INF552: Machine Learning for Data Informatics

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Office Hours: will be announced in class
Teaching Assistant(s): will be announced in class

The learning objectives for students in this course are: (1) Broadly understand major algorithms used in Machine Learning; (2) Understand supervised and unsupervised learning techniques; (3) Understand Bayesian decision theory and nonparametric methods; (4) Understand decision trees, dimensionality reduction, clustering, and kernel machines; and (5) Understand reinforcement learning, Bayesian estimation, hidden Markov models, and graphical models.

This is a foundational course with primary application in data analytics. It is intended to be accessible to students with technical backgrounds as well as to students with less technical backgrounds. A basic mathematical background in probability, statistics, and linear algebra, as well as basic programming skills and a basic understanding of engineering principles are strongly encouraged.

The reading material for the course will be based on published technical papers available via the ACM/IEEE/Springer digital libraries or freely available online. All USC students have automatic access to these digital archives. Students can also refer to the textbook "Introduction to Machine Learning", second edition, MIT Press, 2010, by Ethem Alpaydin.

The allocation of grades will be as follows: (1) 5% for scribing one lecture; (2) 5% for presenting research material related to the scribe notes; (3) 70% for seven programming assignments with 10% for each; and (4) 20% for the final course project (students can work in groups of 2-3 but should mention their individual contributions).