

**I. IDENTIFICATION DATA**

<b>Thesis name:</b>	<b>Oprava plánu pro team mobilních agentů (Plan Repair for a Team of Mobile Agents)</b>
<b>Author's name:</b>	<b>Daniel Kubišta</b>
<b>Type of thesis :</b>	bachelor
<b>Faculty/Institute:</b>	Faculty of Electrical Engineering (FEE)
<b>Department:</b>	Katedra řídicí techniky
<b>Thesis reviewer:</b>	Konstantin Yakovlev
<b>Reviewer's department:</b>	Federal Research Center for Computer Science and Control of Russian Academy of Sciences

**II. EVALUATION OF INDIVIDUAL CRITERIA**

<b>Assignment</b> <i>Evaluation of thesis difficulty of assignment.</i>	<b>challenging</b>
The considered assignment is indeed not trivial as it requires integration of the methods from the different sub-fields (MAPF and OR)	

<b>Satisfaction of assignment</b> <i>Assess that handed thesis meets assignment. Present points of assignment that fell short or were extended. Try to assess importance, impact or cause of each shortcoming.</i>	<b>fulfilled</b>
From what I see in the text of the Thesis the assignment (specified on p. 2) was fulfilled.	

<b>Method of conception</b> <i>Assess that student has chosen correct approach or solution methods.</i>	<b>correct</b>
The student used well-known methods (VNS, ECBS etc.) as the foundation of his approach, which, I believe, is a right choice.	

<b>Technical level</b> <i>Assess level of thesis specialty, use of knowledge gained by study and by expert literature, use of sources and data gained by experience.</i>	<b>A - excellent.</b>
The technical level is very high. Different methods and algorithms were explained in details and tied together into a single solver.	

<b>Formal and language level, scope of thesis</b> <i>Assess correctness of usage of formal notation. Assess typographical and language arrangement of thesis.</i>	<b>A - excellent.</b>
I did not spot any abuse of the formal notation. The thesis is well-written and is easy to follow. A great part of it is that the numerous examples are provided throughout the thesis.	

<b>Selection of sources, citation correctness</b> <i>Present your opinion to student's activity when obtaining and using study materials for thesis creation. Characterize selection of sources. Assess that student used all relevant sources. Verify that all used elements are correctly distinguished from own results and thoughts. Assess that citation ethics has not been breached and that all bibliographic citations are complete and in accordance with citation convention and standards.</i>	<b>A - excellent.</b>
The thesis cites the well-established papers in the considered areas.	

<b>Additional commentary and evaluation</b> <i>Present your opinion to achieved primary goals of thesis, e.g. level of theoretical results, level and functionality of technical or software conception, publication performance, experimental dexterity etc.</i>	
See below	

### **III. OVERALL EVALUATION, QUESTIONS FOR DEFENSE, CLASSIFICATION SUGGESTION**

*Summarize thesis aspects that swayed your final evaluation. Please present apt questions which student should answer during defense.*

This is well-written thesis devoted to an actively studied nowadays problem of multi-agent pathfinding (MAPF). The authors elaborates on a specific and practically-important variant of this problem – the so-called MAPF with the delays. This problem assumes that one or more agents is delayed at certain time steps. Daniel suggests to solve this problem by translating it into the job shop scheduling problem (JSS). This translation requires special reasoning and introduction of the additional procedures and algorithms that are presented in the thesis. Finally, empirical evaluation is carried out that provides an evidence that the suggested approach indeed copes with the posed problem and performs better than one of the (state-of-the-art) competitors.

The concerns that can be named are as follows.

First, it is not clear to me whether the suggested method provides some/any form of the theoretical guarantees that the given task will be solved (if the solution exists) and that it will correctly terminate and report 'failure' in case the task can not be solved (can this in principle be the case?).

Second, it is not clear from the text how many different MAPF instances were evaluated per each map? Assuming that this number is not small it would be great to see not only the mean of the metrics, reported in the thesis, but their variance as well.

Overall, I think that this a very well-written thesis that reports an extensive study of the important actual problem.

I evaluate handed thesis with classification grade **A - excellent**.

Date: **28.5.2022**

Signature:



**Konstantin Yakovlev, PhD**