CS 471/571

Introduction to AI

Course Description

Welcome! CS 471/571 is an introduction to artificial intelligence, the subfield of computer science. This course will introduce the basic ideas and techniques used in intelligent computer systems. The techniques you learn in this course will serve as the foundation for further study in any AI-related area you pursue. Students have to use Python for course projects.

Class Location: 110 WIL
Class Time: Mondays, Wednesdays and Fridays, 12pm to 12:50pm
Instructor: Prof. Thanh H. Nguyen
Email: thanhhng AT cs.uoregon.edu
Office: Room 303, Deschutes Hall
Office hours: Wednesdays and Fridays, 1:30 pm to 2:30 pm. Please contact me (via email) if you would like to schedule a meeting.

GE-Teaching: TBA
Email: TBA AT uoregon.edu
Office: TBA
Office hours: TBA

Course Material and Syllabus: We will be using Artificial Intelligence: A Modern Approach, 3rd Edition by Stuart Russell and Peter Norvig. (The 2nd edition is also acceptable.) The book can be purchased at the bookstore or online.

A printable version of lecture slides will generally be available online within a day or two after the lecture. I do not make them available before class. Often the slides will not include all the information we discuss in class, so the printed slides are not a substitute for attending and participating.

Learning Objectives

The learning objectives of this course are:

- to understand basic concepts and methods in Artificial Intelligence.
- to apply these AI-based methods for solving different problems.

Draft Schedule (Subject to change)

Week	Description	Readings
1 (Sep. 27, 29)	Introduction; Uninformed Search	R&N, Ch. 1-2; Ch. 3.1-3.4
2 (Oct. 02, 04, 06)	Informed Search; CSP I	R&N, Ch. 3.5-3.6; Ch. 6.1
3 (Oct. 09, 11, 13)	CSP II; Game Trees: Minimax	R&N, Ch. 6.2-6.5; Ch. 5.2-5.5
4 (Oct. 16, 18, 20)	Game Trees: Expectimax, Utilities; MDPs I	R&N, Ch. 5.2-5.5, Ch. 16.1-16.3; Ch. 17.1-17.3
5 (Oct. 23, 25, 27)	MDPs II; Reinforcement Learning I	R&N, Ch. 17.1-17.3; Ch. 21
6 (Oct. 30, Nov. 01, 03)	Reinforcement Learning II; Probabilities	R&N, Ch. 21; Ch. 13.1-13.5
7 (Nov. 06, 08, 10)	Bayes Nets: Representation; Veterans Day	R&N, Ch. 14.1-14.2
8 (Nov. 13, 15, 17)	Independence; Bayes Nets - Inference	R&N, 14.2-14.4
9 (Nov. 20, 22, 24)	Sampling; Thanksgiving	R&N, Ch. 14.5
10 (Nov. 27, 29, Dec. 01)	Classification; and Exam Review	R&N, 15.2,6
Finals Week	Final exam: 10:15 am-12:15 pm, Monday, Dec 04, 2023.	

Canvas: We make extensive use of Canvas for discussions, announcements, and distribution of handouts (including lecture slides). I strongly encourage you to start or join open discussions. If something is confusing you or bugging you, there is a good chance it is bugging or confusing others as well. We will also use canvas for programming/written assignment submissions. [Link]

Projects

Some projects are more challenging than others. Use Canvas to request additional lab help hours in a week when more help is needed.

Due date	Project	Description
10/16	Project 1	Search
11/03	Project 2	Multi-Agent Search
11/20	Project 3	Reinforcement Learning

Homework

Due date	Homework	Description
10/11	Homework 1	Search
10/25	Homework 2	CSPs and Games
11/08	Homework 3	MDPs and RL
11/27	Homework 4	Bayes Nets

Grading Policy

- Homework: 40%
- Projects: 30%
- Final exam: 30%

Other Resources:

- CS188 from Berkeley. Includes slides, videos, and interactive homework problems (with answers).
- AI class by Peter Norvig and Sebastian Thrun. Includes videos, quizzes, homeworks, and tests.

