CS 430 - Artificial Intelligence
Spring 2009 (Independent Study) - Syllabus

Instructor
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Office Hours: See instructor's home page.

Course Home Page
Handouts will be available only at the course home page (http://csserver.evansville.edu/~hwang/s09-courses/cs430.html). It is your responsibility to consult the course home page on a regular basis.

Catalog Data
Basic ideas and techniques underlying the design of intelligent computer systems. Topics include heuristic search, problem solving, game playing, knowledge representation, logical inference, and planning. Advanced topics such as robotics, expert systems, learning, and language understanding as time allows.

Objectives
Students will be able to predict the behavior and estimate the cost of various search methods, and be able to choose the appropriate method for particular problems. Students will be able to use first-order logic as a representation of knowledge. Students will write a research paper on a current, advanced AI topic and give an oral presentation on the topic.

Prerequisite: CS 215, Recommended: CS 315

Required Textbook

Daily Requirements
Assigned daily reading. Homework assignments as needed. Homework will not be graded.

Programming Projects
There will be 3 programming projects that will illustrate key concepts in artificial intelligence. Each project will consist of an implementation of the program (70%), and a written analysis of the program and/or the results of the program (30%). Links to download free versions of the Scheme language and the Prolog language are available on the course webpage.

Research paper
Each student will write a research paper on an approved topic in artificial intelligence. See Guidelines for AI Research Paper for more information.

01/19/09
Exams and Evaluation
There will be two non-comprehensive take-home exams during the term at midterm and at the end of the term. Grades will be based on the following weighted distribution:

- 40% Two take-home exams (20% each)
- 25% Research paper
- 35% Programming projects (weighted as indicated in assignment)

Honor Code
All students are expected to adhere to the University's Honor Code regarding receiving and giving assistance. Three specific guidelines are in force for this course.

- Homework exercises are for you to gain experience and practice. You may collaborate with your classmates. Ultimately you will be required to demonstrate your proficiency of the material on exams. Therefore, it is highly recommended that you attempt all homework problems on your own before finding a solution from another source.

- **Programming projects are to be your own work.** Discussing the meaning and general solution techniques of an assignment with other students is permitted. For example, discussing "How is this assignment similar or different from problems presented in the text or in lecture?" is acceptable.

  Asking another person for assistance on specific items in your own code is permitted, but you may not observe another person's code or solution for the purposes of studying or copying it, with or without that person's permission. For example, asking, "What does this error mean?" or "Do I have the correct Scheme syntax here?" is acceptable. Whereas asking "Can I see how you coded your game?" is not acceptable.

- Of course, exams are to be entirely your own work.

If there is any doubt as to whether assistance is acceptable, consult the instructor.

Reading Schedule
This is a tentative list of topics and correspond approximately to Chapters 1-11 of the textbook. Adjustments will be made as necessary.

- Introduction
- Scheme
- Intelligent Agents
- Problem solving using search
- Uninformed search
- Informed Search
- Exploration
- Constraint satisfaction
- Take-home Exam 1 (midterm)
- Adversarial Search
- Propositional Logic
- First-Order Logic
- Inference and Prolog
- Knowledge Representation
- Planning
- Take-home Exam 2 (final)