Experiment 4

Foundations of AI

Minimax algorithm

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#R version 4.1.0

#RStudio version 1.4.1717

Minimax is a kind of backtracking algorithm that is used in decision making and game theory to find the optimal move for a player, assuming that your opponent also plays optimally. In Minimax the two players are called maximizer and minimizer. The maximizer tries to get the highest score possible while the minimizer tries to do the opposite and get the lowest score possible. We will try to find the optimal score from the scores of leaf nodes using minimax algorithm

- First using rm(list = ls()) clear the environment before executing the code
- We will make a function minimax containing 5 arguments
- Curdepth-> being the current depth of the node which changes every recursion
- Nodeindex->being the index of node in array of nodes
- Maxturn-> a boolean value which showcases if its max players turn or not
- Scores-> an array storing all the scores
- Targetdepth-> being the maximum depth code will run till
- If we reach the target depth we will return the score of current node
- If its maximizing players turn we will return the max attainable value of two sets of children of current node
- Else if its minimizing turn we will return the min attainable value of two sets of children of current node
- We initialize the scores,curDepth=0,nodeIndex=0,Maxturn=TRUE and Target depth which can be found by finding the log(base 2) of the length of array of scores outside the function and call the function minimax