Computer Science and Engineering 150
Introduction to Artificial Intelligence
Warren Lecture Halls 2204
Section ID: 755976

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Discussion section: Tuesday 5-5:50PM, WLH 2204

Course Description:

CSE 150 is an introductory course in artificial intelligence. I intend to cover search, probability and inference, a brief introduction to learning and reinforcement learning, and if we have time, neural nets. Familiarity with calculus, statistics, computer programming, including procedural abstraction, recursion, list and tree data structures, and elementary tree traversal algorithms is presupposed (see below).

This quarter we will use Russell and Norvig, 3rd edition, covering chapters 1-6, 13-17, parts of 18, and 21. Content-wise, this means we will cover problem solving by searching, game playing, constraint satisfaction, representing and reasoning with uncertainty, decision making, a quick overview of learning, reinforcement learning, and learning with neural nets.

We will also be using clickers. I think you can get by with iClicker 1's. Why will we use clickers? Because I want to use the "peer instruction" method - this has been shown to increase learning (at least in terms of scores on tests), and it will keep you engaged in the material. Peer instruction involves having you discuss the answers to questions in class, and then all of us discussing the outcome. It *also* means that you must come to class *prepared* - hence there will be simple quizzes at the beginning of class on the readings to encourage you to do that.

Prerequisites

You must have all the prerequisites listed below. This is the BARE MINIMUM. If that is all you have, you will have to work hard to keep up. You cannot make up for any missing prerequisite with extra work or a friend who can help you or even the grace of God. In determining the bare minimum, we already figured in all those friends and extra help. IF YOU DO NOT HAVE ALL THE PREREQUISITES DO NOT TAKE THIS CLASS.

(1) CSE 100. (This supposes that you have taken the prerequisites for 100!). CSE 100

may be taken concurrently. If you took a course someplace else it matters little what programming language you used but you need to have covered at least the following topics: procedures, local variables, arrays, recursion and pointers. If you are not very comfortable with recursion in some language, then you do not have the prerequisites and you should not take this class.

(2) Enough knowledge of UNIX to move files around and to use the vi editor. (You will receive absolutely no UNIX instruction in this class, because we will assume that you are already comfortable using UNIX.)

(3) Knowledge of very basic data structures: If you understand both depth first and breadth first searches of binary trees and can implement them in some programming language, then you probably know enough data structures to get by. If you do not feel comfortable with the notions of depth first and breadth first searches, then you should not take this class.

(4) Knowledge of Calculus, in particular, partial derivatives, and statistics.

This course is independent of CSE 151.

Programming considerations

We will do projects in teams of two or three. 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* **Third edition** by Russell and Norvig. This is available used online from amazon.com.

Required work: Clicker reading quizzes: 10, Clicker use during class: 10, three (possibly four) machine problems (45%) a midterm (15%) and a final (20%). Actual figures may vary. I may end up giving short homeworks, If there are homeworks, 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 Tuesday, October 30th, 2012.

Grading policy: Homeworks (if we have them) are due on the due date at the beginning of class. Homeworks will not be accepted late. 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 or trios 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.

CSE 150 Tentative (rough) schedule for Spring, 2005:

Week 1: Introduction, blind search (chapters 1, 2, and 3.1-3.4)
Week 2: Informed search (rest of chapter 3, part of chapter 4)
Week 3: Game playing (chapter 5)
Week 4: Constraint satisfaction (Ch 6).
Week 5: Midterm and beginning of uncertainty (chapter 13)
Week 6: representing uncertainty, inference (chapter 14)
Week 7: Dealing with time (Chapter 15)
Week 8: Decision making under uncertainty (Chapter 16)
Week 9: Making complex decisions (Chapter 17)
Week 10: Reinforcement learning (Chapter 21)

What I would like to cover but probably can't:
Machine learning (Chapter 18)
Statistical learning methods (neural nets) (Chapter 20)

The first machine problem will be given out next Thursday (October 4th).