EECS 492: Introduction to Artificial Intelligence

EECS 592: AI Foundations

Winter 2017

Version Date: January 5, 2017

Meeting Times and Locations

Lectures: Tuesday and Thursday, 10:30-12:00, Chrysler Auditorium [Durfee]
Discussion Sections and default instructor:
(011) Fri 11:30 - 12:30, 2166 Dow [Ryen Krusinga]
(012) Mon 4:00 – 5:00, 1014 Dow [Mark Heimann]
(013) Fri 1:30 - 2:30, 1005 Dow [Luke Brandl]
(014) Fri 9:30-10:30, 3150 Dow [Mark Heimann]
(015) Fri 10:30-11:30, 1005 Dow [Ryen Krusinga]
(016) Fri 12:30-1:30, 1024 FXB [Luke Brandl]

Course Staff

Professor

Edmund H. Durfee
Office: 3745 BBB
Email: durfee@umich.edu
Office hours: Wednesdays 10:00AM-noon, or by appointment

GSIs/IAs

GSI: Luke Brandl
Office Hours Location: BBB Learning Center
Email: brandl@umich.edu
Office hours: Thursdays 1:30-3:30pm
GSI: Ryen Krusinga
Office Hours Location: BBB Learning Center
Email: rkruser@umich.edu
Office hours: Sundays 4-6pm
GSI: Mark Heimann
Office Hours Location: BBB Learning Center
Email: mheimann@umich.edu
Office hours: Mondays 1:30-3:30pm
IA: Spruce Bondera
Office Hours Location: BBB Learning Center
Email: spruceb@umich.edu
Office hours: Fridays 3-5pm

To contact us all, use the email alias eecs492w17@umich.edu

Course Objectives

The purpose of this course is to introduce the foundational ideas and techniques of Artificial Intelligence, as well as to develop an appreciation for the engineering issues underlying the design of intelligent computational agents. The successful student will finish the course with specific modeling and analytical skills (e.g. search, logic, probability), knowledge of many of the most important knowledge representation, reasoning, and machine learning schemes, and a general understanding of AI principles and practice. The course will serve to prepare the student for further study of AI, as well as to inform any work involving the design of computer programs for substantial application domains.

Prerequisites

EECS 281, or equivalent. We assume programming experience and knowledge of programming language concepts, and familiarity with algorithmic concepts such as graph search and computational complexity. We also assume background in concepts in logic and graphs typically acquired in a discrete mathematics course. We will not hesitate to employ mathematics where appropriate.

Textbook

Stuart Russell and Peter Norvig, *Artificial Intelligence: A Modern Approach*, Third Edition, Prentice-Hall, 2010.

Interacting with the Instructors

Lectures

Although not always convenient to attend, lectures are an important part of this course. While we will generally follow the course text, lecture is an opportunity to emphasize certain topics, to present additional examples, to clarify murkier parts of the text, and to cover complementary technical material. You will be responsible for material (including notation, conventions, examples) covered in lecture, whether or not that material aligns exactly with the text!

Discussion Sections

Weekly one-hour discussion sections will focus on developing problem-solving skills. Students should attend the same section every week, and are encouraged to bring problems (perhaps related to but not the same as those on current assignments) to discuss. These smaller groups are designed to be interactive; students are expected to participate in the solution of problems under discussion.

Office Hours

The instructors will have regularly scheduled office hours each week. You are encouraged to make use of these to discuss aspects of the course including lecture material and the homework problems. In cases where you cannot make office hours, contact the course staff to arrange an appointment; don't wait until the last minute though!

Email

The instructors will endeavor to respond promptly to email questions. To increase the chances of a faster response, especially in the evenings and on weekends, sending your message to the email alias that reaches all of the instructors is a good strategy. Email that is relatively short is probably best, while questions/concerns that are more open-ended can often be better handled during office hours or after class. *If you are asking a question about the assignment that others might have already asked, please first check the course website to see if the question has already been answered either in the announcements section or in Piazza.*

Online Resources

Canvas

We will use the Canvas system. If you are registered for the course, you should be able to access all of the important course materials there, including the assignments, handouts, syllabus updates, and if applicable FAQs for assignments. Email directed to the course staff may be reposted (with names removed) to the website, such as as part of a FAQ, unless the sender of the email requests otherwise.

The course homepage is the location of official announcements and other information. Although we hope that there won't be a proliferation of announcements, you should look at it several times a week (and perhaps more frequently as deadlines near) to remain updated. You are responsible for keeping aware of announcements through this means. Announcements will also be made at the beginning of lectures and discussion sections, as needed.

Gradescope

We will be using Gradescope for submitting and grading assignments. You should upload your assignment solutions as pdf files. You will be asked to provide pointers to which pages contain your solutions to particular questions: please give accurate pointers, or else you might not get credit for your solutions. A regrade request based on pointer errors you made to answers that were in your submission will not receive full credit, so get your pointers right in your initial submission.

