

Artificial Intelligence

CS494/594, Fall 2013

MK 525, Tuesday/Thursday 11:10AM – 12:25 PM

Class web page (both URLs point to same webpage):

<http://web.eecs.utk.edu/courses/fall2013/cosc494ai/>
<http://web.eecs.utk.edu/courses/fall2013/cosc594ai/>

Instructor: Dr. Lynne E. Parker, Professor and Associate Head, EECS Dept.

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URL: <http://web.eecs.utk.edu/~parker>

Office Hours: Before and after class (i.e., Tues/Thurs 10:30-11:00AM and 12:00-12:30PM), or by appointment (send email), or any time I am in my office

TA: Hao Zhang

Office: MK 620

Email: haozhang@utk.edu

Office Hours: Mon/Wed 10AM-11AM, or by appointment (send email)

Course Description:

This course on Artificial Intelligence (AI) covers a breadth of topics from the field of AI, including problem-solving, logic, planning, reasoning, and natural language processing. If time allows, we will also touch on perception and robotics. *Noticeably absent from this course is material on machine learning; while machine learning is a key aspect of AI, interested students can learn more on this topic through a variety of other courses in EECS at UTK.*

Prerequisites:

Familiarity with basic concepts of computer science (algorithms, data structures, and complexity) and mathematical maturity commensurate with the successful completion of COSC312 or its equivalent. A foundational understanding of probability (ECE 313) is also needed.

Required Textbook:

Artificial Intelligence: A Modern Approach, 3rd Edition, by Russell and Norvig, Prentice Hall, 2010.

Schedule and Assigned Readings:

Refer to the course website for lecture schedule and reading assignments

Class contact/discussion lists:

Some class announcements will be sent out via the class BlackBoard website. This website will also be used for turning in most assignments. Be sure you receive the test message during the first week of classes.

Evaluation:

Grading will be based 85% on homework/assignment grades and 15% on mini-quizzes (with 3 lowest mini-quiz grades dropped). Some homeworks/assignments will count more than others. The value of each assignment will be announced.

Different assignments will be given to those taking the class for undergraduate credit (CS494), compared to graduate credit (CS594). In grading the homeworks and assignments, the quality of the work expected is higher for graduate students than for undergraduates, and thus the graduate student work will be graded more strictly.

Final grades will be determined by overall average as follows:

A: 90 – 100	C+: 75 – 79.9
B+: 85 – 89.9	C: 70 – 74.9
B: 80 – 84.9	D: 60 – 69.9
	F: 0 – 59.9

The instructor reserves the right to curve grades upward, if deemed appropriate by the instructor. The curving of grades will take place on two separate scales – one for graduate students and the other for undergraduate students.

Class Policies:

- Class attendance: Class attendance will be taken. Decisions on borderline grades will be based upon exceptional class attendance and participation, as deemed merited by the course instructor. Of course, if you have a good reason to miss class (e.g., you are sick, or you need to present a paper at a research conference, or you have a job interview, etc.), then it is not a problem. Just let the instructor know as soon as you know you will need to miss class. Please don't come to class if you think you have a contagious illness. We will work with you to help keep you posted on class activities and material covered. In any case, it is your responsibility to catch up (or keep up) with all course material and announcements covered in class.
- Class participation: Please participate in class discussions. The course is so much more interesting that way! As a bit of incentive, decisions on borderline grades will be based upon exceptional class participation, as deemed merited by the course instructor.
- Homeworks and assignments: Homeworks and assignments will be handed out in class and posted on the course web site, along with the due dates. Some assignments may involve some programming; we will strive to be flexible on the programming language, although some assignments may require a particular language when necessary. Some assignments may involve short presentations or discussions in class. Most assignments will be done individually, although there will be at least one group assignment.
- Due dates and Late Assignments: All assignments are due at the date and time stated. Any assignments turned in more than five (5) minutes past the due date/time (according to the computer used for the submission) will receive a grade of zero.

One (1) “eligible” assignment may be turned in up to four days late and still receive full credit. If an assignment is “eligible” for being late, I will let you know when the material is assigned. (Generally, an assignment is “ineligible” for being late if it requires you to make a short presentation in class, or it is the end of the semester, or whatever.) I recommend you save this late assignment for an emergency, rather than using it to procrastinate!

- Collaboration Policy: Discussing and exchanging ideas is encouraged. You may help each other with your strategy for how to solve the assignments. You are expected to note significant collaborations by giving the name of your student collaborators on the assignment material you turn in. However, except if specifically allowed by the instructor, copying from any outside sources (e.g., fellow students, Internet, etc.) on any material to be graded is not permitted, and will be considered cheating. Cheating will be dealt with harshly, and may result in failure of the assignment and/or failure of the class. Each student is responsible for securing his or her work from copying. Each student is expected to abide by UT’s policies on Academic Conduct and the Honor Statement. Refer to the University of Tennessee Undergraduate Catalog and the HillTopics Student Handbook for more details.
- Exams: There will be no exams ☺ .
- In-class mini-quizzes: In-class mini-quizzes will be given at the beginning of random classes. They will not be announced in advance, but will occur frequently – sometimes twice a week, sometimes once a week, although we will also sometimes skip weeks. They are designed to ensure that you keep up with the material. They will be multiple choice and/or short answer questions that cover recent lectures and assigned readings. They will be short – no more than 5-10 minutes per quiz. As long as you pay attention in class and read what you are assigned, you should find them easy.

Three (3) mini-quizzes with your lowest scores will be dropped. These drops account for times when you might have to miss class due to illness, travel, etc. That is, if you miss a quiz because you are not in class, then that quiz grade will be a 0. But, we’ll drop the lowest three grades, so it gives you some flexibility when you can’t be in class. Plan wisely!

- Grading corrections: Bring any assignment grading correction requests to the instructor or TA within 1 week of receiving the grade, or before the end of the semester, whichever comes first. After that, your grade will not be adjusted. If you find any mistake in grading, please let the instructor or TA know. Your grade will not be lowered.
- Schedule and readings: The schedule for each class will be posted on the class web site, along with relevant readings for each topic. You are expected to keep up with the readings as we go, as they will help provide the foundation for the material we cover in class, and your assignments.
- Using computers/phones in class: Please be respectful of your colleagues in class, by turning off your phones and using your computers only for taking notes or keeping up with the material covered in class. Checking your email, working on other non-class related materials, web-surfing, etc., are not appropriate activities for class time. Be a good citizen, and practice courteous cell phone and computer etiquette!

Topics we expect to cover this semester (but subject to change):

- Introduction to AI and Intelligent Agents
- Problem solving
 - Heuristic search
 - Constraint satisfaction
 - Searching with non-deterministic actions and partial observations
 - Online search
 - Adversarial search (games)
 - Constraint propagation
- Knowledge, reasoning, and planning
 - First order logic
 - Classical planning
 - Planning/acting in real world
 - Knowledge representation
- Dealing with uncertainty
 - Probabilistic reasoning
- Natural language processing
- (If time allows) Perception and robotics
- Philosophical and ethical issues
- Practical applications of AI