THESIS SUPERVISOR'S REPORT

I. IDENTIFICATION DATA

Thesis title:	**Heuristic Evaluation in the Scotland Yard Game**
Author's name:	**Daniel Borák**
Type of thesis:	bachelor
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Department of Cybernetics
Thesis reviewer:	Vojtěch Kovařík
Reviewer's department:	Department of Computer Science

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment **challenging**

How demanding was the assigned project?

The parts (1), (2), and (4) of the assignment (getting familiar with the concepts and literature, comparison of the approach to baselines) were straightforward. The third step involved coming up with a novel modification of an existing algorithm, which could pose a challenge.

Fulfilment of assignment **fulfilled with major objections**

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.

The thesis fails to meet a portion of the assigned goals and offers no good explanation why. Indeed, the thesis goal (1) included getting familiar with the one-sided partially observable games model. This model is never mentioned in the text except for in the introduction.

Moreover, while the thesis goals (3b) and (4) (extension of the MCTS algorithm and comparison to existing approaches) are addressed by the thesis, the writing makes it hard to assess the quality of this work (my *impression* is that the work here is "sufficient").

Activity and independence when creating final thesis **F - failed.**

Assess whether the student had a positive approach, whether the time limits were met, whether the conception was regularly consulted and whether the student was well prepared for the consultations. Assess the student's ability to work independently.

Daniel Borák worked on the thesis very independently. Or rather, he worked on it *too* independently --- apart from the initial meeting before assigning the thesis, I had no contact with him whatsoever. He did not reply to any of my emails and did not send me any updates about his progress. During both the assignment and submission of the thesis assignment, the student failed to sort some of the formalities in time for the official deadlines.

Technical level **D - satisfactory.**

Is the thesis technically sound? How well did the student employ expertise in his/her field of study? Does the student explain clearly what he/she has done?

For the implementation part of the thesis, the student had to understand and use Monte Carlo tree search, a non-trivial game-solving algorithm. He used an existing implementation, fixed some bugs in it, and added extensions and modifications to fit his experimental setup. I would not rate this part of the work as "good", but it does seem satisfactory. After reading the experimental section, I get the impression that the experimental methodology is reasonable. However, its presentation and explanation is unclear.

Formal level and language level, scope of thesis **F - failed.**

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?

The notation used in the thesis (introduced in Section 4.1) is mathematically insufficiently rigorous. The mathematical formulas are often written in plain text (functions literally being written as "u : Z -> R" instead of using latex). A huge

number of definite/indefinite articles is missing --- the text has not been spell-checked. Moreover, the overall level of English is unsatisfactory (but perhaps still borderline acceptable for a Bc. thesis). Even more importantly, the text is not presented very well --- the point of individual paragraphs is often hard to figure out, the content of individual sections is not explained/outlined, and the introduction does not give an accurate impression of the thesis' contents. Some topics are mentioned in the text and then never followed-up on (e.g., DeepStack and CFR in the introduction, neural networks in Section 4.2).

Selection of sources, citation correctness **C - 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 references mostly seem adequate and appropriate. However, the thesis does not make it clear whether the offered improvements of the baseline MCTS (e.g., the localization of Mr. X) are novel or not. (No citations are given, but neither is it stated anywhere that this is the author's contribution.)

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.

Because of the poor writing, I find it hard to assess the novelty and impact of the thesis. My overall impression is that the student is capable of doing good technical work but failed to give the thesis – the writing in particular -- the appropriate effort.

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.

If the grade was based solely on the implementation part, I would find the thesis slightly unsatisfactory, due to its scope, but acceptable. However, there are many other issues with the thesis: insufficiently addressed goal (1) from the thesis assignment, lack of proof-reading, unclear writing, poor typesetting, unclear novelty of the contribution, literally non-existent communication with me as the supervisor. As a result, I am recommending that the thesis is not accepted.

The grade that I award for the thesis is **F - failed.**

Date: **19.1.2021** Signature: