Computer Science and Engineering 151
Statistical Approaches to Artificial Intelligence

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Discussion section: Wednesdays 12-12:50 WLH 2204

Warning!! Discussion sections will have content!!!
It will behoove you to attend!!!

Course Description:
This is the second part of a two quarter sequence in Artificial Intelligence. You are strongly encouraged to take both quarters for a complete treatment, as this quarter is really only half the material. That said, this course is intended to be relatively independent of CSE 150. This may lead to a bit of review for those of you who have taken 150 (hopefully not too much).

This quarter we will continue through Russell and Norvig, covering chapters 13-21, skipping most of 19 and skimming 15. Content-wise, this means we will cover probabilistic approaches to AI, including Bayesian networks, decision making, supervised learning methods (including neural networks), and reinforcement learning. It is a good idea to buy, and read, (and keep!) the textbook!!! This is the best textbook about AI.

Programming considerations
We will do projects in teams of two or three. We require you to learn and use MATLAB for your assignments. The discussion section will be used to introduce you to matlab.

There will be 3 and possibly 4 programming assignments. Choose a partner soon. Partners may be changed for every assignment. We are not matchmakers: You must do this yourselves! Part of the the learning experience is learning to divide tasks into parts and figure out the interface between the parts. Also, learning to work with someone else. When you are out in the work world, you will be thrown together with people you don’t know and forced to work together. Get used to it!

Texts: Artificial Intelligence, A modern approach by Russell and Norvig, SECOND EDITION. This is available used online from amazon.com.

Required work: There will be three (possibly four) machine problems (45%) in matlab, possibly short quizzes on the reading & lectures (10%), a midterm (20%) and a final (25%). Actual figures may vary. If I end up not giving quizzes, I will scale the other percentages proportionally. If there are quizzes, they will be given at lecture time, and randomly collected approximately 50% of the time. Programs will be spread evenly through the term. Extra credit for class participation. The current target date for the
midterm is Thursday, May 4th, 2006.

Grading policy: Programming assignments are due at midnight on the date due (that is, 11:59PM). After midnight, and until the beginning of the next class, programming assignments can be turned in for half credit. The only exceptions will be if you have broken all of your arms or something equally disastrous. ("I stayed late at the Belly Up and overslept" is not acceptable).

Cheating: Don’t. Working in pairs on the machine problems is required, but working together on homeworks must follow the (spirit of the) Gilligan’s Island rule (Dymond, 1986): No notes can be made during a discussion, and you must watch one hour of Gilligan’s Island or equivalent before writing anything down. Suspected cheating will be reported to the Dean. Besides, you’d be nuts to try it in such a small class!

CSE 151 Tentative (rough) schedule for Spring, 2006:

Week 1: Uncertainty (chapter 13)
Week 2 and part of 3: Bayesian networks (chapter 14)
Week 3.5: Probabilistic reasoning over time (Chapter 15)
Week 4: Decision making under uncertainty (Chapter 16)
Week 5: Making complex decisions (Chapter 17)
Week 6: Reinforcement learning (Chapter 21)
Week 7: Machine learning (Chapter 18)
Week 8: Statistical learning methods (neural nets) (Chapter 20)
Week 9-10: Wrap-up loose ends/overrun buffer.

The first machine problem will be given out Thursday.