State University of New York Polytechnic Institute
CS 495 : Artificial Intelligence

Instructor:	Dr. Chen-Fu Chiang
Semester:	Spring 2023
Time:	MW 12:00 pm - 1:50 pm
Location:	Kunsela Hall A135
Office Hours:	MW (My office) : 2:00 pm - 4:00 pm
Office :	Location: Kunsela C225 || Phone: (315) 792-7379
Email:	chiangc@sunyply.edu (best way to reach me)
URL:	http://www.cs.sunyit.edu/∼chiangc
TA Info :	Sai Siddhartha Vegireddy|| vegires@sunypoly.edu
TA Hours:	TR:1:00 pm -3:00 pm W:6:00pm -7:00pm || Library

References

1. https://inst.eecs.berkeley.edu/∼cs188/fa23/

Note

It is important that you have a foundation on both the theoretical and empirical fronts. You should have taken classes (or their equivalents) in : **Programming, Discrete Mathematics and Probabilities**.

Course Description

Web search, speech recognition, face recognition, machine translation, machine learning, autonomous driving, and automatic scheduling are all complex real-world problems. The goal of artificial intelligence is to solve some real-world problems with rigorous mathematical tools. To achieve the goal, it is important to understand the foundational principles that drive these applications and practice implementing (or using) some of these systems. Specific topics include machine learning, search, game playing, Markov decision processes, constraint satisfaction, graphical models, and logic. The main goal of the course is to equip you with the tools to tackle new artificial intelligence problems you might encounter in life.

Student Learning Outcomes

Upon completion of this course the student should be able to:

- Identify and describe basic concepts associated with the field of artificial intelligence
- Develop simple solutions for problems related to artificial intelligence
- Critically analyze research in the field
- Compare and contrast various applications of artificial intelligence to real-world problems
- Apply and (or) modify software that is designed to solve real-world problems, such as speech recognition, machine learning and machine translation
- Pursue specialized studies in artificial intelligence

Topics

Each topic should last for 1 or 2 lectures, based on the progress in the class. The instructor will speed up or slow down the lectures according to students' understanding of the material. It is recommended that the students read the material (and the original papers) ahead before the lecture.

seq #	Topics	seq #	Topics
1	Linear Classification	2	Unsupervised Learning
3	Tree Search	4	Dynamic Programming
5	A* and Heuristics	6	Reinforcement Learning
7	Monte Carlo	8	Function Approximation
9	N-Gram Modeling	10	Min Max
11	Backtracking	12	Hidden Markov Model
13	Bayesian Inference	14	Syntax versus Semantics

Grading (Tentative)

The lecture format will be the basic mechanism used in the course. Computer demonstrations in the classroom will be used whenever appropriate. Assessment of student performance will use a criterion-referenced model which will include written assignments (30%), regular examinations (midterm 25%), a project along with a short report and presentation on your chosen AI topic (20%), and a comprehensive final exam (25%). **Late assignment will not be accepted unless you have made prior arrangements with me**. The acceptable format of your solution will be specified in the assignment. You are encouraged to work in a team and submit assignments as a team. All examinations are closed-book. Percent and Grade : 89.5-100 A 79.5-89.5 B 69.5-79.5 C 59.5- 69.5 D Below 59.5 F (+/- modifiers will also be used ; for instance, [95.5-100]: A+, [92.5-95.5): A, [89.5-92.5): A-)

Attendance Policy

Attendance and active class participation are required. Be prepared to participate by asking and answering questions during class meetings. Please send me an email if you know you have to miss a class.

Academic Integrity/Policy

Plagiarism and Cheating of any kind on an examination, quiz, or assignment will result at least in an F for that assignment (and may, depending on the severity of the case, lead to an F for the entire course). I will assume for this course that you will adhere to the academic creed of this University and will maintain the highest standards of academic integrity. In other words, do not cheat by giving answers to others or taking them from anyone else. The code of academic conduct is detailed on the SUNY Poly student handbook. Make-ups are only given under extreme circumstances. I will also adhere to the highest standards of academic integrity, so please do not ask me to change (or expect me to change) your grade illegitimately or to bend or break rules for one person that will not apply to everyone.

Plagiarism Warning

The work you submit must be your own. You will not receive credit for work which is not your own. You may ask others (classmates/friends/instructors) for advice or help regarding the subject matter of a

problem set. However, your answers and the actual design, coding, entry, and running of your programs must represent your own work. All sources of ideas that are used in any way (quoted, paraphrased, or summarized), including ideas taken from the text, must be acknowledged in problem set program documentation. Failure to provide proper attribution constitutes academic dishonesty, and it will result in a failing course grade. Substantially identical program submissions by multiple students, even with attribution, may result in a failing course grade to all who submit the same program. Submitting a program written by someone else, even with attribution, is strictly prohibited and will result in a failing course grade. Students are further reminded that it is their responsibility to take reasonable precautions to prevent copying of their work by other students and that there are now criminal penalties for computer trespass and computer tampering.

Cancellation of Classes Due to Inclement Weather or Other Emergency

SUNY Poly has a 24-hour hotline to inform students, faculty and staff when severe winter weather prompts the cancellation of all classes. On-campus, you can call the "Snowline" by dialing ext. 7669 ("SNOW"). Off-campus, Snowline can be reached by calling 315-792-7385. Snowline cards are available at various locations on campus. In the event of severe weather, Snowline will announce only the cancellation of ALL classes. The cancellation of all classes will also be posted online, at sunypoly.edu, and will be broadcast on radio and television stations in the Utica-Rome, Syracuse, and Albany areas. Individual class cancellations are always available at sunypoly.edu/apps/canceled_classes .

Accommodations for Students with Disabilities

Your access in this course is important to me. In compliance with the Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act, SUNY Polytechnic Institute is committed to ensuring comprehensive educational access and accommodations for all registered students seeking access to meet course requirements and fully participate in programs and activities. Students with documented disabilities or medical conditions are encouraged to request these services by contacting Student Accessibility Services (SAS) or filling out the Disability Declaration form. Please note, you must provide documentation to SAS and meet with staff before receiving accommodations. Please do this as early as possible so that we have adequate time to arrange your approved academic accommodation/s. Once SAS creates your accommodation plan, it is your responsibility to provide me a copy of the accommodation plan. If you experience any access barriers in this course, such as with printed content, graphics, online materials, etc., reach out to me or Accessibility Services right away. For information related to these services or to schedule an appointment, please contact the SAS using the information provided below.

Office of Student Accessibility Services
SAS@sunypoly.edu
(315) 792-7310
Peter J. Cayan Library, L112