Course Description
This course will discuss how humans and machine learning systems can collaborate for more effective decision making. We will primarily focus on interactivity and transparency for enabling a fruitful collaboration between humans and machine learning systems. Topics include expert systems, recommender systems, active learning, reinforcement learning, computer-aided diagnosis, and human-centered machine learning. Students are expected to read and present several academic papers, analyze several datasets using machine learning algorithms, inspect implicit and explicit biases present in the analytical process, and build a fully interactive and transparent machine learning system.

Prerequisites
CS584 or CS522

Related Video
See https://www.youtube.com/watch?v=Tx3yuKG9wwY

Topics – Tentative
1. Background on machine learning
   a. Rule-based machine learning
   b. Decision trees
   c. Linear models
      i. Naïve Bayes, logistic regression, linear regression, linear SVMs
   d. Nonlinear models
      i. Nonlinear SVMs, nonlinear neural network architectures
   e. Graphical models
      i. Bayesian networks
2. Expert systems
3. Recommender systems
4. Reinforcement learning
5. Robotics
6. Active learning
7. Intelligent user interfaces
8. Computer supported cooperative work
9. Computer-aided diagnosis
10. Citizen science
11. Human-centered machine learning
12. Literature on transparency

Date and Location
Tuesdays & Thursdays, 3:15pm – 4:30pm
Rettaliata Engineering Center - 025

Instructor
Mustafa Bilgic
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Teaching Assistant
None.

Textbook
None. However, there will be required readings mainly chosen from the machine learning literature.

Online Tools
For questions and answers, please use Piazza: https://piazza.com/iit/fall2017/cs59501
Course slides, assignments, and projects will be handled through Blackboard: https://blackboard.iit.edu/

Grading
Attendance: 15%
Assignments: 55%
Presentation: 10%
Project: 20%

Programming Language
Python 3.6.

Late Submission Policy
Assignments will be submitted via Blackboard. Every late minute will cost you 1 point. No exceptions!
Code of Academic Honesty
https://web.iit.edu/student-affairs/handbook/fine-print/code-academic-honesty

Americans with Disabilities Act (ADA) Policy
Reasonable accommodations will be made for students with documented disabilities. In order to receive accommodations, students must obtain a letter of accommodation from the Center for Disability Resources. The Center for Disability Resources (CDR) is located in 3424 S. State St., room 1C3-2 (on the first floor), telephone: 312.567.5744 or disabilities@iit.edu.