



Supervisor's statement of a final thesis

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Supervisor: Ing. Jakub Žitný
Thesis title: Detecting abnormalities in X-Ray 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 adequately fulfilled except for the comparison to the "outside world" (details below).	
<i>Evaluation criterion:</i>	<i>The evaluation scale: 0 to 100 points (grade A to F).</i>
2. Main written part	92 (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 structure of the thesis is great; the written text is excellent in both theoretical and practical parts. It is clear that the student understands the problem in-depth, and all partial solutions are very creative and useful. The only thing that could be improved is the presentation of results. There is no table with accumulated results and proper metrics. Claiming a "fine accuracy" (in 3.3.1.2) or "best results vary for different models" (in 3.3.2.3) is not a way to report results. Figure 3.5 shows damage assessment results, but it is not easy to comprehend.	
<i>Evaluation criterion:</i>	<i>The evaluation scale: 0 to 100 points (grade A to F).</i>
3. Non-written part, attachments	83 (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 chosen tech stack is valid, and the whole repository has a proper logical structure. The code is quite messy, but after a bit of refactoring it could be used for further experiments	
<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	80 (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, in fact, quite impressive, and the whole pipeline can be seen as an excellent achievement. Although the results are not presented properly, there are many working custom solutions to sub-problems that arose during the development. There is no comparison to the “outside world.” However, the student did submit his results to the RA2 challenge and appeared in the middle of the leaderboard. That is not a high accomplishment per se, but given the complexity of the task, it is admirable. Also, more experimentation, especially addressing low-level feature engineering idea, mentioned in 3.4.2, could help here a lot.

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:

Very good activity and independence, the student kept coming up with a lot of creative solutions.

Evaluation criterion:

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

6. The overall evaluation

89 (B)

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:

The overall quality is of a very high standard; achieved results are impressive and reproducible. The presentation of results could be better, but this is possible to put right during the defense.

Signature of the supervisor: