

Assignment 2 – revised: due Wed, Sept 24, 2008

Reminder: The assignment is due at 11:59pm on Wednesday, September 24. To hand in the assignment, upload it to the course directory using the **provide** online submission system.

Please use one file per question, unless noted otherwise.

Question 1 – Games – 20pts

The standard alpha-beta algorithm performs a depth-first exploration (to a certain depth) of the game tree.

1. Can alpha-beta be generalized to do a breadth-first exploration of the game tree instead, and still get the optimal answer? Explain how or why not. If it can be generalized, indicate any advantages or disadvantages of using breadth-first search in this application.
2. Can alpha-beta be generalized to do an iterative-deepening exploration of the game tree and still get the optimal answer? Explain how or why not. If it can be generalized, indicate any advantages or disadvantages of using iterative-deepening search in this application.

Question 2 – Games with an element of chance – 30pts

1. Design state descriptions, move generators, terminal tests and utility functions for your favorite variety of the game of poker.
2. Is the standard expectiminimax model appropriate for this game? Why or why not?
3. Discuss how you might deal with the fact that in some of the games, the players do not have the same knowledge of the current state.

Question 3 – Logical inference – 25pts

Exercise 7.11 (p.238) a) through e).

Question 4 – Logic circuits – 25pts

This question has been revised. The Minesweeper game from Question 3 has potential long-distance dependencies which make it hard to design logic circuits to solve it. Let's focus on the Wumpus World instead.

1. Do exercise 7.13 (p.239) a) through c).
2. Think of a problem or game which you would prefer a logic circuit-based agent to an inference-based agent. Explain your reasoning.

Question 5 – EXTRA CREDIT

Exercise 7.16 (p.239).

Why should you do the extra credit work?

Two reasons.

- Either, you can't figure out one of the main problems, and would like to make up for it by solving the extra credit one.
- Or, you have done all the main problems, but you think it's fun to do this one; and plus you'd like me to know who you are in case you ever need a letter of recommendation from me.

Either way, unfortunately you cannot get more than 100% for a problem set.