CS 3750 Advanced Machine Learning (Fall 2003)

Lecture meeting time: Monday, Wednesday**:** 4:00PM-5:20 PM
Classroom: 5313 Sennott Square (SENSQ)

Instructor:	**Milos Hauskrecht**
Office:	5329 Sennott Square Building
Office Hours:	By appointment
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Course Web page:	http://www.cs.pitt.edu/~milos/courses/cs3750/

Course Description:

The goal of the field of machine learning is to build computer systems that learn from experience and that are capable to adapt to their environments. Learning techniques and methods developed by researchers in this field have been successfully applied to a variety of learning tasks in a broad range of areas, including, for example, text classification, gene discovery, financial forecasting, credit card fraud detection, collaborative filtering, design of adaptive web agents and others. The objective of the Advanced Machine Learning course is to expand on the material covered in the introductory Machine Learning course (CS2750), and focus on the most recent advances in the ML field such as, kernel and variational methods. The course will consist of a mix of lectures, paper presentations and discussions. Students will be evaluated based on their participation in discussions, paper presentations and projects.

Prerequisites: graduate level Machine Learning (CS 2750 or its equivalent), or the permission of the instructor.

Readings:

Most of the readings for the course will be given in electronic form or distributed at the beginning of the class. These will include:
- The book by Michael Jordan and Chris Bishop. Introduction to Graphical Models. In preparation..
- Conference papers and journal articles

The primary textbook for the class is:

Trevor Hastie, Robert Tibshirani, Jerome Friedman. *The elements of statistical learning.* Springer, 2001.

Other books you may find useful:
- C. Bishop. *Neural networks for Pattern Recognition.* Oxford University Press, 1995.
- R.O. Duda, P.E. Hart, D.G. Stork. *Pattern Classification.* Second edition. John Wiley and Sons, 2000.

- J. Han, M. Kamber. *Data mining. Concepts and Techniques.* Morgan Kauffman, 2001.
- T. Mitchell. *Machine Learning.* Mc Graw Hill, 1997.
- B. Schokopf and A. Smola. *Learning with kernels.* MIT Press, 2002. Readings

Requirements:

Each student is expected to present 1-2 papers in the course of the semester and lead the discussion on the paper. The paper will be distributed to students the same way as other readings. The assignment of the papers will be discussed in the first week of the course.

Projects/exams:

There are no homework assignments and exams in this course. However, students will be asked to prepare, submit and present two projects. The first project will be assigned and due in the middle of the semester and is a collaborative project of a small group. The final project (due at the end of the semester) and is more flexible: a student can choose his/her own topic to investigate. You will need to submit a short (one page) proposal for the purpose of approval and feedback for the final project. The final project must have a distinctive and non-trivial learning or adaptive component.

Policy on Cheating

All the work in this course should be done independently. **Collaborations on *quizzes, exams* and *homework assignments* are not permitted.** Cheating and any other anti-intellectual behavior, including giving your work to someone else, will be dealt with severely. If you feel you may have violated the rules speak to us as soon as possible.

Please make sure you read, understand and abide by the Academic Integrity Code for the Faculty and College of Arts and Sciences (http://www.fcas.pitt.edu/academicintegrity.html).

Students With Disabilities

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and Disability Resources and Services, 216 William Pitt Union, (412) 648-7890/(412) 383-7355 (TTY), as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.