SJSU SAN JOSÉ STATE UNIVERSITY

College of Science · Computer Science

Introduction to Artificial Intelligence Section 04

CS 156

Spring 2025 In Person 3 Unit(s) 01/23/2025 to 05/12/2025 Modified 01/29/2025

Contact Information

Instructor: Mira Jane

Email: mira.jane@sjsu.edu

Office Hours

Tuesday, Thursday, 9:30 AM to 10:30 AM, DH282

ISA: Vaibhavi Savani

Email: vaibhavihiteshkumar.savani@sjsu.edu

Office Hours

Send email for any questions or for appointment over zoom.

Course Information

Lectures

Tuesday, Thursday, 10:30 AM to 11:45 AM, Clark 111

In-person

Course Description and Requisites

Basic concepts and techniques of artificial intelligence: problem solving, search, deduction, intelligent agents, knowledge representation. Topics chosen from logic programming, game playing, planning, machine learning, natural language, neural nets, robotics.

Prerequisite(s): CS 146 (with a grade of "C-" or better); Allowed Majors: Computer Science, Data Science, Applied and Computational Mathematics or Software Engineering; or instructor consent.

Letter Graded

Classroom Protocols

- Regular attendance is an integral part of the learning process.
- Please arrive to class on time and make sure your cell phones are silent during the lecture.
- Class time will be spent in interactive lecture.
- You are required to bring your wireless laptop to class. Your laptop must remain closed except for designated activities.
- We will use in-class short quizzes to allow everyone to participate, gather feedback, and check understanding of the material.

Program Information

Diversity Statement - At SJSU, it is important to create a safe learning environment where we can explore, learn, and grow together. We strive to build a diverse, equitable, inclusive culture that values, encourages, and supports students from all backgrounds and experiences.

Course Learning Outcomes (CLOs)

The focus of this course will be to introduce students to the breadth of topics in artificial intelligence, learn the principles, and develop hands-on experience in applying them. At the successful completion of the course, the students will be able to:

1. Understand AI terminology, problem areas, and possibilities.
2. Understand and apply A* algorithm to find solutions nodes in state space.
3. Explain various search algorithms such as BFS and DFS.
4. Explain informed vs uninformed search.
5. Explain hillclimbing.
6. Understand and apply constraint satisfaction.
7. Explain alpha-beta pruning.
8. Translate sentences in first-order logic into CNF.
9. Find proofs using resolution.
10. Explain planning.
11. Explain learning algorithms such as linear classifiers and Naive Bayes.
12. Create learning algorithms using Neural Nets.

Course Materials

Artificial Intelligence: A Modern Approach

Author: Stuart Russell, Peter Norvig
Publisher: Pearson
Edition: 4th
ISBN: 0134610997

Online at Pearson (https://plus.pearson.com/products/ffc86b22-8339-4687-911f-6acaeb1c0e7a/pages/urn:pearson:entity:e9e35334-ca06-4021-8163-bbf4fddfbda5), and book Homepage at Berkeley (https://aima.cs.berkeley.edu/)

✔ Grading Information

Criteria

Grading will be on a **curve** on the weighted sum:

- In-class participation: 5%
- In-class quizzes: 15%
- In-class mid-term: 20%
- In-class final: 20%
- Take-home assignments: 40%

Late submission for take-home assignments: -20% per day

Academic Honesty

All work must be yours only, no collaboration allowed, no use of AI/ML tools allowed unless the question specifically asks to use such tools.

🏛 University Policies

Per University Policy S16-9 (PDF) (http://www.sjsu.edu/senate/docs/S16-9.pdf), relevant university policy concerning all courses, such as student responsibilities, academic integrity, accommodations, dropping and adding, consent for recording of class, etc. and available student services (e.g. learning assistance, counseling, and other resources) are listed on the Syllabus Information (https://www.sjsu.edu/curriculum/courses/syllabus-info.php) web page. Make sure to visit this page to review and be aware of these university policies and resources.

Course Schedule

Topics

- What is AI, Why learn AI, When to use AI
- Intelligent Agents and Environment
- Search
- Constraint Satisfaction
- Logic
- Planning
- Uncertainty and Decision Making
- Machine Learning
- Reinforcement Learning
- Robotics
- Ethics and Safety