

## I. IDENTIFICATION DATA

<b>Thesis title:</b>	<b>Geometrical consistency for object pose estimation from images</b>
<b>Author's name:</b>	<b>Martin Malenický</b>
<b>Type of thesis :</b>	bachelor
<b>Faculty/Institute:</b>	Faculty of Electrical Engineering (FEE)
<b>Department:</b>	Department of Cybernetics
<b>Thesis reviewer:</b>	Radoslav Škoviera
<b>Reviewer's department:</b>	Department of Robotics and Machine Perception, CIIRC

## II. EVALUATION OF INDIVIDUAL CRITERIA

<b>Assignment</b>	<b>challenging</b>
The assignment was quite challenging. It required careful consideration of individual constraints and actually good understanding of algebra and calculus to properly derive the necessary equations.	

<b>Fulfilment of assignment</b>	<b>fulfilled</b>
The goals of the assignment were fulfilled.	

<b>Methodology</b>	<b>outstanding</b>
The proposed method was very good, considering this is a bachelor's thesis. All constraints from the assignment are considered and well implemented into the proposed method. The method was then evaluated against a baseline pose estimation and tested on established benchmark datasets.	

<b>Technical level</b>	<b>A - excellent.</b>
The technical level of the thesis is excellent. The proposed method and evaluation approach is well described, providing correctly written equation where necessary.	

<b>Formal and language level, scope of thesis</b>	<b>A - excellent.</b>
The thesis is logically organized into chapters discussing related work, describing the proposed method and finally the experimental evaluation. Formal side of the work is excellent and all necessary concepts are very well presented.	

<b>Selection of sources, citation correctness</b>	<b>A - excellent.</b>
Previous work is properly referenced and the citations meet the standards. Student's contributions are clearly described and distinguished from previous work.	

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

Overall, I evaluate the work as excellent. The student proposed a method that improved performance of the base pose estimator and generated some impressive results. The work is well written and technically sound.

I would like to have a few questions to ask:

- 1) The method by Wada et. al. ("*Morefusion: Multiobject reasoning for 6d pose estimation from volumetric fusion*", source [35] from the thesis) sounds similar in approach to your method. The key difference being the use of voxels instead of meshes. Are there any improvements and downsides to using meshes vs. voxels for enforcing of geometric pose consistency? Would your approach work with voxels as well?
- 2) What is the computational complexity and HW requirements of the proposed method?



## THESIS REVIEWER'S REPORT

- 3) Can you briefly discuss how would motion affect the algorithm? Would the proposed method work for dynamic scene?

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

Date: **10.6.2024**

Signature: