EE 380L
Data Mining
Spring 2019

Instructor:
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Office hours: via Skype and on campus Tuesdays at 2 pm.

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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: Wed Feb 27 - Thursday March 7, 20%
- In-class midterm: 15% -- Date: Friday, April 5th (2 hours)
- Final Project: 30% teams of 3-4
    - Project proposal -- what you want to do and with which data set. Due Friday, April 5th.
    - Final presentations: Last Day of Class (Saturday, May 4)

    - 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.

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