Assignment 4 Report

Zixuan Zhang

Introduction

Our group is called the Fantastic Five. The five people in the group are Zixuan Zhang(1507250), Yuzhen Gao (1603346), Shanye Xue (1546004), Jun Li (1560231), and Dongheng Li (1500760)

I researched on the what to do in this project along the way since the assignment was released. I wanted to competive in the Computer Games Olympiad at first but found it quite hard to understand what is needed to be done.

I moved on to understanding geodesic-Y and mudcrack-Y but they were little information on them, so I decided just to write a solver and the other group mates agreed to. We finally decided on connect 4.

I wrote the structure of our gmae. Specifically the setStartingPlayer, convertPieceInt, drawboard, is valid, legalMoves, and the play functions. The algorithm for playing the game like the scoring, is_terminal, evaluate_window, minimax, check_end_game, and simulate were all written by other group mates. This is the url to our github repo: `https:github.com/HolaClubSandwich/Mudcrack-Y_Slover`.

The game is called connect 4 where one player wins by connecting four pieces on the board vertically, horizontally, or diagonally. The caveat of this game is that the board is horizontal rather than flat, so pieces are stacked whent the bottom row is full. The best description of this game would be on wikipedia: `https://en.wikipedia.org/wiki/Connect_Four`.

For this project, I accomplished of using learnt materials to apply to a real project which I wrote the structure for. My original goals were to understand how AI plays games and how they are structured to be able to compete against humans or themselves. After writing this project I felt that I had a achieved a better understanding of how AI works and why they work. It was really satisfying to see that my works coming into play. I was also able to get a better insight of how the AI behaves by giving it a different reward for different conditions and seeing how it reacts. The most disappointing part was that I wasn't able to participate the Computer Games Olympiad. If I was to continue working on this project later on I would write a visualizer and also write a guidance to be able to help new players get better. I would also write a better AI with better algorithms like MCTS.