

REVIEW

of dissertation for the award of educational and scientific degree "Doctor"
scientific field 5. "Technical sciences",

professional field 5.3 Communication and computer technology,
scientific specialty "Communication and Computer Engineering"

topic: "Modeling knowledge for the needs of intellectual systems"

author of the dissertation: Krasnomir Milkov Krachunov

Scientific adviser: Assoc. Prof. Dr. