THESIS SUPERVISOR'S REPORT

I. IDENTIFICATION DATA

Thesis title:	**Multi-failure Risk-aware Trajectory Planning for Urban Air Mobility**
Author's name:	**Bc. Jáchym Herynek**
Type of thesis :	
Faculty/Institute:	
Department:	Department of Measurement
Thesis reviewer:	Ing. Jakub Sláma
Reviewer's department:	Department of Computer Science

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment

How demanding was the assigned project?

The thesis is about risk-aware trajectory planning in an urban environment. The state-of-the-art work considers only emergency landings towards an airport in the case of a loss of thrust; therefore, the risk of loss of thrust failure is eliminated. This thesis extends the state-of-the-art approach by allowing risk-inducing emergency landings towards unsafe landing locations. Furthermore, additional possible failures are to be covered. This extension also increases computational demands, which need to be tackled. Thus, I consider this assignment *challenging*.

Fulfillment of assignment

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.

The assignment has been fulfilled.

Activity and independence when creating final thesis

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.

Generally, the student's work was satisfactory. However, the whole work, especially the experiments and results, was finished very close to the deadline, so there was not enough time to iterate over some parts. Moreover, the experiments were not always ready-to-run and had to be returned to the student.

Technical level

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?

Most of the thesis is technically sufficient; however, the results and the evaluation of the risk-aware performance are insufficient. The proposed method is based on a randomized algorithm, but the conclusion on performance is made from only a few trials. Hence, the performance evaluation is insufficient and provides only very limited information. Furthermore, some assumptions are not well stated in the text and require background knowledge to fully understand the idea.

Formal level and language level, scope of thesis

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?

The thesis seems well-written at first sight, but on a deeper level, misleading or unclear statements are quite often considering it is a diploma thesis. On the formal level, the text is sometimes inconsistent, both in the use of English rules (e.g., capital letters) and also in mathematical symbols. The overview of used symbols and abbreviations is completely

missing. Finally, some referenced objects (figures, algorithms, ...) are located too far away from the reference in the text, which makes the reading quite difficult. Some parts of the text could be more inter-connected to make the thesis more readable. Typos and grammatical errors are also occurring in the text.

Selection of sources, citation correctness

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 cited sources are adequate, and the novelty of the work is clearly distinguished. However, a few statements in the thesis are missing a citation; thus, no evidence of the statement's correctness is provided. Furthermore, the online sources are not clearly indicated in the bibliography, and the way of using citations in the text is inconsistent.

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.

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.

The thesis proposes an extension of the previous risk-aware planner for the Urban Air Mobility scenario by introducing the possibility of accounting for unsafe emergency landings. However, the proposed method had not been sufficiently evaluated, considering the randomness of the proposed method. From the technical point of view, the thesis lacks a clear description of considered assumptions a few times and requires additional background knowledge from a reader for full understanding. Furthermore, some statements are misleading or not supported by any evidence. Typos and grammatical errors are present in the text; thus, I consider the technical level inadequate.

Therefore, considering all the student's work and its outcome, the grade that I award for the thesis is

Date: **7.6.2023**   Signature: