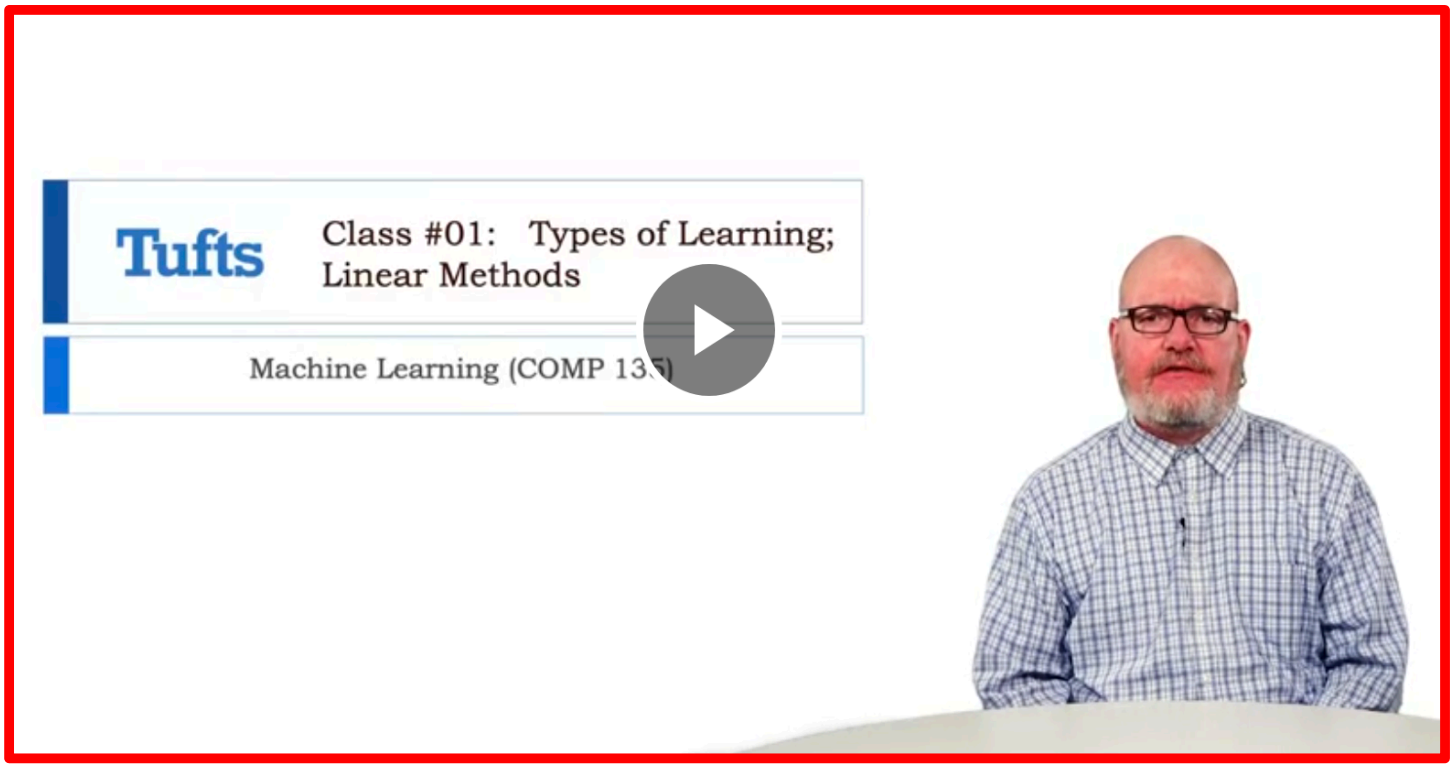
		M	T	W	Th	F	S
Unit 1		14 class		16 class			
Unit 1		21 class		23 class			
Unit 2		28 class		30 class			
Unit 2		5 class		7 class			

Before each class: ***on your own*** - readings from free online textbooks





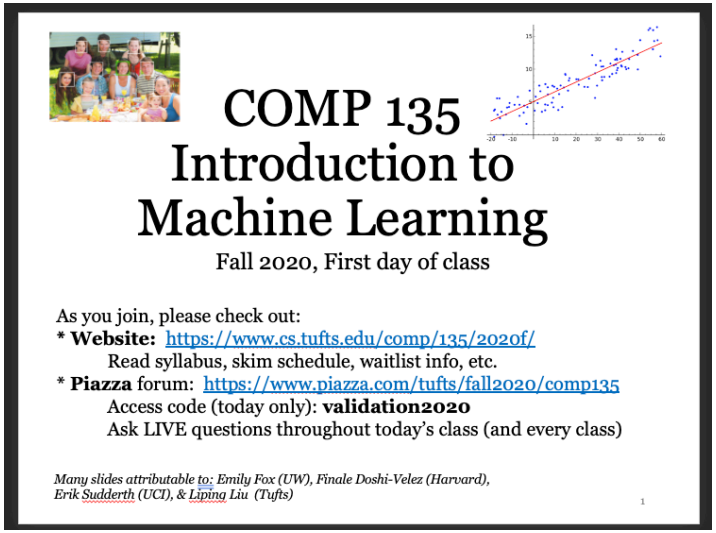
Before each class: ***on your own*** - prerecorded video lectures on Canvas



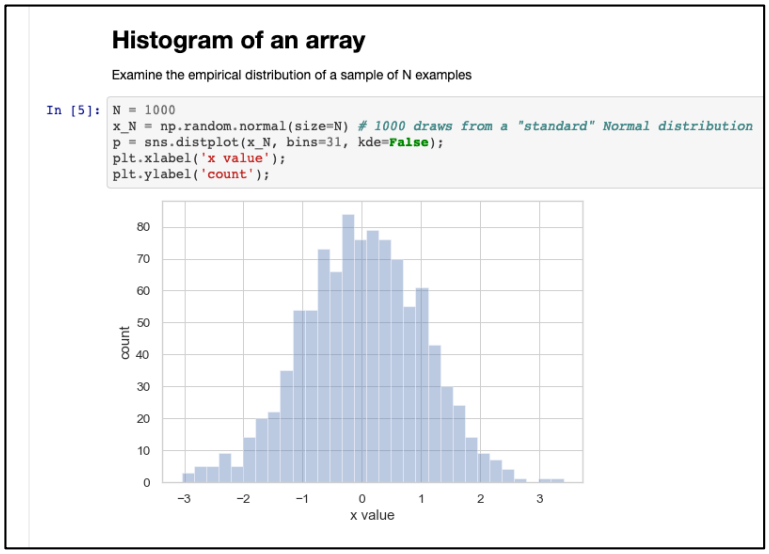
In Class

In class, we will typically have the following structure, all over Zoom:

- First 5 min.: Course Announcements (instructor)
- Next 10 min.: Key concepts for the day (instructor)
- Next 50 min.: Breakout into small groups: discussion and interactive labs
- Last 10 min.: Recap of key concepts and lessons learned



Short slide deck: summary of key ideas and sample practice questions



Labs: Jupyter notebook for interactive exploration

Unit-Specific **Homework**

		M	T	W	Th	F	S
Unit 1	HW1 out	14 class		16 class			
Unit 1		21 class		23 class			
Unit 2		28		30	HW1 **due**		
Unit 2		5		7			

HW are individual work!

Due dates are posted on the website's schedule
PDF writeups and Python code will be turned in via Gradescope.
Code will be evaluated by an autograder on Gradescope
Report figures and short answers will be evaluated by TA graders

Homework Late Policy

Homeworks and lateness

Each student will have 192 total late hours (= 8 late days) to use throughout the semester across all homeworks.

For each individual assignment, you can submit beyond the posted deadline at most 96 hours (4 days) and still receive full credit. Thus, for one assignment in the course due on Thu 9:00am ET, you could submit by the following Mon at 9:00am ET.

This late work deadline is key to our classroom goals. It allows us to always release homework solutions on Monday mornings a few days before the required quiz on that unit is due, and lets us discuss the assignment in class on Monday afternoon without issue.

Unit 2		28		30	HW1 **due**		
Unit 2	Late Deadline	5	HW1 **solution out**	7	Quiz 1		

Unit-Specific Quiz

		M	T	W	Th	F	S
Unit 1	HW1 out	14 class		16 class			
Unit 1		21 class		23 class			
Unit 2		28		30 HW1 **due**			
Unit 2		5 HW1 **solution out**		7 Quiz 1			

Must be completed within 24 h of release
Timed, maximum 30 minutes each
Can use any printed resource
No collaboration

Due dates will be posted on the schedule: schedule.html
All quizzes will be taken via Gradescope.
Multiple choice will be evaluated by autograder on Gradescope
Short answer will be evaluated by TA graders

Quiz Late Policy

Quizzes and lateness

Quizzes CANNOT be turned in late. After the due date, you can receive zero credit. We will drop the lowest quiz grade (so only 4 of 5 quizzes will count to final grade).

