REVIEW

by **Prof. PhD Ivan Ganchev Garvanov**
member of the Scientific Jury, appointed by Order of the Director of IICT-BAS, Sofia, № 326/20.12.2024

about: Dissertation by **Ivaylo Zhivkov Blagoev** on the topic "Development and provision of personalized electronic educational content", submitted for the acquisition of the educational and scientific degree "DOCTOR" in the scientific field "Natural Sciences, Mathematics and Informatics", professional direction 4.6 "Informatics and Computer Sciences" under the Doctoral Program "Informatics", at the Institute of Information and Communication Technologies - BAS, with scientific supervisor: Prof. PhD Vladimir Monov

1. Information about the procedure

At the first meeting of the Scientific Jury, held on 10.01.2025, I was selected to write a review. Under this procedure, I have received all documents in electronic format.

2. Relevance, goal and tasks of the dissertation

The topic of the dissertation is relevant considering the rapid development of electronic learning systems and their implementation in practice. E-learning makes learning easier and more effective, unlike the traditional teaching method. In today's dynamic world, it is of particular importance to have the opportunity for rapid and continuous updating of information as well as the provision of personalized electronic learning content.

The aim of the dissertation: To propose a system and tools for the development and provision of interactive personalized e-learning, based on the prior knowledge of the learners.

To achieve this goal, the following scientific tasks have been formulated:

1. To classify the functional requirements and develop a methodology for evaluating e-learning and knowledge management systems;

2. To classify online training courses according to presentation methods and type of training content and to develop an approach for developing content for e-training courses;

3. To create a method for generating training content using generative artificial intelligence;

4. To develop a model for personalized e-learning based on the learner's competency profile;

5. To design a tool for creating personalized e-learning content;

6. To develop the architecture and prototype of a web-based platform for developing and providing interactive training content.

3. General characteristics of the dissertation work

The dissertation work submitted for review consists of 202 pages, prepared in Bulgarian and structured in an introduction, four chapters, conclusion, publications on the topic of the dissertation work, noted citations, bibliography.

In the first chapter of the dissertation work, an in-depth literature review and analysis of the challenges and existing solutions on the topic of the scientific research is carried out. The need to create and implement new models for personalizing the educational process in an online environment is motivated.

In the second chapter, a classification of the functional requirements of e-learning systems is proposed. Existing e-learning systems and tools are analyzed and

the possibility of using them for personalized learning based on the learner's competence profile and his prior knowledge is assessed. A method for evaluating e-learning systems has been developed. A standard for creating content for e-learning courses has been developed.

In the third chapter, a process for developing an architecture for a system for creating personalized e-learning content is proposed.

In the fourth chapter, a prototype of a complex system for creating and providing personalized e-learning content is developed, which includes an integrated e-learning system and a tool for developing interactive personalized learning content.

In the Conclusion, the obtained results are analyzed and directions for future research in the field are defined. A list of scientific publications on the topic and noted citations are presented.

For a better understanding of the proposed theories, as well as analyzing the obtained results, 53 figures and 13 tables are used. 125 literary sources were used.

4. Contributions

The dissertation work indicates contributions that I would classify as both scientific and scientifically applied in nature. I accept all the contributions of the doctoral student, as I believe that they are real and very well formulated.

5. Abstract

The two versions of the abstract presented in Bulgarian and English faithfully reflect the content of the dissertation and comply with the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for the Implementation of the Law on the Development of the Academic Staff in the Republic of Bulgaria.

6. Assessment of compliance with the minimum national requirements

Doctoral student Ivaylo Blagoev has approved parts of his dissertation in 7 scientific publications, in 1 of which he is an independent author. All articles are in English and have been published in reputable scientific journals and conferences. From the publications presented on the dissertation, it can be judged that the described results are original and personal work of the doctoral student. I have no common publications with Ivaylo Blagoev.

According to the minimum national requirements for obtaining the ONS "Doctor" in professional field 4.6. "Informatics and computer science", defined in Art. 2b, para. 2 and 3 of the ZRASRB and respectively under Art. 24, para. 1 of the Regulations for the Implementation of the ZRASRB requires the presence of at least 30 points in the indicators from Group D. The publications presented in the dissertation form much more points, exceeding the required minimum of 30 points. A list of 21 noted citations is provided, which shows the high quality of Ivaylo Blagoev's scientific production.

The protocol of the Strikeplagiarism anti-plagiarism system for establishing similarity and plagiarism in the dissertation is 18%, which is within the permissible limits.

A reference from Scopus, Web of Science, Google Scholar and ResearchGate as of 28.01.2025 shows the following scientometric indicators:

Scopus: H-index 1, articles 4, citations 7

Web of Science: H-index 2, articles 4, citations 10

Google Scholar: H-index 5, Citations: 50

7. Notes and recommendations

I would like to recommend that Ivaylo Blagoev work with students and doctoral candidates in the future to pass on his knowledge and skills to the younger generations.

8. Final comprehensive assessment

I believe that the presented dissertation meets the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for the Implementation of the Law on the Development of the Academic Staff in the Republic of Bulgaria and the specific requirements of the Institute of ICT-BAS. The achieved results give me reason to give a positive assessment with full conviction and I recommend to the esteemed Scientific Jury to award the educational and scientific degree "Doctor" to Ivaylo Blagoev in the professional field - 4.6. "Informatics and Computer Sciences", doctoral program - "Informatics".

На основание
ЗЗЛД

28.01.2025
Sofia