Simple Go With C++ Programming

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Abstract

This article presents a simple Go game in c++ programming. Update the program,and using the program can play go game,it has some basic and simple functinon such as: basic ko rules ,suicide rules,capturing the stone.Using the environment of computer go program, matching with the recursion algorithm.

1 Introduction

Go is a puzzle game originated in China, first tell us about the basics of chess: , Pieces of gas, means: a piece on the board, and it is a straight line close to the null point of this piece of "gas" meas the freedom. Straight line next to the piece points, if there is the same color pieces exist, they will be interconnected into an integral whole. Their gas should also be calculated.

Grapes, refers to as a chess all the other gas are occupied, it was no gas in the state, will be put off, known as "grapes." If erupted after the two sides were tested piece airless state, no gas should only extract the other son.[2](see fig. 1).

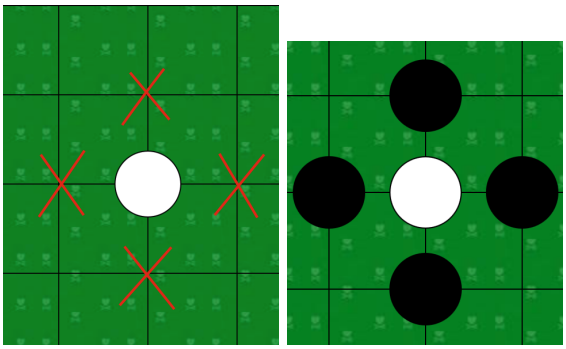

Figure 1: The White 4 freedoms and no freedom

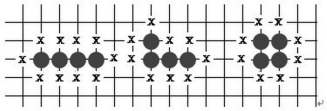

Figure 2: 4 stones with different freedom values

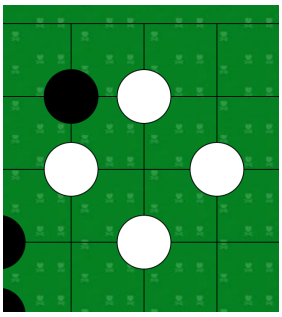

Figure 3: The black stone not allowed to place inside

2 Methods of capture

Recursion in computer science is a method where the solution to a problem depends on solutions to smaller instances of the `same problem`. When only one stone is easy to know the freedoms,but in some stones need to think how to caculate the freedoms.[1](see fig. 2). So need to use recursion to deal with this.First should already calculate the place first stone then judge the west weather have stones,same color,calculate the freedoms. if the west no stone and haven't calculate the freedoms then the number of freedoms plus one and make a sign of this empty space have been calculate the freedoms.else if the west have stone and same color and haven't calculate the freedoms then recursive call to the east point.In the way can search the next stones like east,north and south.

Then can calculate a block of stones freedoms.Use of for loop to search the whole board return the calculate freedom numbers.

Finially can remove means capture the stones.Need to follow the stone no freedoms and different color.

3 Methods of suicide

Though in most positions suicide is an obvious bad move, there exist positions where suicide could be used as a ko threat. In such cases it can be argued that suicide adds something to the game. A drawback of allowing suicide is that the length of the game can increase drastically if players are unwilling to pass (and admit defeat). In most rule sets (Japanese, Chinese, North American, etc.) suicide is not allowed (British Go Association, 2001). So, in all our experiments

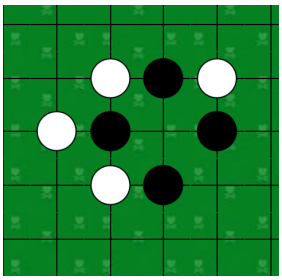

Figure 4: show ko

suicide is illegal.[3](see fig. 3).

In order to achieve this function just make the stones not allowed to place in the position's freedom equals null.Then not change the player(color).Use the for loop to search where position not allowed.

4 Methods of BasicKo

Since stones can be captured (and removed from the board) it is possible to repeat previous board positions. However, infinite games are not practical, and therefore repetition of positions should be avoided. The most common case of a repeating position is the basic ko.[3](see fig. 4).

The basic-ko rule says that direct recreation of a previous board position in a cycle of two moves is forbidden. As a consequence White can only recapture the black stone after playing a threatening move elsewhere which changes the whole-board position. Such a move is called a ko threat.

In order to achieve this function need to save the previous step.If the place stone's position are same and color still same need to place other where.

5 Results

Describe how the benchmark was performed. Be objective - don't describe too many details. The reader which this text is meant for should be able to reconstruct the experiment using his own tools. Some examples of topics for this section:

- The capture of stones
- The suicide
- The basic Ko rules
- Change the backround of board and word style
- Calculate the score just calculate the stones on the board in different color

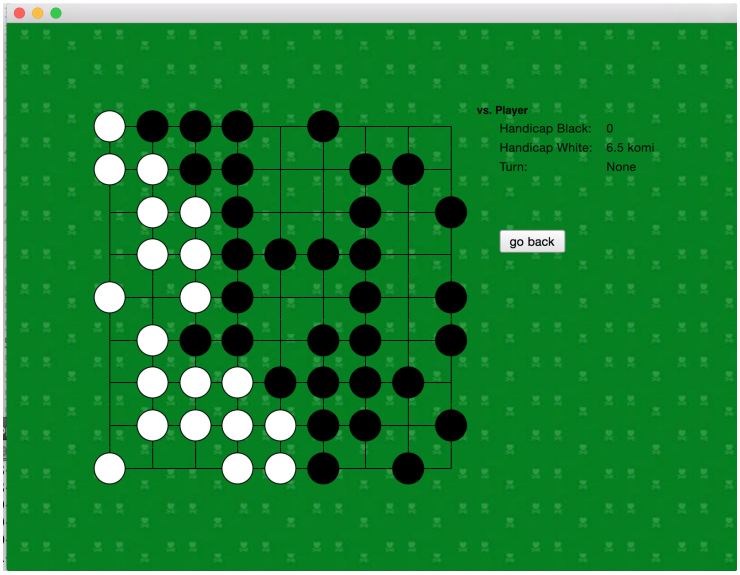

Figure 5: The ending of go

6 Discussion

About calculate the score is a difficult problems.Ask for Someone who can play go well.Recognizing the Go is not easy to judge which one win.And I know why need to creat the boundary.It will easy to calculate by each modular. Judge which player are winner need to finish all the stones.(see fig. 5)Then need to judge the stone who are life or death.Because during the game is unpredictable.And the score rules devide Chinese and Janpanese.For the Janpanese is more need to caculate the positon of empty in the board and died stone need to calculate twice.

About the recursion algorithms are more suitable for a small board, if size increase is not very appropriate. Need to find a better way to calculate. But now the recursion algorithm is easy to think to solve this problem.

References

[1] Oren Patashnik. Graham, Ronald; Donald Knuth. *Concrete Mathematics*. 1990.

[2] YaoSiYu. HeTianYi. Go human-computer chess-playing system, 2009.

[3] Uiterwijk J W H M. SWerf E C D V D, Herik H J V D. Solving go on small boards. *International Computer Games Association*, 2003(26):10–7, 2003.