THESIS REVIEWER'S REPORT

I. IDENTIFICATION DATA

Thesis title:	**Artificial intelligence supported mechanical engineering design**
Author's name:	**Akiki Charbel**
Type of thesis :	bachelor
Faculty/Institute:	Faculty of Mechanical Engineering (FME)
Department:	12113
Thesis reviewer:	František Lopot
Reviewer's department:	12113

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment **challenging**

How demanding was the assigned project?

I consider the project to be quite challenging because the topic is not systematically presented in lectures and/or seminars (if I am well informed).

Fulfilment of assignment **fulfilled with major objections**

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 must admit that the thesis brings quite fine review about the topic. Unfortunately apart from the collection of information on assigned topic and its well anticipated arrangement, I do not find the own invention of the author, which I would expect in a work such as bachelor thesis. Although at the end of the thesis, the author presents his own product created on the basis of available AI source code, for which however, he provides a minimum of information would give me a possibility to assess the ability of the author to provide high quality and independent engineering work, on adequate level of course. However interesting this output may be, I still lack the required case study in the thesis, on which the author would confirm or dispute findings he has obtained from the study of collected information sources. The author also mentions his own research on the page 46, but again without further details about its performance. This is why, I cannot consider the thesis to be fulfilled without some resting reservations.

Methodology **partially applicable**

Comment on the correctness of the approach and/or the solution methods.

There are a lot of high quality (= widely respected) sources in the reference list. Unfortunately, I am almost sure that part of them, the author did not used for the formulation of his text – just because, they do not include information about reviewed topic. I am not sure, if this is a real problem in this case, because I want to believe that the author studied them all to obtain an excellent orientation in the topic with all its complex relations.

Technical level **F - failed.**

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 have to be uncompromising in this chapter. I did not found anything what can convince me of the ability of the author to use knowledge from his study for his original engineering work.

Formal and language level, scope of thesis **A - excellent.**

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?

Better English than mine is…

Selection of sources, citation correctness	**C - good.**
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 refer my comment to the Methodology chapter above.	

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.

If I understood the author's idea for his product correctly, I must agree that it could be a very helpful tool for a designer or an engineer in general. The principle of finding of a successful concept for a technical solution to any problem is most often the discussion and opposition of someone who has a great overview over his field and often also beyond it. Information from such this colleague is an inspiration, reveals weak points in advance and without discussion accelerates the process of iteration to an acceptable result. I am convinced that AI will be able to do things better than a human sooner or later. But at the same time, I am also convinced that people should not give up their crutial role. The model I have described above, which I think corresponds to the concept of the author, seems to me like a good idea not for now only but in general in topic of human-AI cooperation in engineering.

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

In order to fulfill the assignment of the thesis without resting reservations, I must ask the author to add following details of his work:

- detailed information about his product Engineer's Ally (principles of operation, an exhibition of operation…)
- a closer and more detailed information to the Fig. 17
    - why there are four versions which repeat in the list of results
    - where are differences between AI generated design and optimalisation in conventional designing process

The grade that I award for the thesis is **E - sufficient.**

Date: **29.1.2024** Signature: