

I. IDENTIFICATION DATA

Thesis title:	Robust Estimation of Geometric Models for Retrieval with Neural Networks
Author's name:	Daniel Hubáček
Type of thesis :	master
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Cybernetics
Thesis reviewer:	Prof. Mgr. Ondřej Chum, Ph.D.
Reviewer's department:	FEE, Cybernetics

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	challenging
<i>How demanding was the assigned project?</i>	
The problem was well defined, number of different directions to explore. Required good programming skill, understanding of the origin of local features (hand-crafted local features, convolutional NN, transformers, each outputs local features with different precision in space and scale), skills in multi-view geometry, ability to build upon work of others.	

Fulfilment of assignment	fulfilled
<i>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.</i>	
Unfortunately, most of the experiments and directions brought negative results (no significant improvement over no or weaker geometry). These negative results prevented the work to get into the most interesting part of exploiting positive results. The amount of feature sources, models, methods and experiments is sufficient for a solid master thesis.	

Activity and independence when creating final thesis	B - very good.
<i>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.</i>	
Most of the time was Bc. Hubacek very active, independent and fast. Occasionally, we got stuck in periods with rather slow progress.	

Technical level	B - very good.
<i>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?</i>	
The overview of the methods used in the thesis and also of some related methods is comprehensive. Even though the contributions of the student are described well, these are not clearly pointed out or separated from the prior knowledge. This should have been caught by the supervisor (myself) prior to submission of the thesis.	

Formal level and language level, scope of thesis	A - excellent.
<i>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?</i>	
Formalism, organization and presentation is of high standards. It is written in good English, very little guidance in this aspect was necessary.	

Selection of sources, citation correctness	B - very good.
<i>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?</i>	
As mentioned before, the thesis would benefit from a sub-section "Contributions" bullet-listing the contributions of the student. References and description of the prior art is good.	

**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 spatial verification code can be used by other researchers.

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

Student have shown a great level on programming skills, the ability to understand mathematical concepts. Unfortunately, most of the results were negative, no significant improvement was / could have been achieved, which is often a frustrating experience. Overall, all expected directions have been exploited or visited. Even though this diploma thesis is not of an award winning level, it delivers a solid piece of work, which still just falls within the excellent grade A.

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

Date: **8.6.2024**

Signature: