

Game Tree Searching by Min / Max Approximation

This paper use the idea of approximating the “min” and “max” operators by generalized mean-valued operators to find out which node to expand in min/max game tree.

In this paper, two different constraints are explored: Time constraint and putting on constraints on the number of moves each player is allowed.

min/max approximation strategy uses the penalty-based iterative search method. A weight gets assigned to each edge between parent and child nodes. When an edge is selected, it gets assigned a low weight score, compared with unselected edges that get assigned a higher score. The lowest sum from bottom node to root is selected as a tip node to expand.

The result is that when using time constraints, this method performs worse than alpha-beta pruning but in case of limiting number of moves, it outperforms alpha-beta pruning. The reason is when using min/max approximation, computing generalized mean value consumes more time.