

24/04/2013

OPPONENT RECORD

Thesis compiled by: Dan Setterquist and Peter Skeppstedt

Title of thesis: Constructing a Kamisado playing agent

Opponent: Richard Nysäter

Was it easy to understand the underlying purpose of the project? Comments.

Since the project's purpose is both stated and referred to several times throughout the report and has its own section (1.3 Purpose, and to some degree 1.2 Research Question), the purpose was easy to understand.

Do you consider that the report title justly reflects the contents of the report?

The title provides a succinct but clear definition of the report's purpose and as all of the content in the report was deemed relevant to the purpose, the report title does justly reflect the content.

How did the author describe the project background? Was there an introduction and general survey of this area?

The authors briefly covered the history of game playing agents and declared why the development of playing agents may be of importance to other fields. The rules of Kamisado and the algorithms employed in the report was then clearly explained in an accessible way.

To what degree did the author justify his/her choice of method of tackling the problem?

The authors referred to previously created game playing agents for other zero-sum games and employed the same algorithms that have been previously proven to work well. Other justifications for the methods used were also time restraint and computational complexity. Overall, the chosen methods were deemed to be justifiable and logically sound.

Did the author discuss the extent to which the prerequisites for the application of such a method are fulfilled?

The authors explained the methods in a way that either states or implies the prerequisites for every method employed in the report.

Is the method adequately described?

The method used in the report is written in such a way that the study could easily be replicated by almost anyone. Therefore, the method was deemed adequately described.

Has the author set out his/her results clearly and concisely?

The results are mostly in the form of small matrixes. The content of the matrixes and how to interpret them were clearly explained before the matrixes were shown. In addition, some conclusions that further explained the results were written. The result section was clear and concise.

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Do you consider the author's conclusions to be credible?

The conclusions stated were either proven to be correct or reasonable given the results. As no incorrect or unmotivated conclusions were drawn, the conclusions are considered credible.

What is your opinion of the bibliography? What types of literature are included? Do you feel they are relevant?

The bibliography is concise but seems to contain only relevant literature listed in an accessible way. The three sources explaining the games Kamisado and Arimaa are web pages and the four sources related to the algorithms used in the report are books.

Which sections of the report were difficult to understand?

No section was deemed very difficult to understand, though the section 4.1.6 "Combining the heuristic evaluation functions" was the most difficult to understand. However, most difficult is only relative to the other sections in the report, as the section per se was not difficult to understand.

Other comments on the report and its structure.

The report was deemed well structured, with no section missing or redundant.

What are the stronger features of the work/report?

The strongest feature of the report is the thorough yet accessible explanation of the background and the algorithms utilized by the playing agent. These are explained in such a clear way that despite having no familiarity with the playing agent field, one could easily understand how and why the algorithms were applied on a game that the same section explained the rules of.

What are the weaker features of the work/report?

No section was weak per se, but the results obtained from the marathon matches (section 4.2) were slightly disappointing as they did not show one heuristic as superior. Furthermore, the methodology for evaluating the heuristics was, due to time restraints, not as thorough as it could have been.

What is your estimation of the news value of the work?

No groundbreaking research was accomplished for the field of game playing agents. However, as Kamisado playing agents did not appear to exist prior to this report, the work was important as it extended the game playing agent field by showing that the proven algorithms also work well for the game Kamisado.

Summarize the work in a few lines.

A Kamisado game playing agent is created by searching the game tree with the minimax algorithm combined with alpha-beta pruning and iterative deepening (n-ply look-ahead). This completely solves a single round of Kamisado by exhaustively searching the game tree. However, the complexity for exhaustively searching a marathon match of Kamisado is unfeasible. Therefore, the minimax algorithm was instead used with three heuristic evaluation functions which were combined with range voting to allow the game playing agent to approximate which moves would be the most beneficial.

Different weights were applied to the heuristics and were then tested by playing the agents against each other, allowing the authors to draw conclusions about which heuristics were the most important. The best agents were capable of beating the authors in Kamisado.

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Preliminary questions to author:

1. How much of a difference does the n in the n -ply look-ahead algorithm make and was there any specific reason you chose 5?
2. Since your heuristics do not account for Sumo towers, how important are these Sumo towers in human vs human games of Kamisado?
3. You do not particularly place much weight on the regrouping and mention thus in your future work. To what degree do you think the lack of regrouping consideration influences your algorithm when matched against human players?