CSCE 4310-001 Introduction to Artificial Intelligence
CSCE 5210-001 and -600 Artificial Intelligence

Introduction to concepts and ideas in artificial intelligence, including topics such as
search techniques, adversarial search & games, knowledge representation, problem-
solving, logic, probabilistic reasoning, machine learning, perception, natural
language processing, robotics, and the future of artificial intelligence.

Required Text:
9780136042594

TOPICS

ARTIFICIAL INTELLIGENCE
  1. Introduction
  2. Intelligent Agents

PROBLEM SOLVING
  3. Solving Problems by Searching
  4. Beyond Classical Search
  5. Adversarial Search
  6. Constraint Satisfaction Problems

KNOWLEDGE AND REASONING
  7. Brief Introduction to Logic and Knowledge Representation

UNCERTAIN KNOWLEDGE AND REASONING
  8. Brief Introduction to Uncertainty in AI

MACHINE LEARNING
  9. Decision Trees
  10. Artificial Neural Networks
  11. Other ML Algorithms and Ensemble Learning
  12. Deep Learning
  13. Reinforcement Learning

COMMUNICATING, PERCEIVING AND ACTING
  14. Natural Language Processing
  15. Natural Language Communication
  17. Robotics

CONCLUSIONS
  18. The Future of AI

Final Exam: Thursday, May 10, 8:00am-10:00am, Room NTDP B190

ADA accommodation: UNT Policy 16.001: https://policy.unt.edu/policy/16-001

Academic Integrity Expectations: Do the right thing!
Per UNT Policy 06.003: https://policy.unt.edu/policy/06-003 consequences of
violations could include course failure, or in some repeat cases, expulsion.
Learning Objectives:

1. Use and create programs that demonstrate understanding (including computational complexity) of search algorithms such as depth first, breadth first, iterative deepening, A*, Hill-climbing.
2. Implement programs that demonstrate understanding of two-person adversarial games (partially observable, stochastic, with state spaces too large to search).
3. Demonstrate basic understanding of logic and knowledge-based computational reasoning and probabilistic reasoning.
4. Utilize and demonstrate fundamental principles of machine learning algorithms and computational learning theory.
5. Use and create programs that show understanding of machine learning techniques (decision trees).
6. Apply AI techniques in computational linguistics, machine vision and robotics.

Major Assignments:

Midterm: A midterm exam will assess your competency with regard to the learning objectives and topics covered from the beginning through supervised ML (not reinforcement learning).

Final Exam: A final exam will assess your competency with regard to the learning objectives and topics covered throughout the semester.

Grading:

- 10% Class participation (asking and answering thought provoking questions)
- 30% Homework assignments
- 20% Midterm Exam
- 20% Final Exam
- 10% Peer homework grades
- 10% Self Assessment

Under extraordinary circumstances, late assignments might be accepted for partial credit if negotiated with the instructor.

Attendance is required and will be reflected as a component of the class participation grade.

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