CS 335: Search in Games

Francisco Iacobelli

February 20, 2018

1 TASK

Answer the following questions in order:

- Consider the following board for a two player game (A and B) in its starting position:

A			B
1	2	3	4

  Rules: Player A moves first. The two players take turns miving, and each player must move his token to an open adjacent space in either direction. If the opponent occupies an adjacent space, then a player may jump over the opponent to the next open space if any. (For example, if A is on 3 and B is on 2, then A may move back to 1.) The game ends when one player reaches the opposite end of the board. If player A reaches space 4 first, then the value of the game to A is +1; if player B reaches space 1 first, then the value of the game to A is -1.

  - Draw the complete game tree using the following conventions (30pts)
    - Write each state as (S_A, S_B), where S_A and S_B denote token locations.
    - Put each terminal state in a square box and write its game value in a circle
    - Put loop states (states that already apear on the path to the root) in double square boxes. Since thir value is unclear, annotate each with a "?" in a circle.
  - Now, mark each node with its backed-up minimax value (in a circle). Explain how you handled the "?" values and why.(10pts)
  - Explain why the standard minimax algorithm would fail on this game tree (15pts)

- Which of the following are true and which are false? Give brief explanations:
  - In a fully observable, turn taking, zero sum game between two perfectly rational players, it does not help the first player to know what strategy the second player is using –that is, what move the second player will make, given the first player's move.(15 pts)
  - In a partially observable, turn taking, zero sum game between two perfectly rational players, it does not help the first player to know what move the second player will make, given the first player's move.(15 pts)
  - A perfectly rational backgammon agent never loses.(15 pts)

2 MUST HAVE

Your work must comply with the following:

- Done in a computer, not by hand.
- Respect all conventions for states.

Not complying with these will result in discounts.

3 SUBMIT

ONE PDF (not Word (docx), Pages, Libre Office, text, etc.) with all of your answers. If you are working on Word, to make a PDF you should select "Save As" from the "File" menu and select PDF on the filetype drop down box.