# REVIEW

From: *Prof. Doctor of Science Eng. Ivan Ganchev Garvanov*
*University of Library Studies and Information Technologies*
*PF: 4.6. "Informatics and Computer Science"*

Subject: Dissertation for awarding an educational and scientific degree **"Doctor"** in Professional Field 4.6 "Informatics and Computer Science" under the Doctoral Program "Informatics", at IICT-BAS.

***Grounds*** for submitting the review: participation in the scientific jury for the defense of the dissertation according to Order No. 100/04.05.2026. of the Director of IICT-BAS.

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| Author of the dissertation: | *Gergana Dimitrova Vasileva* |
| Topic of the dissertation: | ***Models and methods for providing personalized services in e-learning*** |
| Supervisor of the PhD student: | *Prof. Dr. Vladimir Monov* |

## 1. Dissertation information

The dissertation student studied under the doctoral program "Informatics" at IICT-BAS in the period 2019 – 2021.

I don't know the PhD student Gergana Vassileva, but her CV shows that she is a professional with many years of experience in the field of providing personalized services in e-learning.

## 2. General characteristics of the presented dissertation

At the first meeting of the Scientific Jury, I was selected to write a review and received the following documents in electronic format:

- Dissertation in Bulgarian;
- Abstract in Bulgarian and English;
- CV of the doctoral student;
- Copy of an order for the formation of a scientific jury;
- List of printed scientific publications on the topic of the dissertation;
- Copy of the publications on the topic of the dissertation;
- Reference for the implementation of MNR, etc.

The submitted dissertation consists of 174 pages formatted in an introduction, four chapters, a conclusion, contributions, guidelines for future research, and a bibliography. To illustrate the results, 31 figures and 4 tables are attached. 130 literary sources were used.

**The purpose** of the dissertation is to propose a model, methods and software tools for analyzing the need for training, creating an individual competency profile and conducting personalized training programs.

To achieve this goal, the following tasks are formulated:

1. To develop a method for personalizing the training program according to the individual competence profile of the learner
2. To develop a model for creating an individual competency profile and personalized training programs.
3. To develop a model for creating e-learning courses using generative artificial intelligence, integrating closed expert systems with content from OpenAI,
4. To develop a model of a complex infrastructure for the creation and management of personalized competence profiles
5. To develop an architecture and prototype of a platform for creating a personalized training program based on the competence profile of the learner

**The structure** of the dissertation is logically sound and consistent:

The introduction discusses the relevance and structure of the dissertation.

Chapter One analyzes the theoretical and applied basis related to the problem area of the dissertation. Basic concepts, approaches and technological solutions in the field of e-learning, competence profiles, training need analysis, digitalization of training processes, training sites, competency management and assessment systems, knowledge management systems and personalization of training programs are considered. On this basis, the need to develop a model, methods and software tools for analyzing the need for training, creating an individual competence profile and conducting personalized training programs is justified. At the end of the chapter, the main conclusions, purpose and tasks of the dissertation are formulated.

Chapter Two examines the needs for training based on the competence deficit and offers methods for personalizing the learning process according to the individual competence profile of the learner. A model has been developed for creating an individual competence profile and for building personalized training programs. The possibilities for integrating expert approaches and generative artificial intelligence into the content development process are analyzed. A method

for developing content for e-learning courses and a model for parameterizing training content with competencies are also presented.

Chapter Three describes the process of designing the architecture of a platform for creating an individual competence profile and personalized training programs. The main modules of the platform, their functional characteristics and the interconnections between them are described.

Chapter Four presents a prototype of a software platform to create a personalized learning path based on the learner's competency profile.

The conclusion describes the conclusions of the scientific research and lists the scientific and applied contributions of the author.

The presentation follows a clear research logic – from a theoretical framework to proposing a model and creating a prototype of a software platform.

The topic of the dissertation is extremely relevant both from a scientific and practical point of view.

The dissertation fits into the modern areas of research in the field of providing personalized services in e-learning.

**3. Evaluation of the scientific and applied scientific results obtained**

Gergana Vassileva's dissertation is an independent, logically structured and methodologically sound scientific research with a clearly expressed practical orientation.

The goal has been fulfilled, and the tasks have been realized. The author demonstrates very good theoretical training and skills in applying methods for extracting knowledge from data.

In view of the above, I believe that the dissertation meets the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria and the Regulations for its implementation.

I have not noticed plagiarism in the publications and the dissertation under this procedure.

**4. Evaluation of scientific and applied scientific contributions**

The results of Gergana Vassileva's research enrich an existing scientific field with new knowledge.

The scientific and applied scientific contributions indicated in the dissertation can be summarized as follows:

A method for personalizing training based on an individual competence profile has been developed.

A conceptual model has been created for the dynamic generation of individual learning paths.

A model for the integration of generative artificial intelligence (GenAI) has been proposed.

A comprehensive software environment architecture has been designed to manage personalized learning.

A functional prototype of a web-based platform based on the proposed architecture has been developed and tested.

The contributions are mainly scientifically applied in nature, with the main value being in the relationship between modern technologies (AI, dynamic databases, etc.) and modern pedagogy (competence approach, etc.).

## 5. Evaluation of dissertation publications

The PhD student Gergana Vassileva has tested parts of her dissertation in eight publications – all in English. Six of the reports are a joint development of the PhD student with his supervisor, and two are independent development. All publications submitted under the competition are on the topic of the competition. From these publications it can be judged that the described results are original and personal work of the PhD student. One of the publications is with SJR, and three are visible in Scopus or IEEE.

These publications are sufficient to cover the minimum national requirements for a PhD in PN 4.6 "Informatics and Computer Science".

According to the minimum national requirements for obtaining a PhD degree in the professional field 4.6 "Informatics and Computer Science", defined in Art. 2b, para. 2 and 3 of the Law on the Prevention of Corruption and Corruption and respectively under Art. 24, para. 1 of the Regulations for the Implementation of the Law on the Implementation of the Dissertation Act, the presence of at least 30 points on the indicators from Group G is required. The submitted publications on the dissertation form a total sum of the points for the indicators from Group D equal to 84 points, which exceeds the required minimum of 30 points.

In the dissertation, 29 citations of 3 publications are also indicated.

## 6. Evaluation of the abstract

The presented abstract reliably reflects the content of the dissertation and corresponds to the requirements of the Law on the Protection of Literature and Literature.

**7. Critical notes, recommendations and questions**

I allow myself to recommend Gergana Vassileva to continue working and publishing the results obtained by him in publications indexed in Scopus and WoS.

**8. Conclusion**

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 IICT-BAS. The results achieved give me grounds 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 Gergana Dimitrova Vassileva in the Professional Field 4.6 "Informatics and Computer Science" under the Doctoral Program "Informatics".

На основание ЗЗЛД

20.05.2026 Sign.
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