

I. IDENTIFICATION DATA

Thesis name:	Indoor localization utilizing dense pointcloud
Author's name:	Anna Zderadičková
Type of thesis :	master
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Department of Computer Graphics and Interaction (K13139)
Thesis supervisor:	Ing. Michal Polic
Supervisor's department:	Department of Cybernetics (K13133)

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment <i>Evaluation of thesis difficulty of assignment.</i>	extraordinarily challenging
<p>The student had to understand linear algebra and projective geometry clearly to find the transformations between HoloLens coordinate systems by reverse engineering. Constructing the ground truth localization dataset required in-depth knowledge of several interfaces, libraries, and devices (Matterport, HoloLens, Vicon) and working in several development tools and environments (Matlab, C++, Python). The student ran and evaluated several state-of-the-art methods and their combinations (Hloc, FCGF, R-ICP, RANSAC, Teaser++, PREDATOR). Moreover, the student wrapped these methods into the containers and integrated them into Meshroom GUI.</p>	

Satisfaction of assignment <i>Assess that handed thesis meets assignment. Present points of assignment that fell short or were extended. Try to assess importance, impact or cause of each shortcoming.</i>	fulfilled
<p>The student fulfilled all the requirements.</p>	

Activity and independence when creating final thesis <i>Assess that student had positive approach, time limits were met, conception was regularly consulted and was well prepared for consultations. Assess student's ability to work independently.</i>	A - excellent.
<p>We had regular meetings. The student was always well-prepared. She also proved that she could work independently.</p>	

Technical level <i>Assess level of thesis specialty, use of knowledge gained by study and by expert literature, use of sources and data gained by experience.</i>	A - excellent.
<p>We organized several reading groups focused on recent dense point cloud alignment methods. The student could describe complicated topics and math equations well.</p>	

Formal and language level, scope of thesis <i>Assess correctness of usage of formal notation. Assess typographical and language arrangement of thesis.</i>	B - very good.
<p>We spent a little time polishing the thesis before the submission. However, the notation and text changes were significant. I am not able to directly point out the unclear text. Yet, I believe there will be a few vague or misleading sentences.</p>	

Selection of sources, citation correctness <i>Present your opinion to student's activity when obtaining and using study materials for thesis creation. Characterize selection of sources. Assess that student used all relevant sources. Verify that all used elements are correctly distinguished from own results and thoughts. Assess that citation ethics has not been breached and that all bibliographic citations are complete and in accordance with citation convention and standards.</i>	A - excellent.
<p>The student studied the recent papers carefully and presented them to other students in reading groups. The related work is cited (mainly the schemas overtaken from different articles).</p>	

Additional commentary and evaluation

Present your opinion to achieved primary goals of thesis, e.g. level of theoretical results, level and functionality of technical or software conception, publication performance, experimental dexterity etc.

Please insert your commentary (voluntary evaluation).

III. OVERALL EVALUATION, QUESTIONS FOR DEFENSE, CLASSIFICATION SUGGESTION

Summarize thesis aspects that swayed your final evaluation.

The thesis assignment encapsulates the studying of several interfaces, libraries, and development tools. The student proved a deep understanding of projective geometry and her ability to work independently. The codes developed are written in several environments and languages, leading to hard repeatability of the experiments. Therefore, all the appropriate methods were wrapped into the containers and integrated into the GUI. Anna Zderadičková did a lot of excellent work, and the thesis content is so extensive that it could be two good diploma theses. The only minor comment is that she polished the text closely to the deadline, which lead to some not-polished elements.

I evaluate handed thesis with classification grade **A - excellent**.

Date: **16.1.2023**

Signature:

