CSE 3521/5521: Introduction to Artificial Intelligence

Instructor: Jeniya Tabassum

Administrative Details

- Course Webpage:
  https://sites.google.com/site/cse5521sp2020/

- Instructor
  - Jeniya Tabassum
  - Office Hour: Friday 4:00-5:00 pm
  - Office: DL 190

- TA
  - Rayan Hamza
  - Office Hour: Wednesday 11:00 am -12:00 pm
  - Office: CL 420

Administrative Details

- Piazza (For discussion and resources)
  http://piazza.com/osu/spring2020/5521
- Carmen (Homework Submission)
  https://osu.instructure.com/courses/72347

Evaluation

Grading

Grading will be based on:

Participation and in-class Exercises (10%)

You will receive credit for asking and answering questions related to the homework on Piazza, engaging in class discussion and participating in the in-class exercises.

Homeworks (30%)

The homeworks will include both written and programming assignments. Homework should be submitted to Carmen by 11:59 pm on the day it is due (unless otherwise instructed).
Late HW penalty: -30%: 1 day late
-50%: 2 days late

Midterm (20%)

There will be an in-class midterm.

Final (20%)

There will be an in-class final.

What to Expect

- Lots of math and programming related Homework
- AI algorithms often difficult to debug
  - We ***strongly*** recommend you start early.

Topic

What is AI?
Intelligent Agents
Search in State Spaces
Uninformed Search Strategies
Informed Search Strategies
Minimax, Alpha-beta Pruning
Logical Agents
Propositional Logic
First-order Predicate Calculus
Inference in First Order Logic
Knowledge Systems
Society of Mind
Behavior-based Intelligence
<Midterm> : March 13

Intro Probability
Bayesian Reasoning
Intro to Machine Learning
Parmeter Estimation - Linear Models
Intro to Neural Networks
Intro to NLP
<Final> : April 24

http://bit.ly/tentative_schedule_5525_sp20

AI in OSU CSE Dept.

- Laboratory for Artificial Intelligence Research
  - **https://u.osu.edu/lair/**

- AI Club
  - **https://www.osuaiclub.com/**

Definitions of AI

- Based on theoretical and applied principles of CS
  - Data structures for knowledge representation
  - Algorithms needed to apply that knowledge
  - Languages and programming techniques used for implementation

Why is AI difficult?

- (or is it easy?)

How Can it be?

- How can a slow and tiny brain (biological, technological)
  - Perceive
  - Understand
  - Predict
  - Manipulate

Consider even a tiny spider!

- How can we build something with these properties?

Sub-Fields of AI

- Many sub-fields
  - Knowledge
  - Reasoning
  - Machine learning
  - Language
  - Robotics
  - Vision
  - …

Four Categories of AI

Thinking humanly (Systems that think like humans)	Thinking rationally* (Systems that think rationally)
Acting humanly (Systems that act like humans)	Acting rationally* (Systems that act rationally)

*** Rational system "does the right thing"**

(People make mistakes)

Q: What is Artificial Intelligence?

- It is the science and engineering of making intelligent machines
  - i.e, intelligent computer programs.
- It is related to the similar task of using computers to understand human intelligence.
  - AI does not have to confine itself to methods that are biologically observable.

Q: Yes, but what is intelligence?

- Intelligence is the computational part of the ability to achieve goals in the world.
- Varying kinds and degrees of intelligence occur in people, many animals, and some machines.