

## I. IDENTIFICATION DATA

<b>Thesis title:</b>	<b>Multi-failure Risk-aware Trajectory Planning for Urban Air Mobility</b>
<b>Author's name:</b>	<b>Jáchym Herynek</b>
<b>Type of thesis :</b>	<input type="text"/>
<b>Faculty/Institute:</b>	<input type="text"/>
<b>Department:</b>	Department of Computer Science
<b>Thesis reviewer:</b>	Ing. Václav Pritzl
<b>Reviewer's department:</b>	Department of Cybernetics

## II. EVALUATION OF INDIVIDUAL CRITERIA

<b>Assignment</b>	<input type="text"/>
<i>How demanding was the assigned project?</i>	
The assignment is challenging and relevant to the field of Urban Air Mobility. The goals of the thesis were to propose a multi-failure model of fixed-wing aircraft, implement a solution for risk assessment of in-flight failure, implement a risk-aware path planner using the multi-failure aircraft model for emergency landing planning, and evaluate the computational performance of the proposed approach.	

<b>Fulfilment of assignment</b>	<input type="text"/>
<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>	
All parts of the assignment have been fulfilled.	

<b>Methodology</b>	<input type="text"/>
<i>Comment on the correctness of the approach and/or the solution methods.</i>	
The methodology was correct. The student got familiar with state of the art, implemented algorithms suitable for solving the given task, compared their output with a reference solution, and evaluated their performance and computational requirements in detail.	

<b>Technical level</b>	<input type="text"/>
<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>	
The student has shown a good knowledge of the state of the art, has correctly applied the knowledge obtained during his studies and built upon the previous works and expertise of the department of computer science. The proposed solution is correct and its performance has been computationally evaluated in detail. The approach has been sufficiently described and compared with a reference solution with both its advantages and drawbacks mentioned.	

<b>Formal and language level, scope of thesis</b>	<input type="text"/>
<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>	
The formal level of the thesis is excellent. The English level is very good and easily understandable. The thesis is logically organized and contains all the required sections. The scope of the thesis is sufficient.	

<b>Selection of sources, citation correctness</b>	<input type="text"/>
<i>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?</i>	

The thesis contains a comprehensive review of the works related to its topic and highlights the previous works, which it builds upon. The formatting of bibliographic citations is correct according to the standards. In chapter 2 – Related work, I would expect a description of the differences of the approach utilized in this thesis from the mentioned related works. Nevertheless, the differences from prior works are then individually mentioned later in chapter 5 – Proposed method, so this does not impact the clarity of the thesis too much.

### **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.*

Overall, the quality of the thesis and the achieved results correspond to my expectations. The tackled problem, its proposed solution, and the solution's performance are clearly described in sufficient detail.

### **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.*

*Overall, the student did a very good job. The overall quality of the thesis is excellent with its results very relevant to the field of Urban Air Mobility.*

#### **Questions for discussion:**

*The proposed approach utilizes the assumption that the aircraft can quickly lose its altitude at will. Could the approach be modified to mitigate this assumption? How would it affect the computational demands?*

The grade that I award for the thesis is

Date: 31.5.2023

Signature: