



Supervisor's statement of a final thesis

Student: Tomáš Detko
Supervisor: Ing. Jakub Žitný
Thesis title: Tumor detection in CT images using Neural Networks
Branch of the study: Knowledge Engineering

Date: 10. 6. 2020

<i>Evaluation criterion:</i>	<i>The evaluation scale: 1 to 4.</i>
1. Fulfilment of the assignment	<u>1 = assignment fulfilled,</u> 2 = assignment fulfilled with minor objections, 3 = assignment fulfilled with major objections, 4 = assignment not fulfilled
<i>Criteria description:</i> 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.	
<i>Comments:</i> All parts of the assignment are fulfilled; the student analyzed the topic, chose proper architectures, preprocessing techniques, metrics, and parameters, and communicated results clearly. The only thing missing is a comparison to published results or KiTS leaderboard.	
<i>Evaluation criterion:</i>	<i>The evaluation scale: 0 to 100 points (grade A to F).</i>
2. Main written part	90 (A)
<i>Criteria description:</i> 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. 26/2017, 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.	
<i>Comments:</i> The whole structure of the thesis is reasonable; the student introduces topics that are needed for understanding the setting of his experiments. All required topics are described, and there is nothing that would be useless for the reader. We can see some small grammar mistakes and complicated transitions between chapters, but the overall quality of the content compensates for it. The student understands the topic, chooses proper architectures and metrics, and clearly communicates the results. On the other hand, some claims in the text are not correctly cited (especially in 5.4.1), cross-validation of the results is not utilized, and hyper-parameter tuning is not properly described.	
<i>Evaluation criterion:</i>	<i>The evaluation scale: 0 to 100 points (grade A to F).</i>
3. Non-written part, attachments	85 (B)
<i>Criteria description:</i> 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.	
<i>Comments:</i> The tech stack for the experiments is robust and used correctly. Reproducibility is somewhat achievable here; however, the repository is not documented thoroughly, and one would need to spend a while to use it for further experimentation. Bonus points for working with Horovod and Metacentrum cluster.	
<i>Evaluation criterion:</i>	<i>The evaluation scale: 0 to 100 points (grade A to F).</i>
4. Evaluation of results, publication outputs and awards	85 (B)
<i>Criteria description:</i> 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.	

Comments:

The results are great, we can see that the student put much effort to tune the models. Only a few more experiments (and a lot more computational resources) could make the results excellent. It is too bad that we cannot compare these results to the KiTS leaderboard.

Evaluation criterion: *The evaluation scale: 1 to 5.*

5. Activity and self-reliance of the student

5a:
1 = excellent activity,
2 = very good activity,
3 = average activity,
4 = weaker, but still sufficient activity,
5 = insufficient activity
5b:
1 = excellent self-reliance,
2 = very good self-reliance,
3 = average self-reliance,
4 = weaker, but still sufficient self-reliance,
5 = insufficient self-reliance.

Criteria description:
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 (5a). Assess the student's ability to develop independent creative work (5b).

Comments:

The student was very active and independent.

Evaluation criterion: *The evaluation scale: 0 to 100 points (grade A to F).*

6. The overall evaluation

90 (A)

Criteria description:
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.

Comments:

Student's activity, determination, and understanding of the topics are substantial. Resulting work is high-quality, and only small details are missing to perfection.

Signature of the supervisor: