CSC 7333 - MACHINE LEARNING
Spring 2008
Tuesday, Thursday 12:10pm to 1:30 pm
200 Tureaud Hall
class website: http://csc.lsu.edu/~jianhua/csc7333-08.html

Instructor:
Dr. Jianhua Chen
Computer Science Department
282 Coates Hall
e-mail: jianhua@csc.lsu.edu
tel: (225) 578-4340
office hours: T, TH 1:40pm to 3:30pm

Text:
Machine Learning, by Tom M. Mitchell, McGraw-Hill, 1997.

Web page of Tom Mitchell:
http://www.cs.cmu.edu/~tom/

Lecture slides from Tom Mitchell's web page on the Machine Learning book:
http://www.cs.cmu.edu/~tom/mlbook-chapter-slides.html

Machine learning has emerged as a significant area of research in Artificial Intelligence in recent years. Research in machine learning concerns with developing computational theories of learning process and building learning machines. Machine learning has been widely applied in various areas such as image processing, robot control, pattern recognition, intelligent process control and expert systems.

The goal of this course is to introduce the students to the fundamentals and frontiers of machine learning research. The coverage will be balanced between theory and applications. Important papers from books, recent conference proceedings and journals will be covered. General background in analytical thinking and basic knowledge of knowledge-based systems are required to take the course. Previous course work in AI is helpful but NOT a must.

Main Topics:

1. General issues of Machine Learning.
2. Inductive learning from examples: version space, decision trees and related issues.
3. Probabilistic, computational approach to Boolean function learning.
4. Learning via Genetic Algorithms.
5. Neural networks learning and fuzzy reasoning.
6. Bayesian learning and data mining.

Form of the Course: Mainly lectures by the instructor, but we will also arrange some student group presentations during the semester (in addition to the final term-paper presentations). So the students should try to form groups early in the semester for the group presentation activity.

Grading:

Class participation (attendance + activities)	10% + 10%
Group activity and presentation	15%
Homeworks	25%
Term paper	20%
Term paper presentation	10%
In-class Quiz (totally 2)	10%

Final Exam (term paper presentation) date: Saturday May 10, 2008, from 7:30am to 9:30am.
Written final term paper due date: Saturday May 10, 2008, by 5pm.
Quiz dates: one quiz in the week of March 10 - 14, , another in the week of April 14 -18.

Grading scales:
A: 90-100; B: 80-89; C: 70-79; D: 60-69; F: below 60.

Academic Honesty Requirements
Except for group presentations, the homeworks, the individual term papers (writing and presentation) and the in-class quizz are all individual assignments that must be done **independently** by each student. In accordance with the LSU policy regarding academic honesty, any act of cheating will be prosecuted vigorously.
For group presentations, we encourage the members of the same group to share and collaborate on the preparation of the presentation materials,

References:

1. Machine Learning, Paradigms and Methods, edited by J. Carbonell, MIT Press.
2. Proceedings of the International Conference on Machine Learning.
3. AAAI Conference Proceedings.
4. IJCAI Conference Proceedings.
5. Machine Learning, An Artificial Intelligence Approach (I - III), by R.S. Michalski, J.G. Carbonell, T.M. Mitchell (eds).
6. Machine Learning Journal.
7. The Artificial Intelligence Journal.
8. Journal of Fuzzy Sets and Systems
9. Journal of Man, Machine and Cybernetics.
10. Proceedings of International Conference on Knowledge Discovery and Data Mining.

List of some interesting web sites on machine learning

1. http://www.ics.uci.edu/~ mlearn/
2. http://www.ics.uci.edu/~ mlearn/MLOther.html