Classroom Behaviors

All members of the class (both students and instructor) can expect to:

- Participate and Contribute: All students are expected to participate by sharing ideas and contributing to the learning environment. This entails preparing, following instructions, and engaging respectfully and thoughtfully with others. While all students should participate, participation is not just talking, and a range of participation activities support learning. Participation might look like speaking aloud in the full class and in small groups as well as submitting questions prior to class or engaging with Discussion posts. We will establish more specific participation guidelines and criteria for contributions in our first weeks of the term.
- Expect and Respect Diversity: All classes at the University of Oregon welcome and respect diverse experiences, perspectives, and approaches. What is not welcome are behaviors or contributions that undermine, demean, or marginalize others based on race, ethnicity, gender, sex, age, sexual orientation, religion, ability, or socioeconomic status. We will value differences and communicate disagreements with respect. We may establish more specific guidelines and protocols to ensure inclusion and equity for all members of our learning community.
- Help Everyone Learn: Part of how we learn together is by learning from one another. To do this effectively, we need to be patient with each other, identify ways we can assist others, and be open-minded to receiving help and feedback from others. Don't hesitate to contact me to ask for assistance or offer suggestions that might help us learn better.

Absences

This is a face-to-face course. Attendance is important because we will develop our knowledge through in-class activities that require your active engagement. We'll have discussions, small-group activities, and do other work during class that will be richer for your presence, and that you won't be able to benefit from if you are not there. Excessive absences make it impossible to learn well and succeed in the course. We know our UO community will still be navigating COVID-19, and some students will need to isolate and rest if they get COVID. Please take absences only when necessary, so when they are necessary, your prior attendance will have positioned you for success. Students with COVID are encouraged to seek guidance and resources at UO's COVID-19 Safety Resources webpage

Barriers and Accommodations

My goal is a fully inclusive class, accessible to everyone. If you encounter or anticipate barriers to full participation and fair evaluation due to a disability, please communicate your needs to the instructor so that we can find a suitable accommodation. If you encounter or observe other impediments to full participation, for yourself or others, please share your concerns with the instructor. You are also encouraged to contact the Accessible Education Center in 164 Oregon Hall at 541-346-1155 or uoaec@uoregon.edu. The AEC offers a wide range of support services including note-taking, testing services, sign language interpretation and adaptive technology

Accommodations for Religious Observances

The University of Oregon respects the right of all students to observe their religious holidays, and will make reasonable accommodations, upon request, for these observances. If you need to be absent from a class period this term because of a religious obligation or observance, please fill out the Student Religious Accommodation Request fillable PDF form and send it to me within the first weeks of the course so we can

make arrangements in advance.

Academic Honesty

Academic honesty is expected and cases of suspected dishonesty will be handled according to university policy. In particular, copying someone else's work (including material found on the web) will not be tolerated. If solutions to assignments are obtained from outside sources, the source must be cited.

Mandatory Reporter Status

I am a [designated reporter/assisting employee]. For information about my reporting obligations as an employee, please see Employee Reporting Obligations on the Office of Investigations and Civil Rights Compliance (OICRC) website. Students experiencing sex or gender-based discrimination, harassment or violence should call the 24-7 hotline 541-346-SAFE [7244] or visit safe.uoregon.edu for help. Students experiencing all forms of prohibited discrimination or harassment may contact the Dean of Students Office at 5411-346-3216 or the non-confidential Title IX Coordinator/OICRC at 541-346-3123. Additional resources are available at UO's How to Get Support webpage. I am also a mandatory reporter of child abuse. Please find more information at Mandatory Reporting of Child Abuse and Neglect.

Acknowledgement

I would like to thank Ramakrishnan Durairajan for inspiring the design of this webpage.