THESIS SUPERVISOR'S REPORT

1 IDENTIFICATION DATA

Thesis title: **Geometrical consistency for object pose estimation from images**
Author's name: **Martin Malenický**
Type of thesis: bachelor
Faculty/Institute: Faculty of Electrical Engineering
Department: Department of Cybernetics

Thesis reviewer: Ing. Vladimír Petrík, Ph.D.
Reviewer's department: IMPACT, CIIRC, ČVUT

2 EVALUATION OF INDIVIDUAL CRITERIA

Assignment   **challenging**

The challenge of the thesis lies in the combination of object pose estimation from images and differential distance computation between meshes.

Fulfilment of assignment   **fulfilled**

All goals of the thesis were achieved.

Activity and independence when creating final thesis   **A - excellent**

The activity of the student was excellent. The student was well prepared for all the consultations. Only minor improvement was observed after the geometricall consistency was implemented and evaluated according to the assignment. Student analyzed the results and observed that implementing the gravity might improve the results more. Therefore, the student implemented potential energy into the optimization that leads to the significant improvement of the state-of-the-art results. This was implemented on top of the assignment.

Technical level   **A - excellent**

The thesis is very well written. Several datasets are compared according to the metrics used in the literature. A significant improvement of the state-of-the-art results was achieved.

Formal and language level, scope of thesis   **A - excellent**

The thesis is well organized and the language and notation is clear and understandable.

Selection of sources, citation correctness   **A - excellent**

All relevant sources are properly cited.

3 OVERALL EVALUATION

The thesis is well written and it was shown that state-of-the-art pose estimation results could be improved significantly by considering physical consistency of the scene. The student managed to use state-of-the-art pose estimation algorithm, implemented optimization that enforce physical consistency, and evaluated the results on several datasets and in the robotics application. The thesis contributes to the European project Agimus and the student is preparing a scientific publication based on findings presented in the thesis.

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

Date: 12.06.2024   Signature: