

OPINION

by Dr. Vladimir Vassilev Monov,
professor at the Institute of Information and Communication Technologies - BAS
on a dissertation work for obtaining the educational and scientific degree
"doctor"

field of higher education: 4. *"Natural sciences, mathematics and informatics"*

professional direction: 4.6. *"Informatics and Computer Science"*

doctoral program: *"Informatics"*

Author:

Eng. Maria Grancharova-Hristova

Topic: "Research on the creation of semantic models in the field of humanities"

Scientific supervisors: Prof. Dr. Asya Stoyanova-Doycheva, Prof. Dr. Todorka Glushkova,
Plovdiv University "Paisiy Hilendarski"

1. General description of the procedure and the presented materials

By order No. ПД -21-2231 dated 27.11.2023 of the Rector of Plovdiv University "Paisiy Hilendarski", I have been appointed as a member of the Scientific Jury for conducting the defense of the dissertation work. By decision of the Scientific Jury from a meeting held online in the period 28.11.2023–29.11.2023, my participation in the work of the Scientific Jury was determined with the preparation of an opinion on the dissertation.

The set of materials presented by Eng. Maria Grancharova-Hristova is in accordance with Article 36 (1) of the Rules for the Development of the Academic Staff of the PU and includes the following documents:

- request to the Rector of the PU to disclose the procedure for the defense of a dissertation work;
- CV in European format;
- protocol from the Departmental Council related to reporting the readiness to open the procedure and preliminary discussion of the dissertation work;
- dissertation work;
- abstract;
- list of scientific publications on the topic of the dissertation;
- a complete list of the doctoral student's scientific publications;
- copies of scientific publications on the topic of the dissertation;
- declaration of originality and authenticity of the attached documents;
- certificate of fulfillment of the minimum national requirements for acquiring the educational and scientific degree "doctor".

The doctoral student has also attached an official note for participation in two research projects under the Operational Program "Science and Education for Smart Growth".

The attached documents meet the regulatory requirements set by the ZRASRB and the Rules for its implementation for the acquisition of the educational and scientific degree "doctor".

2. Relevance of the dissertation topic

The topic of the dissertation refers to the current and prospective field of informatics and computer systems, related to the development of semantic models for providing new knowledge in the field of humanities. The use of methods and techniques for processing natural language, extracting and presenting semantic relationships between words, phrases and documents in textual data determines the essential role of this type of models in the development of modern computerized humanities both in our country and internationally. In this context, the topic of the dissertation research is distinguished by its current and significant character with the potential for contributions in scientific and scientific-applied terms.

3. Knowledge on the state of the problem

In the first chapter, a detailed overview and analysis of the main concepts in the dissertation research such as semantic web, ontologies, languages for ontologies and applications of ontologies in various fields is made. In summary, ontologies are defined as knowledge bases for a particular domain that can be reused for different purposes. As a result of the research carried out in this chapter, a new approach for automatically generating questions from ontologies in the Bulgarian language in the humanitarian field has been developed. The presented material in the chapter shows an in-depth knowledge of the matter and current problems in the researched area with a view to realizing the formulated goal and tasks of the dissertation work.

4. Research methodology

The dissertation contains a developed strategy for achieving the set goals, which is characterized by logical justification and particularly formulated stages of work. They include creation of an ontology as a semantic model in the humanitarian field, testing of the model, development and testing of algorithms for automatic generation of questions in Bulgarian, improvement of the structure of the ontology and algorithms, possibilities of creating a new ontology using analogous structures. The obtained results show that the developed strategy was successfully implemented in accordance with the set goal and tasks of the dissertation.

4. Characterization and evaluation of the dissertation work and contributions.

The dissertation has a volume of 201 pages and consists of an Introduction, 5 chapters, a Conclusion and an Appendix containing the developed algorithms. Lists of figures and tables in the text are provided, containing 167 Figures and 12 tables, respectively. The list of bibliographic sources includes 162 titles, including sources from Bulgarian and foreign authors, as well as Internet sites. The list of publications on the dissertation topic contains 6 titles. A list of 11 reports on the dissertation topic presented at national and international scientific conferences is also presented. According to the requirements, a Declaration of originality of the obtained results is attached to the dissertation.

The individual chapters of the dissertation are developed in detail and systematically and present the author's solutions to the tasks set. Overall, the dissertation reflects the author's in-depth research work and convincingly presents the results obtained.

I accept and positively evaluate the results noted in the dissertation and the Abstract. In my opinion, they can be defined as contributions of a scientific and scientific-applied nature as follows:

- A semantic model was created in the form of an ontology in the humanitarian field. The model is applied to describe the history of today's Humanitarian High School in the city of Plovdiv, established during the Renaissance.

- Algorithms have been created for the automatic generation of interrogative and communicative sentences from the Bulgarian language ontology.

- A C# application was developed using predefined structures to create and introduce new information into the ontology.

- A C# language application was developed for extracting information from ontologies based on the created algorithms.

The relationship between the tasks set, their development in the structure of the dissertation, the results obtained and the publications made is correctly reflected in Table 12 on page 164.

6. Evaluation of the publications and personal contribution of the doctoral student

The presented 6 publications on the dissertation topic were published in the period 2021-2022. They are co-authored, two of them are in issues indexed in the Scopus database. The publications reflect essential parts and main results of the conducted research and meet the requirements for acquiring the educational and scientific degree "doctor". In addition, a complete list of the doctoral student's publications is presented, containing 12 titles, data for one noticed citation are indicated. With this, the results of the author's overall research activity have become available to the scientific community in the subject under consideration.

My acquaintance with the dissertation and the publications on the dissertation topic gives me grounds to consider that the dissertation work and the contributions to it are personal work of the doctoral student. I am not aware of any plagiarism.

7. Abstract

The abstract has a volume of 32 pages in Bulgarian and English and meets the requirements for its formatting. Its content corresponds to the content of the dissertation and accurately presents the main results of the dissertation work.

8. Recommendations for future use of dissertation contributions and results

The dissertation contains directions for future research work that are well-formulated and essentially represent a logical continuation and further development of the dissertation's contributions and results. My recommendation is that in the future work of the author, these results should find

application in the educational and pedagogical activities of Plovdiv University "Paisiy Hilendarski", as well as in various fields of humanities.

CONCLUSION

The dissertation contains scientific and scientific-applied results, which represent an original contribution to science and meet all the requirements of ZRASRB, the Regulations for its implementation and the respective regulations of Plovdiv University "Paisiy Hilendarski". Doctoral student Maria Grancharova-Hristova possesses in-depth theoretical knowledge and professional skills in the scientific specialty "Informatics", demonstrating qualities and skills for independent conduct of scientific research.

I confidently give my positive assessment of the presented dissertation work and the results and contributions obtained in it. I propose to the Honorable Scientific Jury to grant the educational and scientific degree "doctor" to Eng. Maria Grancharova-Hristova in the field of higher education: 4. "Natural Sciences, Mathematics and Informatics", professional direction 4.6. "Informatics and Computer Science", Doctoral Program "Informatics"

12.01. 2024.

Opinion prepared by:

/Prof. Dr. Vladimir Monov/