

OPPONENT'S EVALUATION OF THE MASTER'S THESIS

Student: Okafor-Mefor Ekene Louis

Opponent: PhDr. RNDr. Martin Žáček,
Ph.D.

Study program: **Information Technologies**
Study course/Specialization: **Software Engineering**
Academic year: **2023/2024**

Master's Thesis topic: **Student Knowledge Assessment System Based on Artificial Intelligence**

Evaluation of the thesis:

The author of the thesis was very thorough in his treatment of the topic. The thesis covers various relevant areas such as artificial intelligence, machine learning and natural language processing (NLP), and their applications in the education system. The author has also covered existing systems such as Socratic and Wolfram Alpha. The development and implementation of the S.K.A.S. system is described in detail and include a clear explanation of the technologies and methods used.

The methods and technologies used are very advanced and correspond to the current state of knowledge in the field. The author makes effective use of the LangChain framework and the spaCy NLP library, which shows his deep understanding of the subject and his ability to apply theoretical knowledge in a practical context. Integrating the GPT-3.5 model and other advanced tools demonstrate high technical proficiency.

The work makes a significant contribution to the field of education. The developed S.K.A.S. system represents an innovative approach to assessing students' knowledge that outperforms traditional testing methods. I positively evaluate the system's ability to generate questions based on the given text and evaluate the answers using semantic similarity represents a significant step forward in personalization and adaptive assessment in education.

Formally, the work is of an excellent standard. The structure of the thesis is logical and clear, the text is well written and the methodologies are described in detail. Although there are minimal typographical (e.g. colon in the title) and grammatical errors, these do not significantly detract from the overall quality of the thesis. In the theoretical part of the thesis, the author accompanies the text with appropriate figures, but these figures are unnecessarily large and thus appear to be of poor quality (e.g. Figures 2, 3, 4, ...).

Questions for the thesis defence:

1. How does the S.K.A.S. system deal with ambiguities or errors in students' answers that may arise from language variations or misunderstandings?
2. Can you explain the scalability of the system in more detail? How does it perform with large numbers of students and diverse subjects?
3. How does the system ensure the security and privacy of student data, especially given the use of AI and NLP techniques?
4. What are the potential limitations or challenges for practical deployment of S.K.A.S. in educational institutions?

The S.K.A.S. system has the potential for wide practical use in educational institutions. Its ability to provide immediate feedback to students and to adapt to individual needs represents a significant contribution to improving the educational process.

Based on the above reasons, the thesis exhibits all the attributes of an excellent thesis: it is thoroughly developed, of high methodological and technical quality, innovative and of practical benefit. Therefore, I grade this thesis with A grade.

The evaluation may be extended to cover further pages.

Overall evaluation of the thesis:

The Opponent shall grant a mark according to the ECTS classification scale:

A – Excellent, B – Very Good, C – Good, D – Satisfactory, E – Sufficient, F – Insufficient

An “F” grade also means "I do not recommend the thesis for defence."

I recommend this thesis to be defended and suggest the following evaluation:

A - Excellent

In the case of an evaluation grade of “F – Insufficient”, please supply the main shortages and reasons for this assessment.

Date: 21. 5. 2024

Thesis Opponent's Signature: