

I. IDENTIFICATION DATA

Thesis title:	Virtual hand guiding of industrial robots
Author's name:	Annea Futko
Type of thesis :	master
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Control Engineering
Thesis reviewer:	Ing. Štěpán Pšenička
Reviewer's department:	Company Kuka CEE GmbH

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	challenging
<i>How demanding was the assigned project?</i>	
<p>The assigned project was more than average demanding. It required a big amount of effort, resources, and time to complete successfully. The project presented numerous challenges and complexities that required careful planning, coordination, and problem-solving skills. The workload and requirements exceeded what would be considered typical or average for a project of similar nature. Completing the project required going above and beyond the usual level of effort and dedication. Overall, the project was considerably demanding, requiring a higher level of commitment and expertise to achieve the desired outcomes.</p>	

Fulfilment of assignment	fulfilled with minor objections
<i>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.</i>	
<p>The thesis has been fulfilled almost completely, successfully achieving its primary goals. However, there was a minor aspect related to safety that was not fully addressed. Specifically, the part concerning securing the robot against interaction with humans during movement, as outlined in ISO 10218-1 and ISO 10218-2, was not entirely prepared. This particular aspect could be further developed or expanded upon to ensure compliance with the safety standards mentioned. Nonetheless, the majority of the assigned task was effectively completed, demonstrating a strong level of accomplishment in the thesis.</p>	

Methodology	outstanding
<i>Comment on the correctness of the approach and/or the solution methods.</i>	
<p>The approach and solution methods employed in the project were generally correct. The methods chosen were appropriate and aligned with the objectives of the project. They demonstrated an understanding of the problem and were effective in addressing the key challenges.</p>	

Technical level	A - excellent.
<i>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?</i>	
<p>Yes, the thesis is technically okay. The student demonstrates a reasonable level of expertise in their field of study. She shows a sufficient understanding of the subject matter and utilize appropriate technical knowledge to address the research problem. The student also explains their work adequately, providing clear explanations of their research methodology, experimental procedures, data analysis techniques, and the outcomes obtained.</p>	

Formal and language level, scope of thesis	B - very good.
<i>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?</i>	

Yes, the thesis is organized in a logical way, providing a clear structure that allows readers to follow the flow of ideas and arguments. However, it should be noted that there are some instances where paragraphs are repeated in the text. Language is understandable.

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?

The selection of sources was adequate.

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.

The thesis is well done, demonstrating a solid understanding of the subject matter. Based on this excellent achievement, I assign the thesis a grade of A.

However, it is worth considering the practical aspects of robot programming in industry, where logic coding plays a significant role. In trajectory planning, there is often a need for detail work, requiring the programmer to work closely with the robot, its effector, and the target. Based on my experience, it seems that this approach may have limited applications, particularly in the context of industrial robot programming. However, it could potentially find suitable use in certain tasks such as painting. Are you aware of any other specific applications in industry where this trajectory planning method could be effective?

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

Date: **15.6.2023**

Signature: