Midterm report1

19340980040 Lai Weibo   18300180075 Chen Xiaohan

Abstract：   For the class project, we implemented a Gomoku AI using Alpha-Beta pruning. In detail, we added a real-time score in order for the AI to evaluate current situations on the board, depicting possible moves for beating the human player.

Intro of Gomoku:

Gomoku is a simple board game composed of a grid (board) and two colored pieces. In order to win, players should make a consecutive line of at least 5 pieces in the direction of horizontal, vertical or diagonal.

There are 7 basic shapes on board which can be easily pinpointed and predicted.
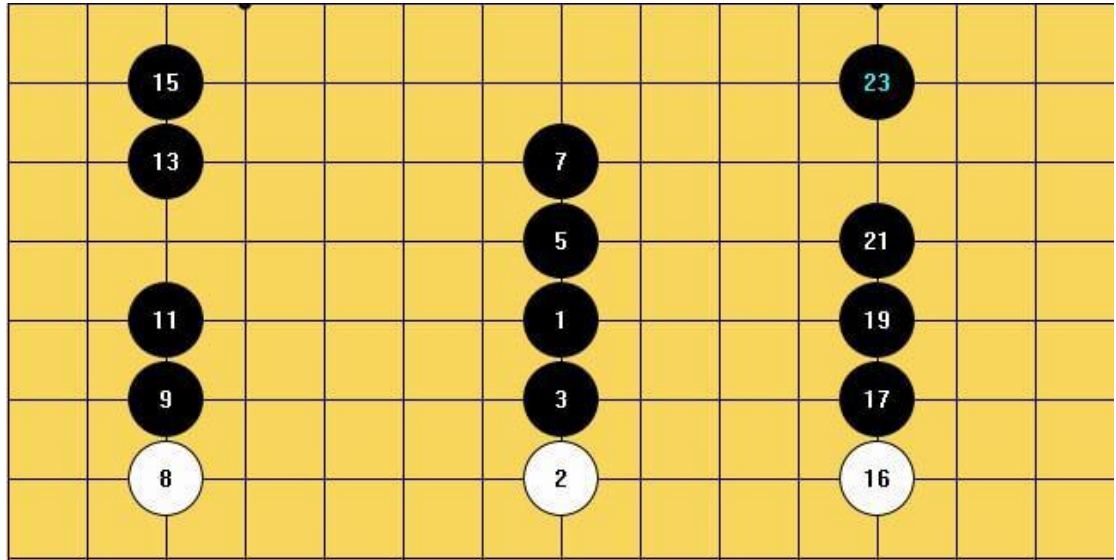
Lian Wu :the case where you have 5 consecutive pieces (usually signals a win)
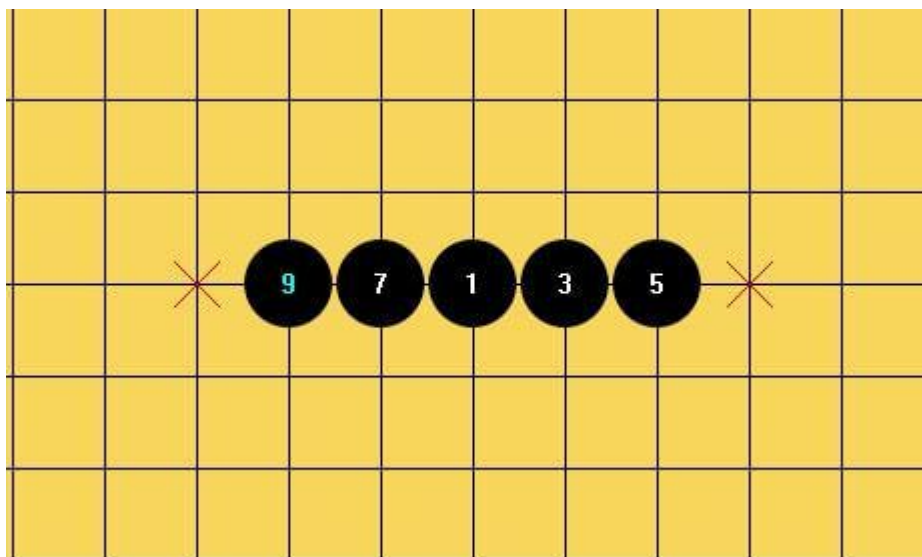
Huo Si: the case where you have 4 consecutive pieces ,with no opponent pieces on either side, in this situation, your opponent is not likely to win(unless he has this shape too and he is next to place a piece).
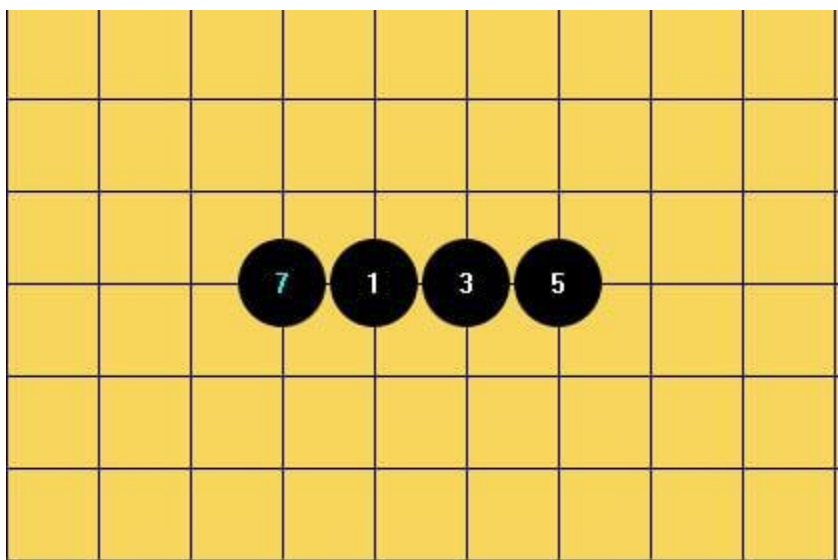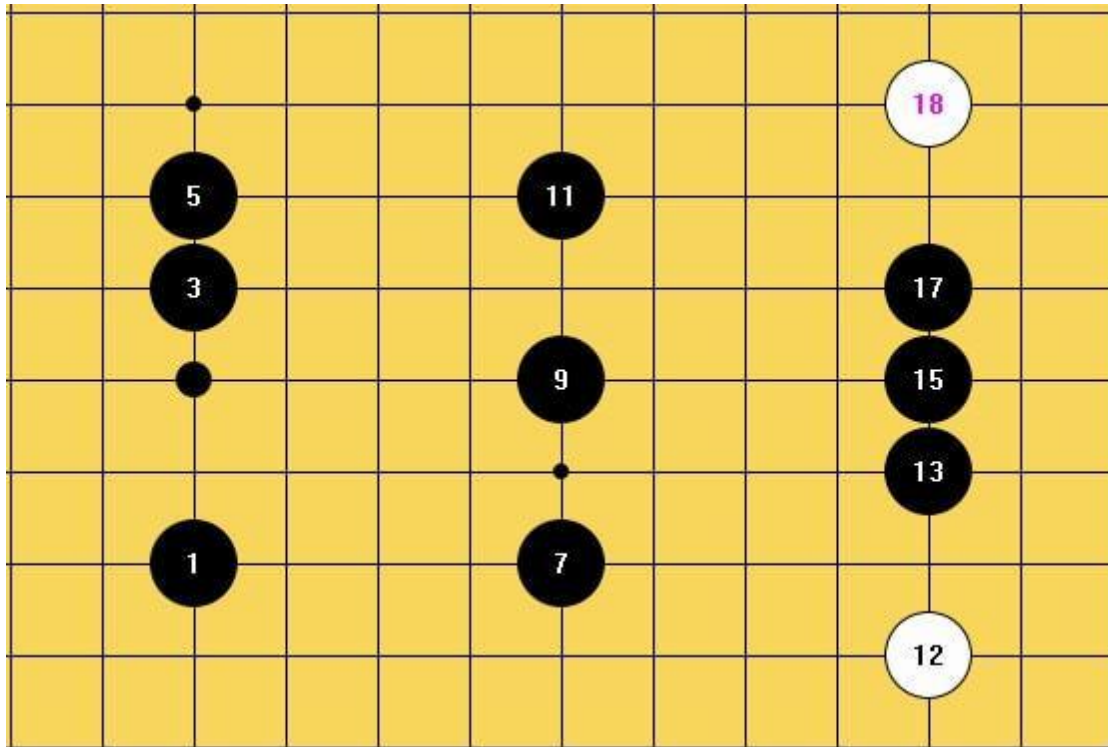
Chong Si: the case where you have four pieces in a row, with one gap remaining:

Huo san: the predecessor of Huo Si:
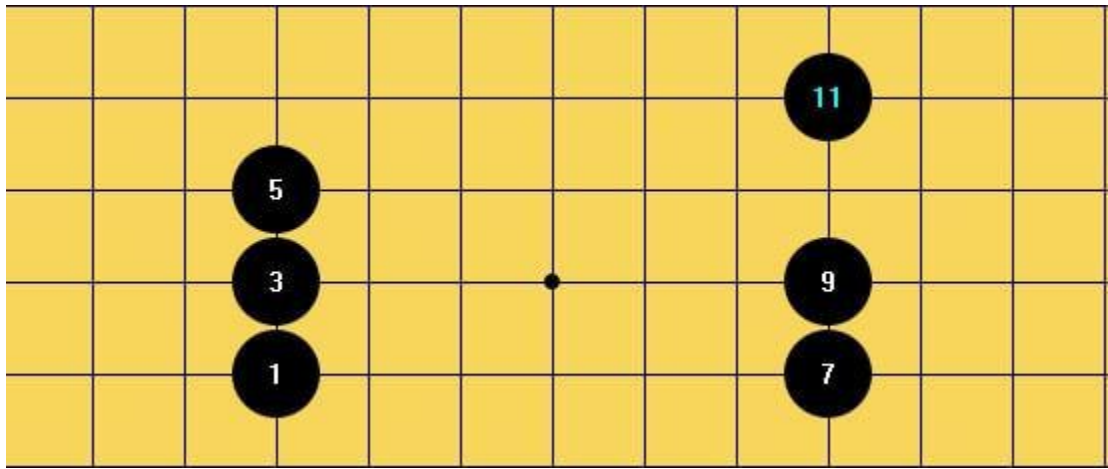
Mian San: the predecessor of Chong Si:

Similarly, Huo Er and Mian Er is the same case but with two pieces.

In the score evaluation, the first three shapes signals a possible near win, so they get higher scores. The score is an important indicator for the AI to determinate its next moves.

Using MinMax implemented by Alpha-Beta Pruning, the AI searches the next move which gives itself the max score and gives its opponent the least score(if possible, reducing the opponent's score.)