Piazza

We will use Piazza as an online forum for the course. Piazza has various benefits to students who, despite legitimate efforts to understand course material, are confused by course concepts or assignment expectations, and can seek clarification online. It also provides students with greater mastery an opportunity to deepen their understanding by explaining course material to their fellow students. This course wholeheartedly supports such uses of Piazza.

Piazza does, however, have downsides. Some students are tempted to turn to Piazza prematurely, before making a legitimate effort to understand the material from the lecture, discussion, and textbook sources. While doing so might get a faster answer to a specific question sooner, it robs a student the opportunity to form a deeper understanding of the material and to develop personal resourcefulness skills that are valuable throughout a career. Similarly, some students in their enthusiasm for helping others, can provide the wrong kind of help, by leading a fellow student to the answer to a homework problem for example. The right kind of help will instead allow the fellow student to find the path to an answer themselves!

Thus, please be thoughtful in your use of Piazza:

- For your own benefit, first use the textbook, lecture materials, and discussion materials as sources to help yourself answer your question, before turning to Piazza for help.
- Before posting, check to see if a question you want to ask has already been asked.
- Do not make your (partial) solutions to a problem visible to other students, either in a question ("this is how I've solved it so far…") or in a response ("here is how I did it…"). You can create **private** postings that only the instructors can see for questions of this type.
- Always be respectful in how you address others on Piazza, just like you should be in all other encounters.

Assignments

All assignments will be posted on Canvas and submitted on Gradescope.

There will be six homework assignments (problem sets) in this course, put on the web, and due at approximately two-week intervals. These could involve some programming or other software work. In addition to programming, assignments can also involve mathematical analysis, information gathering (from WWW and elsewhere), and critical thinking. Do not leave problem sets (especially programming tasks) to the last minute, as network servers sometimes go down, and working through the problems usually takes longer than you think (even when you take this fact into account). We give you two weeks for a reason!

Late Policy

To be considered on time, assignments must be turned in by 11:59pm on the due date. All of the assignments will be due on Mondays, which means that to be on time they need to be submitted by 11:59pm on Monday night (so you can still get a good night's sleep and make it to class on Tuesday morning). We will use the submission timestamp to validate turn-in time.

Late assignments will be assessed a penalty of 10% per day (fractions of days will be rounded up), up to a maximum of 3 days (72 hours). For some assignments, however, the maximum number of late days might be smaller (or zero); for example, an assignment due near an exam might not allow late submissions so that sample solutions can be posted sooner to help students prepare for the exam. Assignments for which late submissions cannot be accepted will expressly say so.

Deadline extensions will not be granted, except under extraordinary circumstances. If your circumstances are compelling and you need an extension, contact the professor as early as possible before the assignment is due.

Collaboration

Adherence to the Engineering Honor Code (http://www.engin.umich.edu/students/honorcode/code) is required in all assignments and exams. All problem sets (homework assignments) are to be completed on your own. You are encouraged to discuss ideas and techniques broadly with other class members, but all written work, whether in scrap or final form, are to be generated by you working alone unless otherwise expressly stated in the homework assignment. You are not allowed to sit together and work out the details of the problems with anyone. You are not allowed to discuss the problem set with previous class members, nor anyone else who has significant knowledge of the details of the problem set. *Nor should you compare your written solutions, whether in scrap paper form or your final work product, to those of other students (and vice versa).* You are also not allowed to possess, look at, use, or in any way derive advantage from the existence of solutions prepared in prior years, whether these solutions were former students' work products or copies of solutions that had been made available by instructors. Violation of this policy is grounds to initiate an action that would be filed with the Dean's office and would come before the College of Engineering's Honor Council. If you find any ambiguity about this policy, it is your responsibility to contact the course staff for clarification.

Grading

Problem sets 60% (10% each); Exams 40% (midterm 15%, final 25%). (These percentages are subject to slight adjustments at the discretion of instructor.)

If you have a concern with the grading on a particular assignment or exam, write a brief (one-paragraph) description of the concern, and give it (email for an assignment, by hand for an exam) to an instructor for a regrade. Regrade requests must be submitted within one week of when the graded assignment is made available to the student. Later regrade requests will not be accepted.

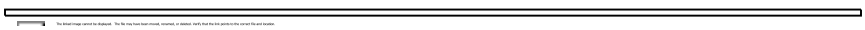
Exams

There will be two examinations—a midterm and a final. The midterm will be held on the day indicated in the course schedule, either during the class period if a large enough room can be found, or in the evening. Please reserve both times. If held during the class period, the exam will begin as close as possible to 10:30AM (rather than 10:40). Please ensure that you do not miss the exams, and that you arrive promptly for them.

The exams will be closed book, with the exception that each student may bring in one sheet of (regular-sized) paper on which the student can write anything that they expect to find useful.

Midterm: Thursday, 23 February, time either 10:30-12 or Evening. Location TBA.

Final: Wednesday, 26 April, 4-6PM, 25% of grade. Location TBA.



Lecture and Homework Schedule

The schedule is given on the Canvas website. Be forewarned that adjustments/revisions to the schedule might be made over the course of the term.