Kenny Ta

CECS451 Assignment 5

Feb 17 2021

1. a.) h(n) = 0 is an admissible heuristic for the 8-queens problem.  
    True

b.) Assume that a rook can move on a chessboard one square at a time in vertically or horizontally, but cannot jump over other pieces. Manhattan distance is an admissible heuristic for the problem of moving the rook from square A to square B in the smallest number of moves.   
False

1. The heuristic path algorithm is a best-first search in which the evaluation function is f(n) = (2 − w)g(n) + wh(n). What kind of search does this perform for w = 0, w = 1, and w = 2?   
     
   f(n) = (2 − w)g(n) + wh(n)

If w = 0: f(n) = 2g(n) Iterative-Deepening Search

If w = 1: f(n) = g(n) + h(n) A\* search

If w = 2: f(n) = 2h(n) Greedy Search

1. Give the name of the algorithm that results from each of the following cases:  
   a.) Hill-climbing

b.) Depth-first

1. Imagine that, one of the friends wants to avoid the other. The problem then becomes a two-player pursuit–evasion game. We assume now that the players take turns moving. The game ends only when the players are on the same node; the terminal payoff to the pursuer is minus the total move taken. An example is shown in Figure 1.   
   a.) -4

b.) BE and BD

c.) Terminal payoff would be at most 3, so no.

d.) Node (6) could have a shorter path, so yes

1. True or False? You don’t need to explain your answers.   
   a.) True

b.) True

c.) False

d.) True

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ⍶ | β | y | ᵦ^y | ⍶⫦(ᵦ^y) |
| T | T | T | T | T |
| T | T | F | N/A | N/A |
| T | F | T | N/A | N/A |
| T | F | F | N/A | N/A |
| F | T | T | T | T |
| F | T | F | F | T |
| F | F | T | F | T |
| F | F | F | F | T |

Therefore, the statement, ⍶⫦(ᵦ^y) is true.