THESIS REVIEWER'S REPORT

I. IDENTIFICATION DATA

Thesis title:	**Simulation and optimization of laboratory processes**
Author's name:	**Dmitrij Sojma**
Type of thesis :	master
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Department of Computer Science
Thesis reviewer:	Ing. Karel Frajták, PhD.
Reviewer's department:	Department of Computer Science

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	**extraordinarily challenging**
The assignment is quite challenging. The author had to research methods of automation of clinical laboratories as well as details about modular laboratory automation systems. Design a simulation process. And in the end to propose an optimization for the simulated process.	

Fulfilment of assignment	**fulfilled with major objections**
The thesis fulfils the assignment. All goals have been achieved. However, I was not able to have a look at the resulting source code since it was not attached. There is also no research on the topic of simulation. Given the nature of the modular laboratory automation system – i.e., samples are being queue in modules – the queuing theory comes immediately to mind.	

Methodology	**correct**
The methodology is correct.	

Technical level	**B - very good.**
The student proved his expertise in this field. The process has been clearly explained and described. The part that explains how the simulation work is for some reason missing.	

Formal and language level, scope of thesis	**A - excellent.**
Student has presented his results in a clear and understand way. The thesis is well organized. The English is satisfactory. The thesis has adequate length.	

Selection of sources, citation correctness	**A - excellent.**
Selected sources are correctly cited. The citations meet the standards.	

Additional commentary and evaluation (optional)
The author did an excellent work in this area. The implementation part was not available. I cannot comment of the details of the simulations which was one of the goals of the thesis. The label of y-axis in Fig 7.2 is "Numbers of …" while the numbers in the charts are percentages. The comparison of 3 different methods are compared in 3 different charts and it is difficult to compare them.

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

I don't have other comments apart from those mentioned above.

Questions for student:

1. It is not mentioned in the text how the optimization problem was solved – a set of equations was presented along with sets, parameters, and variables. In the work of Brezina, Gurobi solver is used to solve the problem. The question is – is the solution to the optimization problem essential part of the proposed solution and can the user view the optimization results while they tune the parameters of the system? Or is it a standalone feature?
2. How are the modules of the laboratory system represented in the simulations and how do they work in the simulation?

Given the fact that I was not able to check the source code, the grade that I award for the thesis is B - very good.

Date: **6.6.2022** Signature: