

OPINION

by Prof. Dr. Tatyana Atanasova

Institute of Information and Communication Technologies - BAS

on the dissertation of IVAYLO ZHIVKOV BLAGOEV

on the topic: "**DEVELOPMENT AND PROVISION OF PERSONALIZED E-LEARNING CONTENT**"

The opinion was prepared in accordance with Order No. 326 of 20.12.2024 of the Director of ICT-BAS, issued on the basis of a decision of the Supervisory Board of ICT (Minutes No. 13 of 19.12.2024), by which I was appointed as a member of the scientific jury to ensure the procedure for defending the dissertation on the topic "DEVELOPMENT AND PROVISION OF PERSONALIZED ELECTRONIC LEARNING CONTENT" for awarding the educational and scientific degree of "Doctor" in the doctoral program "Informatics", Professional field 4.6. "Informatics and Computer Science" by IVAYLO ZHIVKOV BLAGOEV with scientific supervisor Prof. Dr. Vladimir Monov.

I. **General description of the submitted materials**

As a member of the scientific jury, I have received:

1. Dissertation for awarding the educational and scientific degree of "Doctor";
2. Abstract of the dissertation in Bulgarian and English;
3. Copies of the articles included in the dissertation;
4. Other documents accompanying the procedure.

The dissertation is 202 pages long. Its structure includes an introduction, four chapters, a conclusion and a summary of the results obtained, a graph of the dissertation, guidelines for future research, publications on the topic of the dissertation, citations noticed, a declaration of originality of the results, acknowledgments, a bibliography, a list of figures, a list of tables. The dissertation includes 53 figures, 13 tables and 125 literary sources.

The attached list of publications contains 7 titles. Six of the publications are co-authored, one is independent. The abstracts in the volume of 44 pages in Bulgarian and 42 pages in English reflect the essence and content of the dissertation.

II. **Relevance, purpose and objectives**

The dissertation is dedicated to solving problems for creating adaptive learning content in an electronic environment. The study of various factors for providing content according to the learner's profile, which includes their abilities and preferences, is a challenge to global educational practices and the ubiquitous digitalization of education in the modern education system.

The purpose of the dissertation under consideration is to propose a system and tools for the development and delivery of interactive personalized e-learning based on the prior knowledge of the learners.

For this purpose, several tasks have been defined, of which I note the following:

- 1 to develop a methodology for evaluating e-learning systems.
- 2 to develop an approach to content development for e-learning courses.
- 3 to create a method for generating training content through generative AI.
- 4 to develop a model for personalized e-learning based on the competence profile of the learner.
- 5 A tool for creating personalized e-learning content should be designed.
- 6 to develop the architecture and prototype of a web-based platform for the development and delivery of interactive training content.

I find that the goal set and the formulated tasks reflect the relevance and significance of the presented dissertation. The PhD student has extensively analyzed the problems related to theories, models and technologies in the field of e-learning and its personalization.

It is very valuable that the proposed prototype of a web-based platform for the development and delivery of interactive educational content was also used to generate part of the graphic illustrations in the dissertation. This can be seen as piece of an integrated solution in the process of acquiring an educational and scientific degree "Doctor".

III. Analysis of the candidate's scientific achievements

In the evaluation of the dissertation, the requirements of the Act on the Development of the Academic Staff of the Republic of Bulgaria and the Regulations for its Implementation are decisive. According to Art. 6 (3) of the Act on the Development of the Academic Staff of the Republic of Bulgaria under Para. 2 "dissertation shall contain scientific or applied scientific results that constitute an original contribution to science."

The Scopus reference shows four indexed publications authored by Ivaylo Blagoev in this international database of scientific documents. One publication is in a journal assigned to the Q2 quartile of Scopus and Ivaylo Blagoev's Hirsch index (h-index) is 1. Ivaylo Blagoev's profile in Web of Science has h-index=2, with four indexed publications, one of them is in an edition with **impact factor** and **JCR Q4**. Independent citations in documents indexed in world scientometric databases prove the necessary publicity of the results achieved.

The formulated contributions in the dissertation can be considered as scientifically applied and correspond to the tasks set for solution. The relationship between tasks, contributions and publications is presented in a table entitled "dissertation graph".

As a result of the extensive analysis and classification of e-learning approaches and tools, a model of an innovative multi-component web-based platform has been developed to be used to create and offer personalized learning content taking into

account certain competencies of the learner. A standardized approach to content development for e-learning courses is proposed. An architecture of the complex e-learning system with defined flows of information between the individual modules is presented. The developed approaches, models and architecture have been published in prestigious journals and conference proceedings.

IV. Critical notes on the presented works

According to Art. 27 (2) of the Act on the Development of the Academic Staff of the Republic of Bulgaria, "The dissertation must be presented in a form and volume corresponding to the specific requirements of the primary unit. It should be noted the large volume of the dissertation under consideration, which could be presented in a more concise and structured form. Spelling errors are also noticeable, but this does not diminish the significance of the results achieved in this dissertation, which is distinguished by its originality.

V. Conclusion

I accept that the requirements of the Act on the Development of the Academic Staff of the Republic of Bulgaria, the Regulations for its Implementation and the Regulations on the Specific Conditions for Acquiring Scientific Degrees and Occupying Academic Positions at IICT-BAS have been met. After getting acquainted with the dissertation and the publications to it, analyzing their significance and the contributions contained therein, I give my **positive assessment with full conviction** and recommend to the honorable scientific jury to award the educational and scientific degree "**Doctor**" to **Ivaylo Zhivkov Blagoev** in the professional field 4.6. "Informatics and Computer Science", PhD program "Informatics".

Sofia

31.01.2025

Mem

НА ОСНОВАНИЕ

ЗЗЛА