FACULTY
OF INFORMATION
TECHNOLOGY
CTU IN PRAGUE

Supervisor's statement of a final thesis

Supervisor:	Mgr. Ján Antolík, Ph.D.
Student:	Jan Sobotka
Thesis title:	Decoding visual stimuli from cortical activity using neural networks
Branch / specialization:	Artificial Intelligence 2021
Created on:	16 May 2024

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 work objectives were accurately formulated and achieved. The student exceeded the scope of the assignment (e.g., tested broader range of DNN architectures) without negatively impacting the achievement of the goals.

2. Main written part 98 /100 (A)

The thesis is well written in concise but clear language. English is excellent. The overall volume of content easily meets the requirements of bachelor thesis. The sources are diligently and appropriately cited. Since the thesis is highly interdisciplinary (on the interface of neuroscience and machine learning) it was challenging to write it such that it is accessible to non-experts, but I think the student did a good job at describing the motivation and context. The biggest strength is the breath and significance of the results which I think are excellent.

3. Non-written part, attachments 100 /100 (A)

The attachments which are primarily in the form of tables and supplementary figures are adequate and document well the minor results of the thesis.

4. Evaluation of results, publication outputs and awards 100 /100 (A)

The results of the thesis are excellent, both in terms of the range of DNN architecture the student explored, and the significance of the findings. The results represent an

improvement on the state-of-the-art in decoding visual stimuli from population activity in primary visual cortex. We expect the thesis will provide a basis for a scientific article.

5. Activity of the student

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

The student worked systematically and independently throughout the duration of the project, generating a steady stream of new results. Student diligently followed all meetings and feedback.

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

Student actively proposed new model architectures, experiments and required minimal external input on writing of the report.

The overall evaluation 100 /100 (A)

This is an excellent thesis that offers true advance on state-of-the art of a significant scientific problem - stimulus decoding from primary visual cortex. Together with the excellent work ethic of the student I am evaluating with the highest marks.

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.