Midterm Examination Review

Fall 2014

Wei Ding

Schedule

The examination is close-book and close-note. However, you can prepare a cheat sheet using ONE piece of paper (size 8.50" * 11.00", double side, no less than 11-font size and single line space). There are **60 minutes** for the Examination.

Class Time	Exam Time
4:00 PM	4:05 PM – 5:05 PM Wednesday October 22
Must be at class room at 4:00 PM sharp	Assume it takes 5 minutes to distribute the examination papers

Preparation Materials

Lecture notes, examples posted at class web site and UMassOnline, homework assignments, and textbook. If there are any inconsistency between the lecture notes and the textbook, use class lecture notes.

Topics

1. Everything you have practiced in homework
   You will not write a computer program in the exam, but you should be familiar with the following topics.
   - Problem formulation of solving problems by searching (states, initial state, actions, transition model, goal test, path cost)
   - Use examples to illustrate uninformed search including breadth-first search, depth-first search, and iterative deepening search
   - Use examples to illustrate A* search
   - Understand how to define a heuristic function for informed search
2. All the questions we have practiced in the class
   Midterm exam questions will be similar as those in-class exercises questions.
3. The Lecture of
   - Introduction to AI
     - Four categories of AI
     - Turing test
     - Definition of Machine Learning
     - Rational behavior
   - Solving Problem by Searching
     - Goal-based agents
     - T() and O()

- NP and inherently hard problems
- b, d, m for time and space complexity

- Uninformed Search Strategies
  - Understand how to calculate the properties of time, and space for different search strategies.
- Informed Search and Exploration from Part I to Part III
  - Understand how to analyze the optimality and completeness of different search strategies.
  - Understand the proof of optimality of A*
  - Repeated state in A*
  - Admissible heuristic
  - Consistent heuristic
  - Effective branching factor b*
  - Domination
  - Hill-climbing search
  - Simulated annealing (pseudo code is required)