Course Overview

This course shall cover basic concepts of machine learning algorithms and theories, and introduce the best practices for implementing robust intelligent systems. The topics involve supervised methods, (e.g. decision tree and support vector machine, etc.), unsupervised methods (e.g. clustering and dimensionality reduction, etc.), and their applications in classification, regression, data analysis, visualization, etc.

Upon successful completion of this class, students should be able to:
i) obtain an understanding of the basic machine learning concepts and techniques;
ii) implement most of the widely used machine learning methods, and solve real learning problems with moderate challenges
iii) design a robust machine learning system, perform efficiency and complexity analysis, and improve system performance by diagnosing system bottlenecks.

Enrollment Information

Prerequisites: programming, data structures, minimal exposure to statistics, linear algebra;

Course Materials

The following resources will be distributed to students:
- Lectures and necessary reading materials
- Sample codes (most of them are in Matlab format);
- Home assignments

Optional Reading:
- Optional Reading: Machine Learning: a Probabilistic Perspective by Kevin Patrick Murphy

Course Structure and Conduct

CS 596 Machine Learning is a lecture-based course. Assignments will primarily use Matlab. Full versions of Matlab are available in the dual boot computer science lab (GMCS 425) or may be downloaded to a personal computer (see http://www.rohan.sdsu.edu/~download/matlab.html for details).
Instructor's homepage is sometime used for distributing materials. See the FAQ on the course web page. Students may use Matlab on their own computers with the university license server or the GMCS labs.

Course Assessment and Grading
This class uses coarse grading, based on your mastery of the concepts, algorithms, theories and practice skills. There are six levels: A+ (Excellent), A: Good (G), B (mostly right), C: right track (RT), D: valiant effort (VE), F: not much effort.

The assessment comprises of the following aspects:

- **Homework assignment (60% of grade).** There are 4 homework assignments. Each assignment mixes up with problem set, programming and topic discussions; assignment will be due in one week; late submission is possible for another week after due date but penalty will apply;
- **Final Project (40% of grade).** Students are encouraged to pair with others (three at the most) in the same class to complete a project together. Presentation is performed on team basis, and contributions of individual members should be clearly stated.

---

**Other Course Policies**

**Accommodations:** The learning environment should be accessible to all. SDSU provides reasonable accommodations in the following situations:

- **Disability:** If you are a student with a disability and believe you will need accommodations for this class, it is your responsibility to contact Student Disability Services at (619) 594-6473. To avoid any delay in the receipt of your accommodations, you should contact Student Disability Services as soon as possible. Accommodations are not retroactive.
- **Religious and official university activities (e.g., Athletics):** Within the first two weeks of classes, notify your instructor of planned absences for religious or university activities. If scheduling changes occur, immediately notify the instructor.

**Academic Honesty:** You are free to discuss ideas and strategies for approaching problems with others, but students must complete work on their own. Using other people's work in any form (i.e. the web, other students) will result in disciplinary action. Plagiarism is unacceptable and will not be tolerated. You are responsible for understanding plagiarism; the library has a tutorial (http://library.sdsu.edu/guides/tutorial.php?id=28). If you have any questions about plagiarism after taking the tutorial, I will be happy to assist you. My standard course of action is to report students whom I believe have cheated or plagiarized to the Judicial Procedures Office. In addition to the academic penalty (usually an F for the course), Judicial Procedures may decide upon additional sanctions such as expulsion.

**Classroom policy:** Turn cell-phones off before class and refrain from chatting during class as both disturb the students around you. If you find yourself unable to resist chatting, you will be asked once to be quiet. A second time will result in your being asked to leave for the day.

**Conflicts/Issues:** Should you have any concerns about the course, please see me during my office hours or make an appointment and we will try to resolve the problem together. If you are not satisfied with the resolution after having discussed the issue with me, you may contact department chair Dr. Leland Beck.