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A Chinese Chess Program

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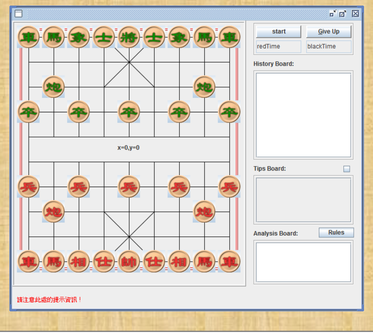
Introduction

Artificial Intelligence of Chinese Chess has a long history of development in which most of them are built to defeat the players. Such master level of A.I. programs are not suitable for beginners or intermediate players. Thus the objective of this project is to build an A.I. program which is able to improve players' ability and of course, have fun.

The program consists of two main features to teach the players

- **Tips Board**
- **Analysis Board**



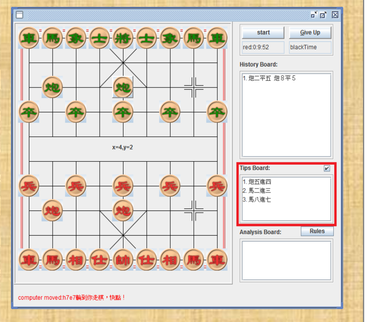
Overview

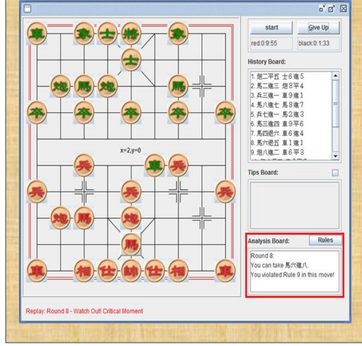
Estimate Players' Level

For players to enjoy the games with our A.I. program and learn from it, their levels must be similar. Therefore, the A.I. program is able to identify players' level and make appropriate moves instead of finding best moves all the time.

Tips on Request

Tips are available and will only be shown upon the request of the players. This function helps the players to understand what are good moves in some particular game situations.





Move Analysis

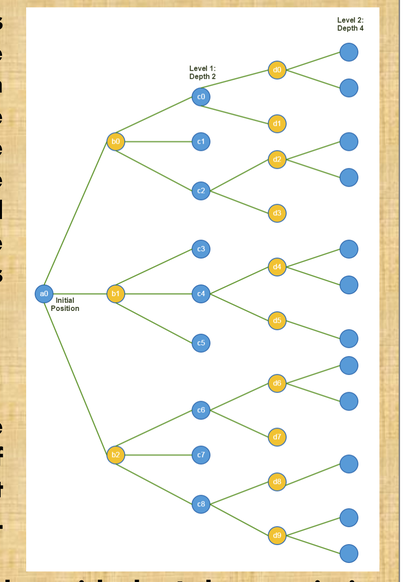
In-game and end-game analysis are provided on the moves. Bad moves are evaluated by a list of Chinese Chess guidelines and move suggestions will also be shown.

A.I. & Algorithms

The A.I. program tries to search for the possible moves from the perspectives of the players. To identify the level, the ranks of the moves among all possible moves are collected the level is given by:

$$L = \frac{R_1+R_2+R_3}{3}$$

where R_1, R_2 are R_3 are the average ranks of the moves in the past three games. Lower L refers to higher level.



The A.I. program will then pick the L-th move in its searching to play with the players.

Conclusion

The A.I. program was put under testing and it successfully identify the players' level , provide useful tips and move analysis. As a result, the players are able to enjoy the games with more rounds and learn from the program.