

OPINION

According to the procedure for the defense of a dissertation on the topic:
"Smart Services for Development of personalized and adaptable educational
video-games"

to acquire educational and scientific degree "doctor"

from candidate: ALBENA EMILOVA ANTONOVA

Field of higher education: 4. Natural sciences, mathematics and informatics

Professional direction: 4.6. Informatics and Computer

Science Doctoral program: "Information Technologies", Department: "Information Technologies",

Faculty of Mathematics and Informatics (FMI),

Sofia University "St. Kliment Ohridski" (SU),

The opinion was prepared by: Prof. Dr. Galya Mihailova Kozuharova DIITT, Thrakia University, Stara Zagora in my capacity as a member of the scientific jury, according to Order No. RD 38-115/07.03.2023 of the Rector of Sofia University.

1. General characteristics of the dissertation work and the presented materials

In the stipulated time, I received all the required materials for the preparation of the opinion: dissertation, abstract, list of publications, certificate of fulfillment of the minimum requirements, Strike Plagiarism similarity report, declarations, etc. The presented dissertation is in full volume of 170 pages, which includes 5 chapters, 55 figures and 10 tables, 5 appendices, a list of used literature, a list of abbreviations and terms. The used literature contains 137 titles, and the list of publications on the topic of the dissertation includes 7 articles. The dissertation work is structured in an introduction, five chapters, conclusion, author's reference, list of used literature and 5 appendices.

The ability to present and layout the academic text and the presented materials as a whole makes a very good impression.

2. Data and personal impressions about the candidate

Albena Antonova is an assistant professor at Sofia University "St. Kliment Ohridski", Faculty of Mathematics and Informatics, Department of "Information Technologies" since 2019. In the period 2019-2023, is a doctoral student at SU "St. Kliment Ohridski", FMI. In 2001-2002, he

obtained a master's degree in Business Administration (French equivalent of an MBA) at the University of Nantes, France. He obtained a bachelor's degree in the same specialty at the Faculty of Economics of Sofia University "St. Kliment Ohridski". The presented list of over 100 publications and two monographs is proof of enduring scientific interests.

The lecture courses, which are in the asset of the doctoral student, also speak of a university professor from the city with a modern vision of education. Courses of interest are: Gamification and gaming industry, Management information systems, Telematics and business applications, Human-machine interface design and others, some of which are in English and French. From the attached materials, it can be seen that the doctoral student has extensive experience in international and national projects. I know Albena Antonova from working together on international projects as a strict, searching and innovative person.

3. Content analysis of the candidate's scientific and applied scientific achievements, contained in the presented dissertation work and the publications to it, included in the procedure

The presented dissertation aims to research, propose, develop and validate intelligent services supporting the creation of personalized and adaptive maze-type educational video games enriched with mini-puzzle games.

On the basis of a comparative literature review of the nature and characteristics of intelligent services, a study of the challenges of creating and using personalized and adaptive educational video games, as well as modern approaches for personalizing and adapting training to the needs of the learner, approaches are proposed for creating personalized and adaptive educational video games. Models of intelligent services supporting the creation of personalized and adapted educational video games have been developed and specific pedagogical scenarios for such games have been proposed. The key features of intelligent services in the context of educational maze video games, their requirements and application field are outlined. Key success indicators and metrics for evaluating intelligent services are derived.

In this sense, I accept the scientific, scientific-applied and applied contributions formulated by the doctoral student in the dissertation and the abstract.

4. Approbation of the results

The presented materials for the defense of the dissertation meet, even significantly exceed the minimum national requirements (according to Art. 2b, paras. 2 and 3 of the RSARB) and, accordingly, the additional requirements of SU "St. Kliment Ohridski" for obtaining an educa-

tional and scientific degree "doctor" The author has presented seven publications on the topic of the dissertation research, one of which is independent. For co-authored publications, declarations from the co-authors for equal participation of the doctoral student are attached. The mentioned publications really reflect the achievements of the doctoral student and are representative enough to announce them to the academic community and interested circles.

The author has also submitted a list of 17 noticed citations of three co-authored articles, which significantly exceeds the requirements for this procedure. The results presented by the candidate in the dissertation work and related scientific works do not repeat those from previous procedures for acquiring a scientific title and academic position. There is no proven plagiarism in the submitted dissertation and scientific works under this procedure. Strike Plagiarism Similarity Report attached shows dissertation originality.

5. Qualities of the auto-reference

The abstract was developed according to the requirements of the Regulations for the Development of the Academic Staff of Sofia University and accurately reflects the main results obtained in the dissertation research.

6. Conclusion

Having familiarized myself with the dissertation work presented in the procedure and the accompanying scientific works and based on the analysis of their significance and the scientific and applied scientific contributions contained in them, I confirm that the presented dissertation work and the scientific publications to it, as well as the quality and originality of the results and achievements presented in them meet the requirements of the RSARB, the Rules for its application and the relevant Rules of the SU "St. Kliment Ohridski" for the candidate's acquisition of the educational and scientific degree "doctor" in the scientific field 4. Natural sciences, mathematics and informatics, Professional direction: 4.6. Informatics and Computer Science. In particular, the candidate satisfies the minimum national requirements in the professional direction and no plagiarism has been found in the scientific works submitted for the competition.

Based on the above, I recommend the scientific jury to award Albena Emilova Antonova an educational and scientific degree "Doctor" in the scientific field of Natural Sciences, Mathematics and Informatics, professional field of Informatics and Computer Sciences.

20.05. 2022

Prepared the opinion:.....

(Prof. Dr. Galya Kozuharova)