Minimax Homework

CS5500

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Problem

Write a parallelized version of the minimax algorithm. As part of the assignment, create an implementation of Tic-Tac-Toe for the algorithm to play on. Parallelize the program any way you see fit.

Minimax

The minimax algorithm looks at each potential move and calculates the positive and negative value of each move. The positive value increases when the move is good for the algorithm's player. The negative value reflects whether the move is good for the algorithm player's opponent. For example, if the algorithm player wins in Tic-Tac-Toe, the positive value might be 1, while the negative value would be -1. Since the algorithm player won, they have a high positive value. Since the opponent lost, the negative value is low.

The minimax algorithm then picks the move that maximizes the positive value and minimizes the negative value.

Tic-Tac-Toe

Create a Tic-Tac-Toe game implementation that allows for the algorithm to play or a human to play. Once you are complete, you should be able to play against your A.I. opponent (and you should lose, or tie if you're lucky). Print the player ID then the board after every turn.

Turn-in instructions

Write up a Latex report describing your experiences creating this program. Let me know how you decided to parallelize the algorithm and show me how your games went against the algorithm. Let me know what your code is and have fun with it.

Turn in a .pdf file of your report in a .zip file that contains your source code.

Further Reading

[1] Mina Krivokuća. Minimax with alpha-beta pruning in python.