1. Introduction

In recent years, with the popularity of AlphaGo, the chess AI that beats the world champion in GO chess, people are paying more and more attention to chess AI and the whole field of artificial intelligence.

The AlphaGo we mentioned is a zero-sum chess game. For a zero-sum chess game, the result is either win or lose, so in a fully observable and known environment (like GO game or Reversi game), we can easily make a intelligent agent for us to make better decisions in the zero-sum game and win the game. With proper transformation, the intelligent agent may help us in more zero-sum conditions.

In this project, we intend to make a chess AI that can automatically play Reversed-Reversi. Reversed-Reversi is a reversed form of Reversi whose winning condition is to make your remaining chess on the chessboard minimum when both players do not have step to move. In Reversed-Reversi, you can only take steps at the positions where there are opponent’s chesses between that position you stepped on and another chess of you. We intend to make this chess AI reliable and powerful that it can beat more human and algorithms and winning the game.

1. Preliminary
2. Introduction to Reverse-Reversi

Reversi is a zero-sum game. It consists of a 8x8 square board, and pieces with one black and one white side. Each player has a color, and the aim of the game is to get more of your pieces on the board than the opponent's pieces.

At the start of the game there are four pieces on the board, two white and two black. You must try to capture opponent pieces and flip them over so they turn into your color. You do this by making a horizontal, vertical or diagonal line of pieces, where your pieces surround the other player's pieces. The surrounded opponent pieces are then captured and will be flipped over to your color, increasing the number of your pieces on the board. Every move you make must capture some opponent pieces. If there is no available move on the board that captures pieces then you must say Pass and your opponent gets to play again. If both players say pass in a row then there are no more moves on the board and the game ends.

The game ends when the board is full, or both players say pass. At that time the pieces on the board are counted and the player with more pieces wins.

<https://cardgames.io/reversi/>

<https://www.javatpoint.com/mini-max-algorithm-in-ai>

https://zhuanlan.zhihu.com/p/35121997

\textsubscript

\item

\begin{equation}

a+b=\gamma\label{eq}

\end{equation}

\eqref{eq}

\For{condition}{

only if\;

\If{condition}{

1\;

}

}

\While{not at end of this document}{

if and else\;

\eIf{condition}{

1\;

}{

2\;

}

}

\ForEach{condition}{

\If{condition}{

1\;

}

}