This deadline is key to our classroom goals. Quizzes assess what you as an individual understand about the course material. Allowing lateness might encourage intentional or unintentional sharing of answers.

Students with unforeseen and exceptional circumstances may contact the instructor to make other arrangements (likely in the form of a makeup oral exam).

Unit 2		5 HW1 **solution out**		7 Quiz 1			

Must be completed within 24 h of release
Timed, maximum 30 minutes each
Can use any printed resource
No collaboration

Due dates will be posted on the schedule: schedule.html
All quizzes will be taken via Gradescope.
Multiple choice will be evaluated by autograder on Gradescope
Short answer will be evaluated by TA graders

Projects

Open-ended programming challenges, can do in small groups

3 projects all semester, each one ~4 weeks long

- Due dates are posted on the website's schedule
- Results and relevant code will be turned into Gradescope
- Polished PDF reports will be turned in via Gradescope

Leaderboard

Search

RANK	SUBMISSION NAME	ERROR_RATE	AUROC
1	Ben	0.14833333333333332	0.9272055555555554
2	Darren	0.15666666666666662	0.9183333333333333
2	=.=		
4	PC		
5	Ki Ki		
5	bellkor's pragmatic chaos	0.16166666666666663	0.9187555555555557

- Project A: Image Classification with Engineered Features
- Project B: Text Sentiment Classifiers for Online Reviews
- Project C: Recommendation Systems for Movies

Enrollment and Waitlist

DRAFT POLICY: SUBJECT TO CHANGE

As of two weeks before the start of semester, we expect to have 120 students enrolled in the course. We are currently at capacity, but some students may drop the course and leave openings for others (usually we see 10-20 openings in the first week of classes as schedules shift).

Our top priority is to provide each enrolled student with our full support, including the ability to get prompt answers to questions on Piazza and in office hours as well as the ability to get high-quality feedback on submitted homeworks, exams, and projects in a timely manner.

We understand some students are on the wait list (either formally on the wait list on SIS system, or just conceptually would like to be in the course). It is possible that students currently on the wait list may be added, but only if there is adequate staff support.

Prof. Mike Hughes will make the final decision about all wait list candidates by end of day on Monday 9/21 (just before the ADD deadline), which is when the first homework will be turned in and fully graded.

To be considered for enrollment, you should do these two things:

- Complete and submit HW0 by end of day Wed 9/16.
    - This action shows you have the necessary skills and would take the course seriously
- Message the instructor by end of day Wed 9/16 via email with subject containing "COMP 135 Wait List Request", explaining your current state within the degree program (e.g. sophomore undergraduate in CS, Ph.D. student in Cog. Sci.) and why taking the course *this* semester would be important to you.

Collaboration Policy

Our ultimate goal is for each student to fully understand the course material.

For quizzes and exams, all work should be done individually, with no collaboration with others whatsoever.

For homeworks and projects and papers, we have the following policy for student work:

*You must write anything that will be turned in -- all code and all written solutions -- **on your own** without help from others. You may not share any code or solutions with others, regardless of if they are enrolled in the class or not.*

We do encourage high-level interaction with your classmates. After you have spent at least 10 minutes thinking about the problem on your own, you may verbally discuss assignments with others in the class. You may work out solutions together on whiteboards, laptops, or other media, but you are not allowed to take away any written or electronic information from joint work sessions with others. No notes, no diagrams, and no code. Emails, text messages, and other forms of virtual communication also constitute "notes" and should not be used preparing solutions.

When preparing your solutions, you may always consult textbooks, materials on the course website, or existing content on the web for general background knowledge. However, you cannot ask for answers through any question answering websites such as (but not limited to) Quora, StackOverflow, etc. If you see any material having the same problem and providing a solution, you cannot check or copy the solution provided. If general-purpose material was helpful to you, please cite it in your solution.

For work that is intended to be done individually (homework), we interpret "others" as as anyone else, whether in the class or not.

For work that is intended to be done on small teams (projects), we interpret "others" above as anyone not on your team.

Remember, you are responsible for everything that you (or your team) hands in. You should understand it and be able to answer questions about it, if asked.

Let's Get Started!

- Setup your Python environment ASAP
  - Come to office hours!
  - Try today's posted labs:
    - NumPy: basics of arrays
    - Pandas: data manipulation
    - Matplotlib: plotting

- HW0 due NEXT Wed (9/16), 11:59pm AoE
  - Assesses if you have relevant programming skills
  - Get started early!