



Supervisor's statement of a final thesis

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Thesis title: Preprocessing of X-Ray images for COVID-19 detection Neural Networks
Branch / specialization: Knowledge Engineering
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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 parts of the assignment are fulfilled. The student chose to follow the harder parts of the assignment making it quite challenging for a Bachelor's thesis.

2. Main written part 80/100 (B)

The structure of the work is clear, and the reader is not bored with the obvious basics. The flow goes from the crucial concepts to the core of the thesis and experiments. The theoretical part is solid, with good English. Most required building blocks are described, and no useless parts are present. It is clear that the student understands the topic. On the other hand, the reading flow is not always easy to follow, and especially the beginning and the end of Chapter 4 are not connected to the whole story sufficiently.

3. Non-written part, attachments 80/100 (B)

The attached experiments are high-quality. Weights and biases - a service for visualizing experiments has been used very well, making a clear picture of what's been explored. Generated dataset is also attached for further research if needed. This whole experimenting required a lot of open-source code reuse, making the whole setup and reproducibility very difficult. That being said, provided notebook would need a lot of extra work in order to be truly reproducible.

4. Evaluation of results, publication outputs and awards

75 /100 (C)

The findings are impressive, but in order to use them in practice, one would need a bit more experimenting on top of this work.

5. Activity of the student

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

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

The overall evaluation

82 /100 (B)

The topic of this thesis was very difficult on several levels - theoretical understanding, research of the state-of-the-art models, reproducing what has been published and connecting it all together to our own story. The student has succeeded in coping with all of these difficulties, was able to provide working solutions to the current problems in the area, and has shown that following the trends in using generative models for synthesising data is a valid step in specific use-cases. Nevertheless, many more things could have been tried in order to provide deeper evidence on how to use synthesis in practice. The scope and depth of the work are more than appropriate though.

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.