

I. IDENTIFICATION DATA

Thesis title:	A heuristic algorithm for Kriegspiel
Author's name:	Foret Vojtěch
Type of thesis :	master
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Department of Computer Science
Thesis reviewer:	Ing. Matej Uhrín
Reviewer's department:	Department of Computer Science

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	challenging
<i>How demanding was the assigned project?</i>	
The goal of the thesis was to review existing algorithms for solving imperfect information games (focusing on Kriegspiel), implement the game, implement the "sota" algorithm and extend it using a traditional chess engine as a heuristic. I rate the assignment as challenging as it requires significant research into topics not usually covered during the study.	

Fulfilment of assignment	fulfilled
<i>How well does the thesis fulfil the assigned task? Have the primary goals been achieved? Which assigned tasks have been incompletely covered, and which parts of the thesis are overextended? Justify your answer.</i>	
The author fulfilled all of the requirements.	

Methodology	correct
<i>Comment on the correctness of the approach and/or the solution methods.</i>	
The experiment part of the thesis is solid. The author uses correct methodology for evaluating algorithms against each other and correctly reports findings with confidence intervals.	

Technical level	A - excellent
<i>Is the thesis technically sound? How well did the student employ expertise in the field of his/her field of study? Does the student explain clearly what he/she has done?</i>	
The thesis is technically sound. The student employed expertise beyond his field of study.	

Formal and language level, scope of thesis	C - good
<i>Are formalisms and notations used properly? Is the thesis organized in a logical way? Is the thesis sufficiently extensive? Is the thesis well-presented? Is the language clear and understandable? Is the English satisfactory?</i>	
<p>The language of the thesis is understandable and the thesis is sufficiently extensive. With that being said, I found the text to be difficult to read due to the following:</p> <ul style="list-style-type: none"> - Confusing/incorrect capitalization of words: "Chess, Bridge, ..." and other games are capitalized in the whole text and also "Šachy" in the abstract. There are words capitalized all over the text that are not proper nouns. - Typos: "applicatbl", "untill", "onlyslightly" and quite a few others. - Missing spaces, commas and full stops. <p>Overall, the impression from the text is as if it has not been proofread. Additionally:</p> <ul style="list-style-type: none"> - Section 4.4.3, page 26 seems unnecessary. It would be sufficient to simply state that the referenced paper does not explain algorithms sufficiently. - Section 4.4.3, pages 23, 24 would be much easier to read if all of the "The probability of a move to be legal is a sum of probabilities of the squares..." long worded paragraphs were expressed using the introduced formal notation. 	

Selection of sources, citation correctness**A - very good**

Does the thesis make adequate reference to earlier work on the topic? Was the selection of sources adequate? Is the student's original work clearly distinguished from earlier work in the field? Do the bibliographic citations meet the standards?

The author cites around 22 sources in his extensive review of the existing algorithms and clearly distinguishes his own work from cited works. Bibliographic citations meet the standards apart from a small error of missing reference for "StrangeFish".

Additional commentary and evaluation (optional)

Comment on the overall quality of the thesis, its novelty and its impact on the field, its strengths and weaknesses, the utility of the solution that is presented, the theoretical/formal level, the student's skillfulness, etc.

III. OVERALL EVALUATION, QUESTIONS FOR THE PRESENTATION AND DEFENSE OF THE THESIS, SUGGESTED GRADE

Summarize your opinion on the thesis and explain your final grading. Pose questions that should be answered during the presentation and defense of the student's work.

The thesis is solid, there is a good amount of work behind the implementations, the results are well presented and significant. However, for a perfect grade I would expect the text to be on a higher level.

The grade that I award for the thesis is **B - very good**

Questions:

1. Will the findings be compiled into a scientific paper?
2. The abstract mentions that games with imperfect information are closer to real-world problems: Can you present a real-world problem that maps well to Kriegspiel? What assumptions/reductions would have to be made for it to be applicable?

Date: **16.6. 2021**

Signature: Matej Uhrín