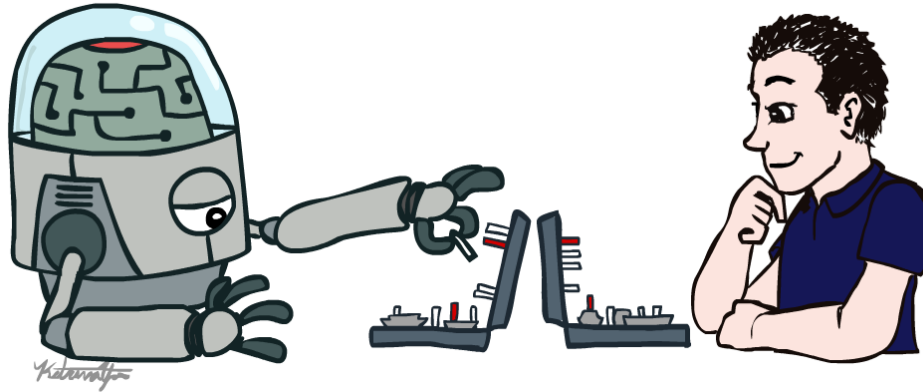# CSCI 446: Artificial Intelligence

Exam 1 Review

Instructor: Michele Van Dyne

Montana Tech

Main Topics

- Search
- Constraint Satisfaction Problems
- Games
- Markov Decision Problems
- Reinforcement Learning

Search

- Search
  - Completeness, Optimality, Time/Space Complexity
- Uninformed Search
  - Depth First Search
  - Breadth First Search
  - Iterative Deepening
  - Uniform Cost Search
- Informed Search
  - Greedy Search
  - A Star

Constraint Satisfaction Problems

- Backtracking
- Filtering
- Arc Consistency
- Strategies
  - Minimum Remaining Values (MRV)
  - Least Constraining Value (LCV)
- Structural Efficiencies
  - Tree Structured
  - Cutset Conditioning
  - Tree Decomposition
- Iterative Improvement
- Local Search

Games

- Minimax
  - Alpha-Beta Pruning
- Expectimax
- Depth Limited
- Evaluation Functions

Markov Decision Problems

- Bellman Equations
- Value Iteration
- Policy Methods
  - Policy Evaluation
  - Policy Extraction
  - Policy Iteration

Reinforcement Learning

- Model-Based Learning
- Model-Free Learning
- Passive Reinforcement Learning
- Temporal Difference Learning
- Active Reinforcement Learning
- Exploration vs. Exploitation
- Approximate Q-Learning
- Policy Search

Questions