

## I. IDENTIFICATION DATA

<b>Thesis title:</b>	<b>The Computation of Intermediate Set</b>
<b>Author's name:</b>	<b>Marek Žuffa</b>
<b>Type of thesis :</b>	Bakalářská práce
<b>Faculty/Institute:</b>	Fakulta elektrotechnická
<b>Department:</b>	Department of Cybernetics
<b>Thesis reviewer:</b>	Ing. Václav Kratochvíl Ph.D.
<b>Reviewer's department:</b>	ÚTIA AV ČR, v.v.i.

## II. EVALUATION OF INDIVIDUAL CRITERIA

<b>Assignment</b>	<b>Choose an item.</b>
<i>How demanding was the assigned project?</i>	
The complexity of the assignment fully corresponds to the nature of the work - the bachelor's thesis.	

<b>Fulfillment of assignment</b>	<b>Choose an item.</b>
<i>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.</i>	
The defined goal of the work was fulfilled. The work could include a more detailed comparison of the speed of both implementations using, for example, the so-called code profiling for easy detection of problematic/computationally slow parts.	

<b>Methodology</b>	<b>Choose an item.</b>
<i>Comment on the correctness of the approach and/or the solution methods.</i>	
The procedure for solving the problem is quite straightforward and it follows the procedure suggested in the assignment.	

<b>Technical level</b>	<b>Choose an item.</b>
<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 technical level of the thesis is good. First, the student introduces the basic theoretical concepts altogether with the current state of the art. The student implemented the vertex enumeration of the intermediate set in two different programming languages - which in itself proves his good orientation in the area. All steps are clear	

<b>Formal and language level, scope of thesis</b>	<b>Choose an item.</b>
<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 thesis follows a good tradition of research papers. It is consistent in notation, it contains both the introduction and the conclusion. The problem is illustrated using several examples. I appreciate the effort to write a bachelor's thesis in English. However, I recommend the author to focus especially on word order. Its misuse makes some sentences less readable and spoils the impression of an otherwise interesting text.	

<b>Selection of sources, citation correctness</b>	<b>Choose an item.</b>
<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 author used a sufficient amount of literature, which he correctly cited (except for a small problem on page 16, probably a typo)	

<b>Additional commentary and evaluation (optional)</b>
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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.*

The work is interesting and it can be seen that the student spent a lot of time writing it. It is a pity that its final part is quite brief. The comparison of the two implementations is limited to stating that Python code is much more efficient. A more thorough analysis is missing. In case of the author's interest, I would like to recommend tools designed for code profiling - available in both Matlab and Python. Since both approaches used cdd for the final vertex enumeration, I would look for the problem elsewhere. As the author correctly suggested, the problem of slow Matlab implementation can be hidden in changing matrices in loops - which is generally not a good strategy to be used in Matlab.

It is worth noting that the efficiency of the cdd algorithm depends on the order of the input inequalities extremely. Cdd allows using of one of the predefined heuristics to rearrange them. Maybe Matlab uses a different heuristic than Python, but that's just speculation.

### 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 work is well and readily written. It contains a lot of examples and draws readers into the problem of coalition games. However, the assignment could be fulfilled better - the comparison of implementation efficiency is just a sketch of it. Similarly, the language side of the work could be better. For this reason, I am inclined to evaluate this work by C. I have no further questions.

The grade that I award for the thesis is **C**.

Date: **May 31, 2021**

Signature: