THESIS SUPERVISOR'S REPORT

I. IDENTIFICATION DATA

Thesis title:	**Improving the HardNet Descriptor**
Author's name:	**Milan Pultar**
Type of thesis :	master
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Department of Cybernetics
Thesis Supervisor:	Dmytro Miskin

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	challenging

How demanding was the assigned project?

The HardNet descriptor is well polished and optimized method, which recently has been shown to outperform the competing approaches in a large scale evaluation. Thus, I consider the task of improving the HardNet descriptor to be challenging.

Fulfilment of assignment	fulfilled

How well does the thesis fulfil the assigned task? Have the primary goals been achieved? Which assigned tasks have been incompletely covered, and which parts of the thesis are overextended? Justify your answer.

Milan was able to conduct all the necessary experiments and respond to my feedback. All the assigned tasks were fulfilled.

Activity and independence when creating final thesis	A - excellent.

Assess whether the student had a positive approach, whether the time limits were met, whether the conception was regularly consulted and whether the student was well prepared for the consultations. Assess the student's ability to work independently.

All the tasks were done in time and the consultation time was fruitful and well spent. Moreover, the part of the experiments, which lead to the improvements, were proposed by Milan himself. Milan has shown rigor in experiments and independent thinking.

Technical level	A - excellent.

Is the thesis technically sound? How well did the student employ expertise in his/her field of study? Does the student explain clearly what he/she has done?

The part of the thesis content, which is about AMOS-Patches dataset creation, has been published at CVWW 2019 and received 6 citations according the Google Scholar. Among the works, which cite the paper, there is one journal publication and one ICCV publication. I believe that the more recent part of the thesis is to be a similar level of quality and I encourage Milan to submit it to a conference.

Formal level and language level, scope of thesis	A - excellent.

Are formalisms and notations used properly? Is the thesis organized in a logical way? Is the thesis sufficiently extensive? Is the thesis well-presented? Is the language clear and understandable? Is the English satisfactory?

Milan has spent a considerable amount of time working on the writing quality and multiple iteration on adopting the feedback I gave him.

Selection of sources, citation correctness	A - excellent.

Does the thesis make adequate reference to earlier work on the topic? Was the selection of sources adequate? Is the student's original work clearly distinguished from earlier work in the field? Do the bibliographic citations meet the

standards?
The prior work is acknowledged well and the citations as correct.

Additional commentary and evaluation (optional)
Comment on the overall quality of the thesis, its novelty and its impact on the field, its strengths and weaknesses, the utility of the solution that is presented, the theoretical/formal level, the student's skillfulness, etc.

III. OVERALL EVALUATION, QUESTIONS FOR THE PRESENTATION AND DEFENSE OF THE THESIS, SUGGESTED GRADE

During the work on thesis, Milan has shown creative approach to problem solving, rigor in experiments and independent thinking. It was a pleasure to work with him and I learned a lot myself during the collaboration.
The technical outcome of the Milan master`s project – HardNet8PT descriptor has finished 4th in the stereo track of the CVPR 2020 Image Matching Challenge among more than hundred submissions. We plan to submit the work describing it to the one of the scientific conferences on computer vision.
Regarding the thesis itself, I believe, I am not the one who should evaluate it, but the thesis reviewer.

The grade that I award for the thesis is | A - excellent. |

Date: | 06/11/20 | Signature: