CTU
CZECH TECHNICAL UNIVERSITY IN PRAGUE

# THESIS SUPERVISOR'S REPORT

## I. IDENTIFICATION DATA

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|---|---|
| **Thesis title:** | **Robotic Motion Planning Guided by Demonstration** |
| **Author's name:** | **David Kovář** |
| **Type of thesis:** | bachelor |
| **Faculty/Institute:** | Faculty of Electrical Engineering (FEE) |
| **Department:** | Department of Cybernetics |
| **Thesis reviewer:** | Ing. Vladimír Petrík, Ph.D. |
| **Reviewer's department:** | CIIRC, ČVUT |

## II. EVALUATION OF INDIVIDUAL CRITERIA

**Assignment** **Challenging**

*How demanding was the assigned project?*

The goal of the thesis was to use Humanoid Path Planning (HPP) software and pre-processed video demonstrations for solving task-and-motion planning problems. The assignment is challenging as it requires defining and implementing benchmark environments in weakly documented HPP software and proposing, implementing, and validating a novel combination of demonstrations with planning algorithms.

**Fulfillment of assignment** **Fulfilled**

*How well does the thesis fulfill 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.*

All goals have been fulfilled.

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

*Assess whether the student had a positive approach, whether the time limits were met, whether the conception was regularly consulted and whether the student was well prepared for the consultations. Assess the student's ability to work independently.*

We discussed the progress regularly. The student worked independently on the assigned tasks and solved all issues proactively. He also contributed to a few bug fixes to the used HPP library, allowing him to implement novel tasks.

**Technical level** **A - excellent.**

*Is the thesis technically sound? How well did the student employ expertise in his/her field of study? Does the student explain clearly what he/she has done?*

The thesis is technically well-prepared, and all contributions are well-explained. The experiments performed in the thesis confirmed initial expectations.

**Formal level and language level, the scope of thesis** **B - very 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?*

Formal-wise, the thesis is well structured. The text was significantly improved from the first version. However, a few more iterations would be needed to further improve the formal and language levels of the thesis.

**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?*

Citations are adequate.

**Additional commentary and evaluation (optional)**

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

There are two main contributions of the student:
(i) as a second author, he contributed significantly to our accepted ICRA 2023 paper [1], his role in the project was to propose and implement a new benchmark and to prepare real-world robotics experiments that were used to demonstrate the algorithm proposed in the paper;
(ii) he designed and implemented an extension of the algorithm [1] and evaluated it against the approach presented on the conference; results are promising and will form a basis for our follow-up work in this area.

[1] Zorina, K., **Kovar, D.**, Lamiraux, F., Mansard, N., Carpentier, J., Sivic, J., and Petrik, V. Multi-contact task and motion planning guided by video demonstration. [Accepted] IEEE International Conference on Robotics and Automation, 2023.

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

Date: **31.01.2023** Signature: