



Supervisor's statement of a final thesis

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Thesis title: Simple Object Machine implementation in functional programming language
Branch / specialization: Computer Science
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Evaluation criteria

1. Fulfillment of the assignment

- ▶ [1] assignment fulfilled
- [2] assignment fulfilled with minor objections
- [3] assignment fulfilled with major objections
- [4] assignment not fulfilled

All goals has been successfully carried out. This thesis is on the harder side given the extensive implementation. The SOM programming language is small, yet to execute it one has to build the whole compiler pipeline and the VM.

2. Main written part

80/100 (B)

There is a lot to like on the written part: it is well written and to the point. The brevity is refreshing for a PL person, but might be a hindrance for people not that familiar with VM implementation, let alone Haskell. In general it would be good to extend it with more code listings so all the main data definitions are present making it standalone. In the current form one has to reach to the implementation.

In many cases however, the text follows the descriptive story, i.e., explains what has been done rather than why it has been done. Finally, the second part of the assessment, i.e., the one which compares the imperative approach with the functional could have been greatly expanded. I would have cut on the SOM description and instead focus on the comparison.

3. Non-written part, attachments

95/100 (A)

The implementation is rather extensive and well executed.
Haskell is not a typical language to write VMs in and thus there were a few challenges.

4. Evaluation of results, publication outputs and awards

95 /100 (A)

The result is a functional implementation of the SOM language in a pure, lazy, programming language.

To the best of my knowledge, the first FP approach to SOM.

Given that, it would be good to let the world know (public repo, contact Stefan Marr to list HASOM on the official page, convert the thesis essentials into a blog post and publish it).

5. Activity of the student

- ▶ [1] excellent activity
- [2] very good activity
- [3] average activity
- [4] weaker, but still sufficient activity
- [5] insufficient activity

Always way prepared, to the point, very much enjoyed working with Filip.

6. Self-reliance of the student

- ▶ [1] excellent self-reliance
- [2] very good self-reliance
- [3] average self-reliance
- [4] weaker, but still sufficient self-reliance
- [5] insufficient self-reliance

Filip knows what he is doing - he has done the work with a minimal need of guidance.

The overall evaluation

95 /100 (A)

This thesis has been an intellectual exercise answering the question how do you implement a dynamic object-oriented programming language in a pure functional programming language such as Haskell. The result is a working compiler and a runtime which quite nicely shows the tradeoffs.

Instructions

Fulfillment of the assignment

Assess whether the submitted FT defines the objectives sufficiently and in line with the assignment; whether the objectives are formulated correctly and fulfilled sufficiently. In the comment, specify the points of the assignment that have not been met, assess the severity, impact, and, if appropriate, also the cause of the deficiencies. If the assignment differs substantially from the standards for the FT or if the student has developed the FT beyond the assignment, describe the way it got reflected on the quality of the assignment's fulfilment and the way it affected your final evaluation.

Main written part

Evaluate whether the extent of the FT is adequate to its content and scope: are all the parts of the FT contentful and necessary? Next, consider whether the submitted FT is actually correct – are there factual errors or inaccuracies?

Evaluate the logical structure of the FT, the thematic flow between chapters and whether the text is comprehensible to the reader. Assess whether the formal notations in the FT are used correctly. Assess the typographic and language aspects of the FT, follow the Dean's Directive No. 52/2021, Art. 3.

Evaluate whether the relevant sources are properly used, quoted and cited. Verify that all quotes are properly distinguished from the results achieved in the FT, thus, that the citation ethics has not been violated and that the citations are complete and in accordance with citation practices and standards. Finally, evaluate whether the software and other copyrighted works have been used in accordance with their license terms.

Non-written part, attachments

Depending on the nature of the FT, comment on the non-written part of the thesis. For example: SW work – the overall quality of the program. Is the technology used (from the development to deployment) suitable and adequate? HW – functional sample. Evaluate the technology and tools used. Research and experimental work – repeatability of the experiment.

Evaluation of results, publication outputs and awards

Depending on the nature of the thesis, estimate whether the thesis results could be deployed in practice; alternatively, evaluate whether the results of the FT extend the already published/known results or whether they bring in completely new findings.

Activity of the student

From your experience with the course of the work on the thesis and its outcome, review the student's activity while working on the thesis, his/her punctuality when meeting the deadlines and whether he/she consulted you as he/she went along and also, whether he/she was well prepared for these consultations.

Self-reliance of the student

From your experience with the course of the work on the thesis and its outcome, assess the student's ability to develop independent creative work.

The overall evaluation

Summarize which of the aspects of the FT affected your grading process the most. The overall grade does not need to be an arithmetic mean (or other value) calculated from the evaluation in the previous criteria. Generally, a well-fulfilled assignment is assessed by grade A.