

EE 380L
Data Mining
Spring 2019

Instructor:

Constantine Caramanis (constantine@utexas.edu)

Office hours: TBD -- via Skype and on campus

TA: Ashish Katiyar

The emerging field of data analytics and, more broadly data science, is transforming engineering, healthcare, scientific discovery and many industries ranging from Agriculture to Telecommunications. In this class we are going to discuss how to use data to build models to perform prediction and inference.

Topics: Predictive modeling. Regression and Classification. Data cleaning and preprocessing. Feature engineering. Unsupervised methods. Principal Component Analysis. Data clustering. Model selection and feature selection. Entropy and Information theory. Neural Networks and Deep Learning. Machine learning for signals and time-series data.

Requirements: The class will have a significant hands-on component on working with real data, performing modeling and prediction. Laptops with wifi access, Python, Numpy, Pandas and Scikit installed are required. Additional tools will be discussed when introduced.

Course Material: While most of the class will rely on the notes we hand out in class and post, a very good (and freely available) resource is: An Introduction to Statistical Learning (G. James, D. Witten, T. Hastie and R. Tibshirani).

Grading:

- Homework: 35%
- Midterm Project -- Kaggle, Date TBD 20%
- In-class midterm: 15% -- Date TBD
- Final Project: 30% teams of 3-4 (depending on class size).
 - Project proposal -- what you want to do and with which data set. Due TBD
 - Final presentations: Last Day of Class
 - Report due: Last Day of Class
- There will be no final exam.

Collaboration: Discussion of homework questions is encouraged. Please be absolutely sure to submit your own solutions that you type yourself. If you collaborate with someone, you must acknowledge your collaborators on the front page of your homework.

No late homeworks will be accepted.

University Honor Code

"The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the University is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community."

College of Engineering Drop/Add Policy

The Dean must approve adding or dropping courses after the fourth class day of the semester.

Students with Disabilities

UT provides upon request appropriate academic accommodations for qualified students with disabilities. Please contact the Office of Dean of Students at 471-6259 or ssd@uts.cc.utexas.edu.

Emergency Preparedness

Every member of the university community must take appropriate and deliberate action when an emergency strikes a building, a portion of the campus, or entire campus community. Emergency preparedness means we are all ready to act for our own safety and the safety of others during a crisis.

Students requiring assistance in evacuation must inform the instructor in writing of their needs during the first week of class. This information must then be provided to the Fire Prevention Services office by fax (512-232-2759), with "Attn. Mr. Roosevelt Easley" written in the subject line.

You may want to bookmark the emergency Web site <http://www.utexas.edu/emergency/> because it is updated with information during actual emergencies or campus closures.

The university collects cell phone numbers from members of the campus community for emergency text messages. You can sign up for campus text alerts online. If you would like more information regarding emergency preparedness, visit

<http://www.utexas.edu/safety/preparedness>