Connect Four Playing A.I. Agent

1.0 About

This is a A.I. Agent which can play Connect Four Game.

The game is consistent with a board 7 columns and 6 raws. The two players put color disks in to the columns 1 to 7 of the board. The objective is to connect four of one's own discs of the same color next to each other vertically, horizontally, or diagonally before your opponent.
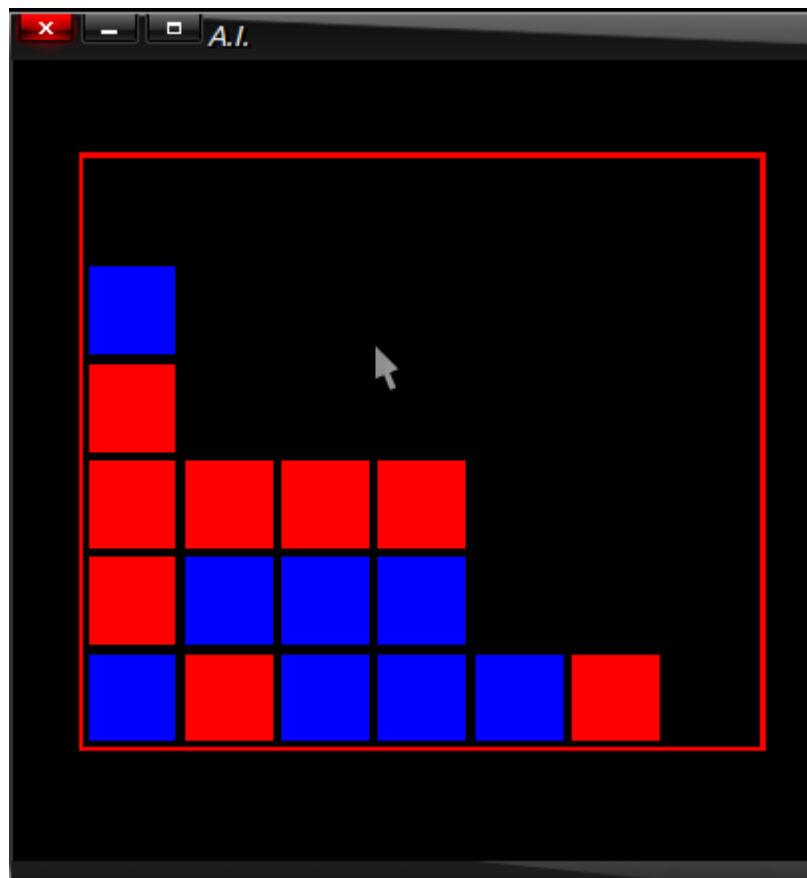

Figure 1.0 Connect Four Game

2.0 Implementation

The agent use a game tree to predict moves. The moves are decided using minimax values four four steps.
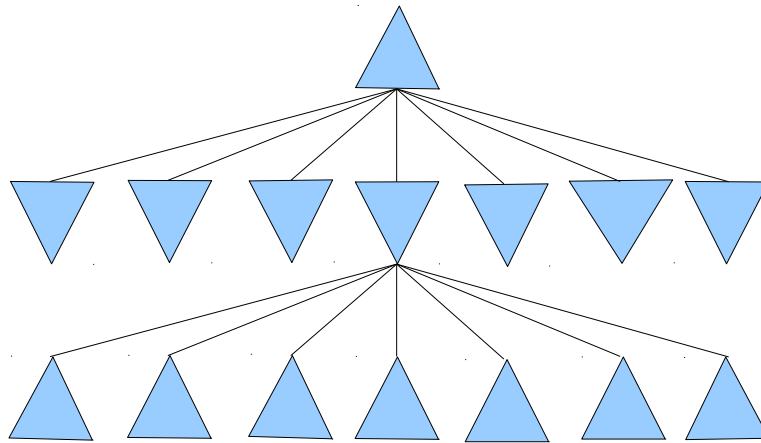

Figure 2.0 Game Tree

The minimax function check the board vertically, horizontally and diagonally and return a value specifying the state of the game. If it is a win or a loose the function return -20 or +20. If the raw or column or diagonal cannot get four hits because it is blocked by opponents disk it returns value 0. If it can be a win it returns in next moves it return value between -20 to +20.

The get_value function recursively search the tree and return next sub-optimal move.

3.0 Compilation And Running

You need 'openGL' and glut to compile . Install them by running,

sudo apt-get install freeglut3-dev
sudo apt-get install libgl1-mesa-dev

on terminal. Then use make commend to compile.

Then to use this first you have to use trainer to train the network. Run it using terminal using,

./[executable]

command. The trainer has following keyboard commands.

- a,s,d,f,g,h,j – Use 1 to 7 columns to drop disk.
- r – Reset
- esc – Quit the game

4.0 More Inf0

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