

OPINION

by Prof. Radoslav Dimov Pavlov, Ph.D.
Institute of Mathematics and Informatics –
Bulgarian Academy of Sciences

on the dissertation

by Oleg Petrov Iliev

titled “Methods and models for personalization of a thematic-oriented learning content”, submitted for acquisition of the scientific and academic degree *doctor* in professional field 4.6. *Informatics and computer sciences*, scientific specialty *Informatics*

In accordance with *Order No. 210/02.12.2020* of the president of IMI-BAS for the initiation of the procedure for a defense of the dissertation of the candidate for a doctor’s degree Oleg Petrov Iliev, I have been approved for a member of the Scientific jury on the procedure. This Opinion is prepared and presented on the grounds of a Decision of the Scientific jury (*Protocol No.1/03.12.2020*) on the division of the proceedings among the members of the Scientific jury on the procedure.

The present Opinion is made in accordance to the *Act for the Development of the Academic Staff in the Republic of Bulgaria*, the *Rules for its implementation* and the *Rules on the Terms and Conditions for Acquisition of Academic Degrees and Occupation of Academic Positions at the Institute of Mathematics and Informatics – Bulgarian Academy of Sciences*.

As a member of the scientific jury, I have been presented with all the required documents including: an application to the president of IMI-BAS for admission to a defense of the dissertation; a curriculum vitae; an order for enrollment in a doctor’s degree programme; protocols for the completed exams, according to the programme plan; an order for disenrollment from a doctor’s degree programme; an order of the Director of IMI-BAS for discussion of the dissertation by a primary section; a list of scientific publications on the dissertation; a list of quotations of the scientific publications on the dissertation; copies of the scientific publications on the dissertation;

the dissertation; a reference to the scientific contributions of the dissertation and the scientific publications on the dissertation; and the author's summary of the dissertation.

1. General description of the dissertation

The dissertation comprises of 145 pages, divided in a Table of Contents, Introduction, eight chapters, Scientific contributions of the dissertation, Conclusion, a list of Figures, a list of Tables, a list of Scientific publications on the topic of the dissertation, and a list of Quotations of the scientific publications on the dissertation. The Bibliography includes 51 scientific sources in Bulgarian and English.

2. Topics and analysis of the scientific and applicational result of the dissertation

The dissertation includes scientific and applicational results that present original contributions in the fields of informatics and applications of computational and communication technologies in digital learning. The problems discussed in the dissertation are of present interest and relevant to actively developed research on the topics, related to the optimized use of learning resources in the modern e-learning environments. The main goals of the dissertation are the presentation of the learning contents in the most suitable way for the different learner, and the ensuring of multiple use and adaptation of the resources in a specific context and situation.

The subject, topic, and the goals of the research are presented in *Chapter 1*. *Chapter 2* contains analytical survey of the contemporary methods and approaches for personalized delivery of the learning content, according to defined cognitive abilities, preferences, and learning style. The characteristics and features of the e-learning environments are reviewed. Options for overcoming of their disadvantages in the design process are considered.

The model for preparation of personalized learning materials from a theme-oriented content is presented in *Chapter 3*. It ensures the multiple use of the learning objects, and the creation of new personalized learning resources. Appropriate algorithms and methods for automatic generation of learning materials are created. In *Chapter 4* the generated theme-oriented and personalized learning content is tested and evaluated. *Chapter 5* presents the software architecture and the components of a e-learning system, that offers personalization of learning content. In *Chapter 6*, a model for specification and control of user identity, and securing the users' data is described. The verification of the effectiveness of the presented models, done during an experiment with real-life

7th grade students is outlined in *Chapter 7*. In *Chapter 8* potential problems and directions for future advancement of the models and applications, developed in the dissertation, are presented.

3. Scientific publications on the topic. Faithfulness of the results.

The list of the author's publications on the dissertation includes seven titles, two of them indexed at Scopus and Web of Science in an edition with SJR. Five are in proceedings of national and international scientific conferences. There are three quotations. No plagiarism has been detected. From the attached papers and the list of the conferences, in which the candidate has participated, it is clear, that the main results are product of his work, and are in compliance with the current research on the topic. The requirements, according to the *Act for the Development of the Academic Staff in the Republic of Bulgaria*, the *Rules for its implementation*, and the *Rules on the Terms and Conditions for Acquisition of Academic Degrees and Occupation of Academic Positions at the Institute of Mathematics and Informatics – Bulgarian Academy of Sciences* for acquisition of the scientific and academic degree *doctor* in professional field 4.6. *Informatics and computer sciences*, scientific specialty *Informatics*, are completely fulfilled.

4. Comments and recommendations

The results in the dissertation are fully and well presented. I have no critical remarks. The topic and the results provide certain possibilities for further development, in accordance with the international trends.

Conclusion: The dissertation, as well as the scientific work attached, are meaningful and contain the required scientific and applicational contributions. I deem the dissertation by Oleg Petrov Iliev “Methods and models for personalization of a thematic-oriented learning content” fulfilling all requirements of the the *Act for the Development of the Academic Staff in the Republic of Bulgaria*, the *Rules for its implementation* and the *Rules on the Terms and Conditions for Acquisition of Academic Degrees and Occupation of Academic Positions at the Institute of Mathematics and Informatics – Bulgarian Academy of Sciences* for acquisition of the scientific and academic degree *doctor* in professional field 4.6. *Informatics and computer sciences*, scientific

specialty *Informatics*. **I give a positive assessment** to the dissertation and **recommend** to the Honoured scientific jury to award Oleg Petrov Iliev the scientific and academic degree *doctor* in the scientific specialty of *Informatics* in professional field 4.6. *Informatics and computer sciences*.

15.12.2020

Sofia

Reviewer:

Prof. Radoslav Dimov Pavlov, Ph.D.