EECS 348 Introduction to Artificial Intelligence

Practice Midterm Exam

May 11, 2010

Partial credit will be given, so feel free to explain your work.

- 1. (10 points total) You have a list of the top 10 restaurants in the country, and want to eat at all of them. You don't want to visit two steakhouses in a row, but otherwise simply want to minimize your total travel time.
 - (a) (6 points) Express your situation as a search problem. That is, define the states, operators, and goal test you will use.

- (b) (1 point) What search algorithm would you use for this problem?
- (c) (3 points) Assume you're using A* search. Devise a heuristic that is admissible, and another that is inadmissible. With which will you obtain optimal solutions?

2. (10 points total) Consider the Tic-Tac-Toe board in Figure 1.

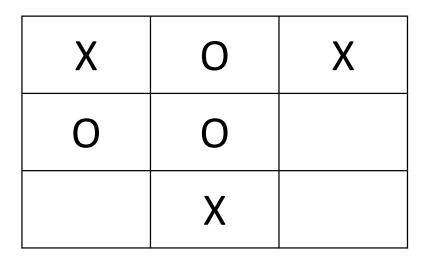


Figure 1: Minimax Example

- (a) (6 points) X is to move. Draw the full minimax tree for this problem.
- (b) (2 points) According to the minimax algorithm, which move should the maximizing player make?
- (c) (2 point) Describe behavior for the O player in which the Minimax move given above is not optimal.

3. (4 points total) Describe four problems, where each one is best solved by a different technique from the following list: Constraint Satisfaction with Arc Consistency, Uninformed Search, A* Search, and Minimax. Each problem should be described in two-three sentences each, and invent these (don't use standard examples from class).

4. (6 points) Say you had a meeting to convince Loebner to make one *incremental* change to the Loebner prize that would improve the contest. In about five sentences, what would your change be, and why?