Practical 4

Week 5

Artificial Intelligence- Summer 2021

This week we shall take a look at heuristic-based search techniques such as the Minimax Search. This technique is meant for two-player based games and is based on computing the goodness of a move made by either of the players using a heuristic function. Usually one player attempts to maximise the value of the heuristic function while the opposing player attempts to minimise it.

Exercise 1:

(a) Look at the code given (`tictactoe.py`) and try to understand it. Within the code identify the heuristic function.

(b) Explain how the heuristic function evaluates a move. Modify the code such that the heuristic score is displayed when either the human or the computer completes a move. Is it possible to know the final heuristic score when either player wins?

Exercise 2:

(a) Look at the code given (`minimax4.py`) and try to understand it. Within the code identify the heuristic function. Assess the performance of this algorithm subjectively and compare it with the performance of the code mentioned in Exercise 1.

(b) Is it possible to quantify the total number of nodes explored within the search tree? If so, how does it compare to the total number of nodes computed in `tictactoe.py`?

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