CSE 4308 / CSE 5360
Artificial Intelligence I

Fall 2013 - TTh 12:30 - 1:50

Instructor: Manfred Huber (huber@cse.uta.edu), Office: 522 ERB, Tel: 2-2345

1   Course Description

Contents and Objectives:
This course gives an introduction to the philosophies and techniques of Artificial Intelligence. AI techniques have become an essential element in modern computer software and are thus essential for a successful career and advanced studies in computer science. Students successfully completing this course will be able to apply a variety of techniques for the design of efficient algorithms for complex problems. Topics covered in this course include search algorithms (such as breadth-first, depth-first, A*), game-playing algorithms (such as Minimax), knowledge and logic reasoning, planning methods (such as STRIPS and Partially Ordered Planner), probabilistic reasoning, and machine learning.

Prerequisites:
All students are expected to have passed the courses *Programming Languages* (CSE 3302) and *Theoretical Concepts* (CSE 3315) or an equivalent before attending this course.

Textbook:
S. Russell and P. Norwig, "Artificial Intelligence: A Modern Approach", Third edition, Prentice Hall, 2009

Course Materials:
Additional course materials such as lecture notes, assignments, and solutions will be available electronically on the course web page. Changes and corrections, if any, will also be announced by e-mail.

Computer Access:
This course will require some programming and all students will have an account on the OIT machine *omega*. If not otherwise stated on the assignment homework assignments can be programmed in the language of your choice but have to compile and run on *omega*. If partial code is provided, however, it will generally be only provided in a limited number of languages. Additional details will be announced in class.

E-mail and WWW page:
There is a course web page at http://ranger.uta.edu/∼huber/cse4308 . All changes and supplementary course materials will be available from this site. In addition, necessary changes or important announcements will also be distributed by e-mail. In order to receive class-related messages you have to send an e-mail to the instructor (huber@cse.uta.edu).

Tentative Office Hours:
Office hours for the course will be held by the instructor in 522 ERB,
Tu 11:00-12:00, Th 2:00-3:00, or by appointment. The first office hours will be Tuesday, August 27. Times are subject to change and will be posted on the course page. If for some reason you can not make it to any of these office hours, please inform the instructor.

Teaching Assistant:
The Teaching Assistant for the course will be Vamsikrishna Gopikrishna. His contact and office hours will be announced and posted in the first week of classes.

2   Assignments and Grading

Attendance:

Students are expected to attend the lectures.

Homework Assignments:

There will be 6 homework assignments in this course, each covering approximately 4 class periods. Assignments are due before class on the date indicated on the assignment and solutions will be posted by the next class period. Late assignments will not be accepted and extensions will only be granted in extreme situations. If you find yourself in such a situation and can not deliver a homework on time, immediately inform the instructor. Also, while working with other persons on non-graded example problems from the textbook is a good way to help you develop your understanding and insight into the techniques of problem solving, homework solutions must be your work only. Violations of this will not be tolerated and result in severe penalties for all parties involved.

Written portions of the assignment can be submitted either by handing them in in physical form to the instructor or the teaching assistant or by submitting them electronically. Programming portions of the assignments have to be submitted in electronic form. All electronic submissions are due via Blackboard (http://elearn.uta.edu/) and have to compile and run on the OIT machine *omega* unless permission is obtained from the instructor or the teaching assistant.

Exams:

All 3 exams in the course are closed book, closed notes. The first 2 exams cover the content of the indicated chapters in the book. The final exam is cumulative and will cover all materials of the course with an emphasis on the content not covered in the previous exams. As in the case of homework extensions, make-up exams will only be given in extreme situations. If for any such reason you can not attend an exam, inform the instructor as early as possible.

CSE 5360:

For students enrolled in the graduate section CSE 5360 the homework assignments, as well as the exam will contain additional problems which are not required for students of CSE 4308.

Grading Policy:

Exams and homework assignments will contribute to the overall grade in the following way:

Homework Assignments	35 %
Exam 1	20 %
Exam 2	20 %
Exam 3	25 %

Final grades will be computed based on scores and overall class performances. Intermediate score to grade estimates will be provided to the students periodically. Intermediate sore to grade estimates are only intended as reference points and are not binding for the final grade assignment. However, final score to grade assignments are not going to assign grades lower than a traditional 10 point incremental scale (i.e. $\geq 90 =$ A; $\geq 80 =$ B, $\geq 70 =$ C, $\geq 60 =$ D, $< 60 =$ F).

3 Class Schedule

			CSE 4308 / CSE 5360 - Artificial Intelligence I	
			Tentative Lecture and Assignment Schedule	
			Fall Semester 2013 - TTh 12:30 - 1:50	
Class	Date	Readings	Lecture Topics	Assignments
1	08/22	1, 2	Course Overview & Introduction to AI and Agents	
2	08/27	3.1	Solving Problems by Search	
3	08/29	3.2-3.4	Uninformed Search	
4	09/03	3.5-3.6	Informed Search	
5	09/05	5	Game Playing	
6	09/10	5	Game Playing continued	Homework 1 due
7	09/12	7	Knowledge and Logic Reasoning	
8	09/17	7	Inference	
9	09/19	7	Resolution	
10	09/24	8	First Order Logic	Homework 2 due
11	09/26		**Exam 1**	
12	10/01	9	First Order Inference & Inference	
13	10/03	9	Unification & Proofs	
14	10/08		Expert Systems	
15	10/10	10	Planning	Homework 3 due
16	10/15	10	Planning continued	
17	10/17	11	Conditional Planning and Replanning	
18	10/22	13	Uncertainty	
19	10/24	13	Probabilistic Inference	
20	10/29	14.1-14.2	Graphical Models	Homework 4 due
21	10/31		**Exam 2**	
22	11/05	14.3-14.4	Graphical Models continued	
23	11/07	14.7	Fuzzy Logic	
24	11/12	18.1 - 18.3	Machine Learning, Induction, Decision Trees	
25	11/14	18.7	Neural Networks	Homework 5 due
26	11/19	18.7	Neural Networks continued	
27	11/21	4.14	Genetic Algorithms	
28	11/26		Applications of AI	
	11/28		*Thanksgiving - No Class*	
29	12/03		Conclusions and Review	Homework 6 due
30	12/12		**Final Exam (11:00 pm - 1:30 pm) – Covers all Course Material**	

This schedule is tentative and subject to change. If changes are necessary they will be announced in class and posted in the schedule on the course page.

4   University Policies and Services

Grade Grievances:

Any appeal of a grade in this course must follow the procedures and deadlines for grade-related grievances as published in the current undergraduate catalog.

Drop Policy:

The standard UTA drop policy applies to this course. Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. Students will not be automatically dropped for non-attendance. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (http://wweb.uta.edu/ses/fao).

Americans With Disabilities Act:

The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the Americans with Disabilities Act (ADA). All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Academic Integrity:

All students enrolled in this course are expected to adhere to the UT Arlington Honor Code: I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence. I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.
Instructors may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System Regents' Rule 50101, paragraph 2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University.

Student Support Services:

UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at www.uta.edu/resources.

Electronic Communication:

UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at http://www.uta.edu/oit/cs/email/mavmail.php.

Student Feedback Survey:

At the end of each term, students enrolled in classes categorized as lecture, seminar, or laboratory shall be directed to complete a Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit http://www.uta.edu/sfs.

Final Review Week:

A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week unless specified in the class syllabus. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Emergency Exit Procedures:

Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, which is located to the right when exiting the room. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist handicapped individuals.