THESIS REVIEWER'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 reviewer:	Anastasiia Mishchuk
Reviewer's department:	EPFL

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	**challenging**

How demanding was the assigned project?

The objective of the thesis was reasonably challenging - to improve the HardNet (state-of-the-art) descriptor and/or the image matching pipeline, which was successfully achieved by extensive experiments with datasets, data sampling and architectures and hyperparameters of training setup. Moreover, novel patches dataset for descriptors evaluation was introduced.

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.

The assigned task was fully fulfilled. Multiple objectives were achieved: author conducted impressive systematic study on the influence of various model architectures, data and dataset setups, training hyperparameters and provided evaluation on newly created AMOS patches dataset and IMW Phototourism datasets.

Methodology	**correct**

Comment on the correctness of the approach and/or the solution methods.

Methodology was correctly chosen.

Technical level	**A - excellent.**

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

Technical level is high. Student clearly explained and covered all steps in all chapters, as well as conclusions for the presented results.

Formal and language level, scope of thesis	**B - very good.**

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?

Notations were properly used. Thesis is well-structured and organized in clear and logical way that is easy to follow. Thesis is sufficiently extensive and well-presented.

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?

Sources and citations are correctly selected. The introduction section clearly presents earlier work in the field as well as justification for the necessary improvements.

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.
The overall quality of the thesis is high.

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

Summarize your opinion on the thesis and explain your final grading. Pose questions that should be answered during the presentation and defense of the student's work.

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

Date: **15.6.2020**   Signature: