Computer Science G4013: Artificial Intelligence

Instructor: Dr. McGovern

Spring 2008

1   General Information

Class time: TR 12-1:15pm

Class location: Michael F. Price Hall, Room 3030

Prerequisites: CS 2413 or CS 4005. Note that prior programming experience is assumed.

Required materials: *Artificial Intelligence: A modern approach*, by Stuart Russell and Peter Norvig, Second Edition, Prentice Hall. This book has a green cover. Do not use the older edition (brown cover). Note that the authors have a very good website for the book: http://aima.cs.berkeley.edu/. This includes errata and sample code.

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- *Office:* EL 144A
- *Phone:* 325-5427 (voice mail available)
- *URL for class:* http://learn.ou.edu
- *Personal URL:* http://www.cs.ou.edu/∼amy
- *Email:* amcgovern@ou.edu
- *Office hours:* Brian: Monday, Wednesday 12:30-1:30. Dr. McGovern: Tuesday, Thursday 10:30-11:30. Dr. McGovern is also available via appointment and via AIM at *dramymcgovern.*

Teaching assistant: Brian McKee (b1mck@ou.edu)

2 Topics

This class will cover about 1/2 of the AIMA book. This course primarily focuses on the foundations of AI: search, planning, and learning. In the search category, we will cover breadth-first search, depth-first search, A^*, adversarial search and constraint satisfaction. We will cover the complexities of each method. For learning, we will cover decision trees, clustering, and instance-based learning. There is a separate course (CS 4033/5033) that focuses entirely on machine learning. For planning, we will focus on multi-agent systems and you will learn how to specify actions and effects in a formal manner.

The design of intelligent systems requires an understanding of the social consequences of each choice. Although a sentient AI is not likely to appear soon, systems that can react intelligently and learn through interaction with the environment have consequences for the people that rely on the systems. These decisions will be examined in both class discussions and homeworks.

There will be three programming projects, each focusing on a main topic area. In addition, there may be homework assignments with smaller programming components. The projects will involve software engineering knowledge where the student must design a medium piece of software to fit into an existing software framework. Grades on the projects will depend on following proper software engineering practices. Each project will also include a written report which will be graded both on the required content and technical writing skills.

3 Homework and Projects

Due dates: Unless the assignment specifies otherwise, all homeworks and projects will be due at the beginning of class, 12 noon.

Slack days: You have 2 slack days for use during the semester. Each slack day buys you a 24 hour extension on an assignment with no grade penalty. If you choose to use a slack day on a group project, at least one member of the group must have a slack day. Group projects can ONLY be delayed by a single day. Unused slack days can be redeemed at the end of the semester for class participation points.

Project code: Your project code and writeups must be written exclusively by you or your group, in the case of group projects. Use of any downloaded code or code taken from a book (whether documented or undocumented) is considered academic misconduct and will be treated as such.

4   Grading and Evaluation

Grade calculation: Your final grade will be determined as follows:

- Midterms: 20%(10% each)
- Final: 20%
- Projects: 30%
- Homeworks and quizes: 20%
- Class participation: 10%

Note that class participation is important. This means that attending class, asking questions, and answering questions are all important for your grade. There will be approximately one minute paper a week. If you complete at least 80% of the minute papers, you will automatically be given 80% of your possible class participation grade. The remainder of the grade must come from your actual class participation.

Grade questions: Homework and project grade disputes should first be brought to the TA. If this does not resolve your question, please see me during office hours. All disagreements about the grading of projects or homework must be brought to our attention within one week of when the item was returned.

Desire2Learn Grade Summary: Desire2Learn has a grade book that is used to store the raw data that is used to calculate your course grade. It is the responsibility of each student in this class to check their grades on Desire2Learn after each project or homework is returned. If an error is found, bring the grading document to me or the TA, and we will correct Desire2Learn.

Examination Grading Questions: If there is a dispute about the grading of an examination problem, you may stay after class the day the tests are returned to discuss it. If you cannot stay at this time, return the paper to me and stop by during my office hours. Once a test has been removed from the classroom after it has been returned, the grade is final and will not be changed, even if it is found to be in error.

Borderline grades: Borderline final grades will be decided by two factors: class participation and your final exam grade. If you are close to a border and you did well on the final, that can push you over a grade boundary. Likewise, being an active participant in class can push you over a grade boundary.

5   Course Policies

Attendance: We will discuss concepts and examples in class that are not in the text book. Another student's notes are an inadequate substitute for class attendance. You are responsible for everything that is announced in class.

Class Web Page: This class will use Desire2Learn software for our web page. The URL for the home page is http://learn.ou.edu. Login with your 4+4 (first four letters of your last name followed by the last four digits of your student number), using your standard OU password. If you have difficulty logging in, call 325-HELP. This software provides a number of useful features, including a list of assignments and announcements, an electronic mailing list, newsgroups, and grade book. All handouts are available from Desire2Learn. I update this web site several times a week. You should check the site daily. You are responsible for things posted on the site with a 24 hour delay.

Class Email Alias: Urgent announcements will be sent through email. It is your responsibility to:

- Have your university supplied email account properly forwarded to the location where you read email.
- Make sure that your email address in Desire2Learn is correct, and forwards email to the place where you read it. I'll send out a test message during the first week of class. If you do not receive this message, it is your responsibility to get the problem resolved immediately.
- Have your email program set up properly so that replying to your email will work correctly the first time. You can send email to yourself and reply to yourself to test this. I will not make any attempt to get bounced email messages delivered.

If you need assistance in accomplishing any of these tasks, contact 325-HELP.

Examinations: There will be two midterms and a final examination. During examinations students are expected to sit in assigned seats. Missing an examination without a previously approved excuse will result in a grade of zero for that examination.

Final Examination: The final is comprehensive, as required by College of Engineering policy. No final examinations can be given early, except as required by University policy.

Newsgroups and Email: The newsgroup on Desire2Learn should be the primary method of communication, outside of class. This allows everyone in the class to benefit from the answer to your question, and provides students with more timely answers since both the TA and I check Desire2Learn at least once a day. Matters of personal interest should be directed to email instead of to the newsgroup, e.g. informing me of an extended personal illness. Posting guidelines for the newsgroup are available on Desire2Learn.

Academic Misconduct: All work submitted for an individual grade, including homework and individual projects, should be the work of that single individual, and not her friends, and not her tutor. It is acceptable to ask a fellow student for help as long as that help does not consist of copying any computer code, or solutions to other assignments.

1. Do not show another student a copy of your projects or homework before the submission deadline. The penalties for permitting your work to be copied are the same as the penalties for copying someone elses work.

2. Make sure that your computer account is properly protected. Use a good password, and do not give your friends access to your account or your computer system. Do not leave printouts, floppy disks or thumb drives around a laboratory where others might access them.

Programming projects will be checked by software designed to detect collaboration. This software is extremely effective and has withstood repeated reviews by the campus judicial processes.

Upon the first documented occurrence of collaborative work, I will report the academic misconduct to the Campus Judicial Coordinator. The procedure to be followed is documented in the University of Oklahoma Academic Misconduct Code[1]. In the unlikely event that I elect to admonish the student, the appeals process is described in http:// www.ou.edu/provost/integrity-rights/.

Tutors: Tutors can be an excellent source of support for students who are having difficulty in the class, but only if the tutor is aware of the distinction between teaching students the material so that they can do their own work, and doing work for students. Tutors who do work for students are not only failing to help the students learn, they are abetting academic misconduct.

- If your tutor is sitting behind you while you are typing and methodically telling you what to enter, he or she is abetting academic misconduct.

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[1]http://www.ou.edu/studentcode

- If you tutor is emailing files containing partial or complete programming projects to you, you will commit academic misconduct if you use those lines in your program.

A more effective use of tutoring services is to do problems that are similar to the assigned work, instead of doing assigned work. For example, it would be fine to work unassigned problems from the textbook with a tutor. This requires significant discipline, both on the part of the tutor and the part of the student. Copying from a tutor is as unacceptable as copying from another student. If your tutor doesnt know how to teach properly, please ask them to call or visit me and I will provide training and guidance. If you are tutoring someone else in the class, you can be accused of academic misconduct if this person copies your work.

Incompletes: The grade of I is intended for the rare circumstance when a student who has been successful in a class has an unexpected event occur shortly before the end of the class. I will not consider giving a student a grade of I unless the following three conditions have been met. 1. It is within two weeks of the end of the semester. 2. The student has a grade of C or better in the class. 3. The reason that the student cannot complete the class is properly documented and compelling.

Accommodation of Disabilities: The University of Oklahoma is committed to providing reasonable accommodation for all students with disabilities. Students with disabilities who require accommodations in this course are requested to speak with the professor as early in the semester as possible. Students with disabilities must be registered with the Office of Disability Services prior to receiving accommodations in this course. The Office of Disability Services is located in Goddard Health Center, Suite 166, phone 405/325-3852 or TDD only 405/325-4173.

Classroom Conduct: Disruptions of class will not be permitted. Examples of disruptive behavior include:

- Allowing a cell phone or pager to repeatedly beep audibly.
- Playing music or computer games during class in such a way that they are visible or audible to other class members.
- Exhibiting erratic or irrational behavior.
- Behavior that distracts the class from the subject matter or discussion.
- Making physical or verbal threats to a faculty member, teaching assistant, or class member.
- Refusal to comply with faculty direction.

In the case of disruptive behavior, I may ask that you leave the classroom and may charge you with a violation of the Student Code of Responsibilities and Conduct.