Introduction to Artificial Intelligence

Course Links and Information

Instructor: Joyce Chai (chaijy@umich.edu)

Lecture Time: Tuesday and Thursday 10:30-12:00

Lecture Location: https://umich.zoom.us/j/9932414410

GSIs: Ziyan Wang (ziywang@umich.edu), Qiucheng Wu (wuqiuche@umich.edu)

IA: Ziqiao Ma (marstin@umich.edu)

Discussion Sections:

- Sec 1: Friday 11:30- 12:30 (https://umich.zoom.us/j/98210265286, Password: 48109)
- Sec 2: Friday 12:30- 13:30 (https://umich.zoom.us/j/98210265286, Password: 48109)
- Sec 3: Friday 13:30 - 14:30 (https://umich.zoom.us/j/8461991344, Password: 0KKfcc)
- Sec 4: Monday 16:00 - 17:00 ([https://umich.zoom.us/j/8461991344,](https://umich.zoom.us/j/8461991344) Password: 0KKfcc)

Office Hours:

- Instructor: Tuesday, 1:30-3:00 pm, EST ([https://umich.zoom.us/j/9932414410 (Links to an external site.)](https://umich.zoom.us/j/9932414410))
- Ziyan: Wednesday, 9-11 am, EST (https://umich.zoom.us/j/94058827122, Password: 970214)
- Qiucheng: Thursday, 1-3 pm, EST (https://umich.zoom.us/j/8461991344, Password: 0KKfcc)
- Ziqiao: Monday, 8-10 pm, EST (https://umich.zoom.us/j/97157684612, Password: martin492)

Course Description

This is an introductory course to artificial intelligence that covers fundamental topics in AI, including search, reasoning, knowledge representation, planning, and machine learning. The goal of this course is to provide an overview of the artificial intelligence field. Through lectures, discussions, and homework assignments, students will learn basic AI concepts and principles and develop modeling and analytical skills to apply AI for problem-solving. The course will prepare students to further exploration of AI in both research and application domains.

Textbook

Artificial Intelligence: A Modern Approach, 3rd or 4th Edition. Russell & Norvig.

The 4th edition just came out and it's not available at several online places. It's great if you have the 4th edition. Otherwise, the 3rd edition would work as well. Unless specified otherwise, all the page numbers and chapter numbers refer to the 3rd edition.

Prerequisite

EECS281 and proficiency in Python programming

(most of the programming assignments will be in Python)

Note: CSE graduate students should enroll in EECS592

Course Grades

The work in this course consists of four homework assignments and two exams. Each assignment may include a written portion and a programming portion.

- Homework assignments: 50%
- Midterm Exam: 25%
- Final Exam: 25%

The final exam will take place online and on the date/time scheduled by the university. Details will be provided before the exam.

	Assigned date	Due date
Homework 1	Jan 19	Feb 9
Homework 2	Feb 9	Mar 2
Homework 3	Mar 2	Mar 25
Homework 4	Mar 25	Apr 15

Lectures and Discussions

Schedule of Topics and Assignments (Tentative)

Date	Topics	Slides	Assignments
Jan 19	Introduction		HW1 Assigned
Jan 21	Intelligent Agent		
Jan 26	Search		
Jan 28	Adversarial Search		
Feb 2	Constraint Satisfaction		
Feb 4	Logical Agents		
Feb 9	Propositional Logic and Inference		HW1 Due HW2 Assigned
Feb 11	First-Order Logic and Inference		
Feb 16	Programming in Logic		
Feb 18	Knowledge Representation		
Feb 23	Planning		
Feb 25	Uncertainties		
Mar 2	Bayesian Network		HW2 Due HW3 assigned
Mar 4	Bayesian Inference		
Mar 9	**Midterm**		
Mar 11	Hidden Markov Model		
Mar 16	Decision Trees		
Mar 18	Concept Learning		
Mar 23	**Well-being Break (no class)**		
Mar 25	Perceptron Learning		HW3 Due HW4 Assigned
Mar 30	Linear Regress and NN		
Apr 1	Deep Learning		
Apr 6	Decision Analysis		
Apr 8	Markov Decision Process		
Apr 13	Reinforcement Learning		
Apr 15	Game theory and Multiagent Decision		HW4 Due
Apr 20	Human-Robot Communication		

Lecture Videos

To be Uploaded.

Discussion Videos

To be Uploaded.

Course Policies

Discussion Sections

Weekly one-hour discussion sections will focus on developing problem-solving skills. These smaller groups are designed to be interactive; students are expected to participate in the solution of problems under discussion. Students should attend the same section every week and are encouraged to bring problems (e.g., based on current assignments) to discuss.

Homework

Homework must be turned in on the date that it is due, **by 11:55 pm**. The homework must be submitted electronically using **Canvas and Gradescope** and we will use the later timestamp to validate turn-in time. It is your responsibility to ensure that the homework has been uploaded **successfully** by the due date. This may include checking a box to verify in accordance with the honor code policy. Homework that is incorrectly uploaded will be subject to the associated late penalty. Late homework will be penalized 10% per day (where each day starts at 11:55 pm on the due day). Homework turned in after three days **will not be accepted**.

Also, note that any changes you make to the homework already submitted on Canvas/Gradescope count as a resubmission. If you make any changes to the assignment after the due date has passed **you will be assigned a late penalty** based on the number of days that have passed. For example, if you edit an assignment on March 5th and it was due on March 2nd, you will be assigned a 30% penalty (10% per day) as explained above.

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 homework problems. In cases where you cannot make office hours, contact the course staff to arrange an appointment.

Piazza

We have enabled Piazza to facilitate collaborative problem solving between students. It does not serve as constant on-demand access to course instructors. If you have pressing concerns, make sure to ask during lectures or office hours. **Do not post homework solutions on Piazza.**

Academic Honesty

Honor code

All homework submitted must be your own work. Review the College of Engineering's Honor Code here: http://www.engin.umich.edu/college/academics/bulletin/rules (Links to an external site.)

In this class, as in many others at the University, you will be expected to include and sign the Honor Pledge on each assignment you submit. The Honor Pledge is as follows:

I have neither given nor received unauthorized aid on this assignment, nor have I concealed any violations of the Honor Code.

The Honor Code is based on these tenets:

1. Engineers must possess personal integrity both as students and as professionals. They must be honorable people to ensure safety, health, fairness, and the proper use of available

resources in their undertakings.

2. Students in the College of Engineering community are honorable and trustworthy persons.
3. The students, faculty members, and administrators of the College of Engineering trust each other to uphold the principles of the Honor Code. They are jointly responsible for precautions against violations of its policies.
4. It is dishonorable for students to receive credit for work that is not the result of their own efforts.

Among other things, the Honor Code forbids plagiarism. To plagiarize is to use another person's ideas, writings, etc. as one's own, without crediting the other person. Thus, you must credit information obtained from other sources, including websites, e-mail or other written communications, conversations, articles, books, etc.

Collaboration

We expect strict adherence to the Engineering Honor Code 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 works, 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 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.

Special Accommodations

If you have disabilities or medical conditions that require some form of accommodations, please contact your instructor and the Office of Students with Disabilities at the start of the term so that arrangements can be made to accommodate you.

Note**:** The instructor reserves the right to modify course policies and the course calendar according to the progress and needs of the class.