View on GitHub

CS161 [Winter2022] Fundamentals of Artificial Intelligence

CS161-Winter2022

Overview

This course introduces the design of intelligent agents, including the fundamental problem-solving and knowledge-representation paradigms of artificial intelligence. Topics to be covered include the AI programming language LISP, state-space and problem reduction methods, brute-force and heuristic search, two-player games, and recent developments in game AI. For knowledge representation and reasoning, we will cover propositional and first-order logic and their inference algorithms. Finally, the course covers probabilistic approaches to AI, such as Bayesian networks to improve the agent's performance with experience.

Prerequisites

This course requires knowledge of basic computer science, algorithms and complexity (CS180), and programming principles.

Textbook

Stuart Russell and Peter Norvig. Artificial Intelligence: A Modern Approach. (3rd Edition), Pearson 2009.

Programming Language

LISP

Logistics

- Time: **Tuesday and Thursday 2:00PM - 3:50PM**
- Location: MS 4000A (when in person) Zoom Link (when online)
- Instructor: Quanquan Gu (Email: qgu at cs dot ucla dot edu)
- Teaching Assistant:
  - [Yue Wu] (Email: wuy at ucla dot edu)
  - [Jiafan He] (Email: jiafanhe19 at ucla dot edu)
  - [Weitong Zhang] (Email: weightzero at ucla dot edu)
- Office hours:
  - The instructor's office hour is Monday/Wednesday 9:00am-10:00am on (Zoom Link).
  - The TA's office hour is:
    - Yue Wu, Thursday 10:00AM - 12:00PM (Zoom Link)
    - Jiafan He, Wednesday 2:00PM - 4:00PM (Zoom Link)
    - Weitong Zhang, Monday 5:00PM - 6:00PM (Zoom Link) Tuesday 11:00AM -1:00PM (Zoom Link)
- Course Website: https://uclaml.github.io/CS161-Winter2022/
- Course Forum: https://piazza.com/ucla/winter2022/cs161/home (If you haven't already, sign up here.)

Grading Policy

Grades will be computed based on the following factors:

- Homework 20%
- Quiz 5%
- Midterm 35%
- Final 40%

Schedule

#	Date	Topics	Reading	Homework
1	1/4	About Course, Introduction: What is AI?	Chapter 1,2	
2	1/6	LISP		
3	1/11	Problem solving as search & Uninformed search strategies	Chapter 3	
4	1/13	Uninformed search strategies	Chapter 3	HW1 Out
5	1/18	Informed search strategies	Chapter 3	
6	1/20	Local Search Algorithms	Chapter 4	HW1 Due, HW2 Out
7	1/25	Local Search Algorithms	Chapter 4	
8	1/27	Constraint satisfaction	Chapter 6	HW2 Due, HW3 Out
9	2/1	Constraint satisfaction	Chapter 6	
10	2/3	Constraint satisfaction	Chapter 6	
11	2/8	Game playing	Chapter 5	HW3 Due, Hw4 Out
12	2/10	Game playing	Chapter 5	
	2/15	Midterm Exam		
13	2/17	Propositional logic	Chapter 7	HW4 Due (extended), HW5 Out
14	2/22	Propositional logic	Chapter 7	
15	2/24	Propositional logic	Chapter 7	
16	3/1	First-order logic: representation	Chapter 8	HW5 Due
17	3/3	First-order logic: inference	Chapter 9	
18	3/8	Reasoning under uncertainty	Chapter 11	HW6 Out
19	3/11	Bayesian Networks	Chapter 13	
	3/16	8:00AM-11:00AM Final Exam		
	3/18			HW6 Due

Academic Integrity Policy

Students are encouraged to read the UCLA Student Conduct Code for Academic Integrity.

Homework

There will be 6 homework assignments during the semester as we cover the corresponding material. Homework consists of both problem solving and LISP programming. The lowest homework score will be dropped for you.

Unless otherwise indicated, you may talk to other students about the homework problems but each student must hand in their own answers and write their own code in the programming part. You also must indicate on each homework with whom you collaborated and cite any other sources you use including Internet websites. Students should never see another student's solution before submitting their own. Students cannot use old solution sets for this class or solution manual to the textbook under any circumstances.Homework assignments will be submitted through bruinlearn.

Please submit your homework on time. Homework is worth full credit before the due date. It is worth zero credit after the due date.

Quiz

There will be 6 in-class online quiz (on bruinlearn) for the purpose of reviewing the newly learned concepts. The quizzes are open textbook. We will drop the lowest quiz score for you.

Exams

There will be one midterm and then final. The exam is online (on bruinlearn) and open book and note. You are not allowed to discuss with other people.

CS161 [Winter2022] Fundamentals of Artificial Intelligence maintained by uclaml

Published with GitHub Pages