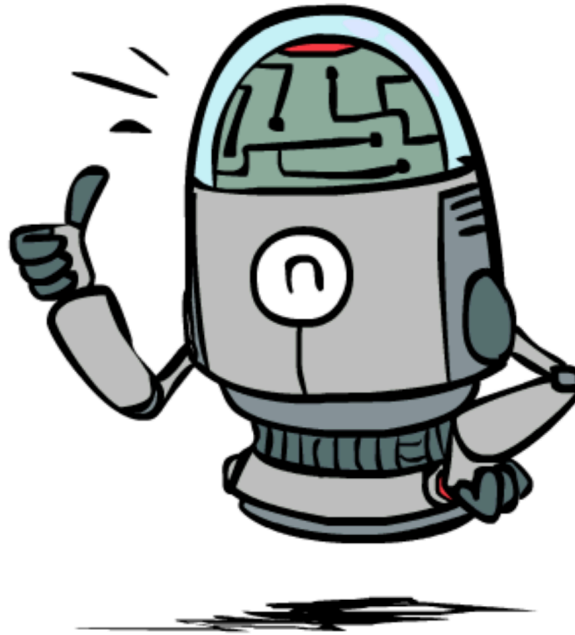# CS 5522: Artificial Intelligence II

Midterm Review

Instructor: Wei Xu

Ohio State University

[These slides were adapted from CS188 Intro to AI at UC Berkeley.]

Midterm

- The midterm will be closed notes, books, laptops, smartphones, and people.

- 80 minutes in class.

- Preparation:
  - Lecture Slides
  - Written Homework (including optional ones)
  - Project 3: Reinforcement Learning

Midterm (20%)

- Make sure you **understand** the fundamentals in addition to being able to procedurally execute algorithms.

- The exam will not test your knowledge of Python, however questions may assume **familiarity with the projects** and test ability of **writing pseudocode**.

- See **written homework, example exams** for examples
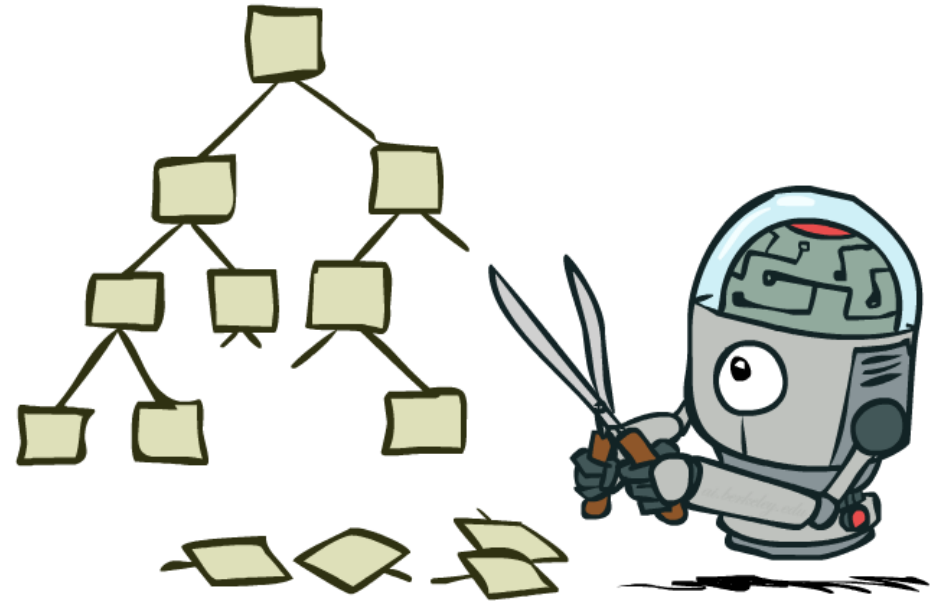
Possible Midterm Topics

- Search:
  - BFS, DFS, USC, A*, Greedy Search
  - Tree search vs. Graph Search

- Games:
  - Minimax search
  - Expectimax search
  - Alpha-beta pruning

- Utilities:
  - Expected utilities
  - Lottery, Equivalent momentary value
  - Insurance

Possible Midterm Topics

- **Markov Decision Processes:**
  - Markov decision process definition
  - Reward functions, values and q-values
  - Bellman equations
  - Value iteration

- **Reinforcement Learning**
  - Q-learning
  - Approximate Q-Learning

Project 3: Reinforcement Learning

Pacman seeks reward.
Should he eat or should he run?
When in doubt, Q-learn.

Possible Midterm Topics

- Will **not** cover the follows:
  - Search (properties): completeness and optimality
  - Search (heuristics): admissibility and consistency
  - MDPs (policy iteration)
  - Probabilities
  - Project 1 and Project 2