



# THESIS REVIEWER'S REPORT

## 1 IDENTIFICATION DATA

Thesis title: **Real-time teleoperation of a robot arm for manipulating self-localization in human participants**  
Author's name: **Oleg Baryshnikov**  
Type of thesis: master  
Faculty/Institute: Faculty of Electrical Engineering  
Department: Department of Computer Science

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

## 2 EVALUATION OF INDIVIDUAL CRITERIA

**Assignment** **challenging**

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The goal is to control robot by motion tracking system. The project builds on previous existing software that needs to be analysed and reprogrammed.

**Fulfillment of assignment** **fulfilled with minor objections**

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Most of the goals were achieved. The plane motion with real subject was not tested. The comprehensive documentation of the code is missing.

**Methodology** **correct**

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The approach is correct. Function requirements are analysed and implemented.

**Technical level** **B - very good**

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The thesis is technically sound, however, it would benefit from more detailed explanation of the robot control part which is the most risky part in the project. It seems, based on the code, that student assumes that numerical IK always converge which might not be true and should be checked before execution of the control step.

Raw pointers should be avoided if possible and replaced by smart pointers. Raw pointers are used several times in the code without deletion of the allocated memory.

It is not clear from the text how computed position is executed on the robot and that the trajectory refers to just position of the end-effector. It should be clarified how is the orientation of the end-effector computed.

Conclusion states that contact forces limits are discussed in the thesis, however, I could not find any information about it.



## THESIS REVIEWER'S REPORT

**Formal and language level, scope of thesis**

**B - very good**

The readme of the code contains basic description of the project with compilation instruction. However, the code itself is not documented at all and the purpose of each function and meaning of the input/output variables is therefore unclear. As an example, there is a 300 lines long operator function without any comments in RobotWorker class. Since the work is focused on the implementation and the best practices are mentioned in the thesis, long functions and missing documentation should be avoided.

Several times it is mentioned that the gain from set 0.(6), 1, and 1.5 is applied. Meaning of parentheses in 0.(6) is not clear to me or it is a typo repeated several times. Axes of the graphs should be labeled.

**Selection of sources, citation correctness**

**A - excellent**

Citations are adequate and the work is clearly distinguished from earlier thesis on the same topic.

### 3 OVERALL EVALUATION

Overall, the thesis is well written but documentation is not complete from my point of view and there are some technical issues that should be addressed.

The grade that I award for the thesis is **B - very good**.

Date: 14.06.2024

Signature: