CS 4320/5314: Artificial Intelligence

Syllabus
Spring 2013

Monday & Wednesday, 3:00-4:20 p.m., CCS 1.0410
Instructor: David Novick
Office: Eng A148
E-mail: novick@utep.edu
Office Hours: 12:30-2:30 p.m. Mondays and by appointment
Course Web site: http://www.cs.utep.edu/novick/courses/CS4317-13

Course Objective
Acquire the basic concepts and techniques of artificial intelligence including knowledge representation, search strategies, symbolic logic, expert systems, and applications

Learning Outcomes

Level 1: Knowledge and Comprehension
(Level 1 outcomes are those in which the student has been exposed to the terms and concepts at a basic level and can supply basic definitions. The material has been presented only at a superficial level.) Upon successful completion of this course, students will be able to

• 1a. Understand what AI is: the main trends and corresponding problems tackled in AI.
• 1b. Know the challenges of designing intelligent programs.
• 1c. Be familiar with key previous work in a broad range of artificial intelligence subareas.
• 1d. Understand what agents are, and how they contribute to the development of solutions to AI problems.
• 1e. Understand the basic idea of uncertainty, and be able to perform qualitative and quantitative uncertainty calculations using simple Bayesian algorithms and belief networks.
• 1f. Be familiar with the design of Knowledge Based Systems and production rules, through study of classic examples.
• 1g. Be familiar with problem-solving and the different solving approaches.

Level 2: Application and Analysis
(Level 2 outcomes are those in which the student can apply the material in familiar situations, e.g., can work a problem of familiar structure with minor changes in the details.) Upon successful completion of this course, students will be able to

• 2a. Read and write (at least simple versions of) the major knowledge representation formalisms.
• 2b. Explain, compare, and use the major search and planning techniques: a practical and theoretical understanding of uninformed and informed search.
• 2c. Apply AI techniques both in analytical and in programming contexts to solve problems, and to communicate the results of such application.
• 2d. Understand the limitations of AI, which problems are still hard, and why.

Level 3: Synthesis and Evaluation
(Level 3 outcomes are those in which the student can apply the material in new situations. This is the highest level of mastery.) Upon successful completion of this course, students will be able to

• 3a. Read research articles in AI (related or not to their project) and explain them in an
abstracted way.
3b. Complete a team project.
3c. Write a technical report for this project, and be able to present it in a clear and concise way.

**Format**
“Flipped class” – Brief lectures will be available before class via YouTube. Students are expected to complete assigned readings and view videos before class. Class sessions will focus on problem-solving, integrating understanding of material, and projects.

**Texts**
- Handouts

**Assignments**
Reading and homework assignments will be handed out or announced in class. If you miss a class, it is your responsibility to find out what you missed. You should expect to spend at least seven hours per week outside of class on reading, videos, and homework.

There will be a number of structured assignments, designed to give experience with various artificial-intelligence topics. Most assignments will be done in teams. Assignments due at the start of class will be collected after a one-minute grace period; late assignments will receive at most two-thirds credit. Assignments are to be handed in as hardcopy unless otherwise specified. Writing quality is important, and rework may be required if it is not up to standard. Cooperation among students and among teams is encouraged, but not to the extent that it interferes with each individual’s understanding or with learning-by-doing. Help given and received from other students and sources should be noted in the assignment write-up.

**Standards of Conduct**
You are expected to conduct yourself in a professional and courteous manner, as prescribed by the UTEP Standards of Conduct. Graded work, such as homework and tests, is to be completed independently and should be unmistakably your own work, although you may discuss your project with other students in a general way. You may not represent as your own work material that is transcribed or copied from another person, book, or any other source, e.g., a Web page. The instructor is required to—and will—report academic dishonesty and any other violation of the Standards of Conduct to the Dean of Students.

**Disabilities**
If you feel that you may have a disability that requires accommodation, contact the Disabled Student Services Office at 747-5184, go to Room 106E Union, or email dss@utep.edu.

**Grading**
For undergraduate students, the semester grade will be based on a combination of daily quizzes, homework assignments, two midterm examinations, a research report, and a final examination. The percentages are as follows:

- **Quizzes**: 15%
Homeworks: 30%
Midterms: 25%
Final: 25%
Research report: 5%

For graduate students, the semester grade will be based on a combination of daily quizzes, homework assignments, two midterm examinations, a research paper, and a final examination. The percentages are as follows:

Quizzes: 10%
Homeworks: 25%
Midterms: 25%
Final: 20%
Research paper: 20%

**Important Dates**
Midterm 1: Wednesday, March 13, 2013
Midterm 2: Wednesday, April 17, 2013
Final Exam: 4: Monday, May 13th, 1:00 p.m. – 3:45 p.m.