SPRING 2010
Computer Science
Special Topics

CS 491/591 Section 1

Monday, Wednesday, Friday
9:00 - 9:50 a.m.
Quigley 306

Instructor -
Dr. Norman Carver

Machine Learning

Machine learning is the name given to the study of methods that allow computers to improve their abilities to perform well on tasks that normally have been done by humans, without the need for extensive (and time consuming) human engineering. Originally a purely artificial intelligence discipline, ML techniques are now applied to a wide range of tasks, including robot locomotion and navigation, agents, game playing, data mining, engineering design, speech recognition, and so forth. ML algorithms are typically classified based on what information is available to learn from and the goal of the learning process. Among the key learning classes that will be considered are supervised, unsupervised, reinforcement, knowledge-based, and inductive. From these classes, we will study various specific learning algorithms, including decision trees, temporal difference and Q-learning, neural networks, genetic algorithms, and learning Bayesian networks. The course will cover both theoretical and practical aspects of ML. Students will be expected to carry out a project that involves experimentation with one or more ML techniques.

Prerequisites: Undergraduates must have completed CS 330 with a C or better.