THESIS REVIEWER'S REPORT

I. IDENTIFICATION DATA

Thesis title:	**InLoc Visual Localization for ARI Robot**
Author's name:	**Tinatin Verdzeuli**
Type of thesis :	bachelor
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Department of Cybernetics
Thesis reviewer:	Karel Zimmermann
Reviewer's department:	Department of Cybernetics

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment **ordinarily challenging**

How demanding was the assigned project?

Please insert your comments here.

Fulfilment of assignment **fulfilled with minor objections**

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.

Quantitative evaluation of InLoc localization is missing.

Methodology **correct**

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

Please insert your comments here.

Technical level **D - satisfactory.**

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?

The experimental evaluation seems to be insufficient.

Author claims that the proposed localization system could not have been verified on the real robot due to the "time constraints" and "technical issues" such as camera malfunction. Instead, it was tested on the existing database, however no results have been reported in this work. What was the localization accuracy?

Also, evaluation on available gazebo simulator is missing. Author just mentions that "*We tested our client-server algorithm in a ARI Gazebo simulation until sensor data was correctly retrieved, send and answer was received.".*

Formal and language level, scope of thesis **C - 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?

The English level is better than average, however the overall description of the InLoc method (chapter 2.7) is vague. Author probably understands the method but description of the pipeline is very general. Also, the overall setup (inputs/outputs) was not clear to me from the very beginning. For example, it took me some time to understand that a 3D map of the environment and database of map-aligned images need to be created semi-manually in advance "*The provided query images are annotated with manually verified ground-truth 6DoF camera poses in the global coordinate system of the 3D map.*".

CTU CZECH TECHNICAL UNIVERSITY IN PRAGUE

THESIS REVIEWER'S REPORT

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?
Please insert your comments here.

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.
Please insert your comments here.

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.

English level is good, however the overall description of the InLoc method (chapter 2.7) is vague. The implementation of InLoc method was not part of the thesis, the main result is creating the ROS interface. It is hard for me to judge technical complexity of ROS-ARI interface, however typical ROS interfaces are not that complicated. The experimental evaluation seems to be insufficient, since no quantitative results has been reported. If the reasons, which prevent the author from performing the quantitative evaluation were caused by a third-party (hardware failure, covid restrictions etc), I am leaning towards assessing a better grade. The supervisor could help to clarify it.

Questions:

1. Have you performed any quantitative evaluation (either on real platform or in simulation)?

2. The localization system (especially the counting of matching pixels) seems to be inherently sensitive to illumination changes such as sun motion, opening/closing window blinds, switching off/on lights or using onboards lights. Is it possible to address these issues? Have you observed it?

The grade that I award for the thesis is **D - satisfactory.**

Date: **26.8.2021** Signature: