Yixin Protocol

Kai Sun

September 9, 2014

1 Introduction

Yixin protocol is a protocol derived from Gomocup protocol [1]. Firstly used by Yixin [4], it supports more commands than Gomocup protocol. This document describes extensions and modifications of Yixin protocol compared with Gomocup protocol. For detail implementation of Yixin protocol, readers are recommended to refer Yixin Board [3] which has implemented all the extensions and modifications described in this document.

2 Modification

Compared with Gomocup protocol, Yixin protocol makes the following modifications:

- The old protocol used by Gomocup [2] which uses files for communication is no longer supported. Therefore the name of brain is no longer required to begin with prefix "pbrain-".
- Yixin protocol no longer supports continuous game, that is, **INFO rule** [**value**] with **value** equals 2 or 3 does not represent continuous game any more. Instead, renju is supported by Yixin protocol and **INFO rule 2** represents renju rule.

3 Extension

Compared with Gomocup protocol, Yixin protocol adds the following extensions:

- **yxboard** After this command the data forming the playing field are send. Every line is in the form:

[X],[Y],[field]

  where **[X]** and **[Y]** are coordinates and **[field]** is either number 1 (own stone) or number 2 (opponent's stone). The manager should send these lines in the same order as moves are made. Data are ended by **DONE** command.

  Example:

  The manager sends:

yxboard 10,10,1 10,11,2 11,11,1 9,10,2 DONE

  The brain answers:

[No Answer]

  The difference between **yxboard** and **board** is that the brain is required not to answer **yxboard** with a move.

- **yxstop** When the brain receives this command, it should stop thinking immediately and output its move.

  Example:

  When the brain is thinking, the manager sends:

yxstop

  The brain answers:

6,7

- **yxshowforbid** This command may be used only if renju rule is set. When the brain receives this command, it should output all the forbidden moves on the board. The format of output is in the form:

FORBID $[X_1Y_1X_2Y_2 \dots X_NY_N]$.

  where N is the number of forbidden moves and (X_1, Y_1), (X_2, Y_2), ..., (X_N, Y_N) are the coordinates of each forbidden move. To avoid ambiguity, leading zero is added to every X_i and Y_i so that every X_i and Y_i is represented with a 2-digit number.

Example:

The manager sends:

```
yxshowforbid
```

The brain answers:

```
FORBID 09121011.
```

In the above example, there are two forbidden moves, one is $(9, 12)$ and the other is $(10, 11)$.

- **yxhashclear** When the brain receives this command, it should clear its hash memory.
- **INFO max_depth** [**value**] The brain should stop thinking when its searching depth is over [**value**].
- **INFO max_node** [**value**] The brain should stop thinking when it has searched over [**value**] nodes.
- **INFO hash_size** [**value**] The brain should use at most [**value**] KB hash memory.
- **INFO thread_num** [**value**] The brain should use at most [**value**] threads for thinking.
- **INFO thread_split_depth** [**value**] The minimum depth at which work can be split between threads.

References

[1] Petr Lastovicka. Gomocup protocol. `http://web.quick.cz/lastp/protocl2en.htm`.

[2] Petr Lastovicka. Old gomocup protocol. `http://web.quick.cz/lastp/protocl1en.htm`.

[3] Kai Sun. Yixin board. `https://github.com/accreator/Yixin-Board`.

[4] Kai Sun. Yixin homepage. `http://www.aiexp.info`.