Technical University Brno
Faculty of Information Technologies

Opinion of the opponent of the bachelor's thesis

Student: Glos Michal

Topic: The use of GAN-type networks for improving the detection and recognition of traffic signs (id 23866)

Opponent: Musil Petr, Ing., UPGM FIT BUT

1. Difficulty of assignment

moderately difficult assignment

The assignment requires the student to study advanced methods of object detection and image generation using CNN.
On the other hand, nowadays there is a large amount of ready-made software and instructions that solve very similar topics and experiments. The actual work is therefore just to appropriately connect already existing blocks. Therefore, the assignment can be considered moderately difficult.

2. Fulfillment of assignment requirements

assignment completed

3. Scope of the technical report

is within the usual range

The scope of the technical report is at the upper end of the usual range. In this case, however, the topics covered and the visualization of the experiments performed were so extensive that a larger scale is not a problem.

4. Presentation level of the submitted work

85 b. (B)

The structure of the work is logical and the chapters follow each other. It clearly introduces the reader to the issue of object detection and generating datasets to improve detection accuracy. The theoretical part of the work in chapters 2 to 4 is more difficult to read, it could be more compact and the student should better choose which information is important for the reader. The chapters describing the student's own work and experiments are well-crafted, it is very understandable what was to be achieved, what tools and architectures of neural networks were used and what results were achieved in the experiments. I miss the discussion of the results of the experiment with the previously published results.

5. Formal modification of the technical report 85 b. (B)

The language level of the work is good and without problems. Images of architectures of individual neural networks, e.g. 5.5, 5.6, 5.7 and further, if they are the work of the author, should be planted in raster format, if they were taken or generated, a citation should be given. The work is typed with the help of the LaTeX system, typographically it is at a very good level.

6. Work with literature

80 b. (B)

The student used a large number of high-quality resources, familiarized himself with the topic being addressed, was able to correctly use modern methods of object detection and data set generation, and describes some methods in detail in the text.
On the other hand, the citation in the literature review is not handled consistently. Many sources are cited only by the name of the author, the title of the work and the year. This abbreviated format can be tolerated in articles where there is often not enough space, but in a bachelor's thesis it is necessary to add additional data according to the citation standard, but at least the name of the conference or periodical and the DOI for finding the source.

7. Implementation output 90 b. (A)

The student created a high-quality data set generator and performed a set of interesting and meaningful experiments with the existing tool for working with detectors.

8. Usability of the results

The results achieved by the student in the experimental work are excellent and, despite the use of simple methods, they probably achieve a detection accuracy comparable to the current state of knowledge. However, the work lacks a discussion of the results, so it is difficult to estimate whether it is caused by the methods used or, for example, a different dataset.

9. Defense questions

- Compare the results of your experimental work with previously published work.

10. Overall assessment 85 b. very good (B)

The student did a very good job. I appreciate the dataset generator and the number of experiments created.
The experimental results of the work are at the level of the current state of knowledge. For a better evaluation, it would be necessary to better discuss the results of the experiments in the text of the thesis and correct the citations according to the citation standard.

Declaration: I give the BUT in Brno permission to publish this assessment in paper and electronic form.

In Brno on: June 4, 2021

Petr Musil, Ing.
opponent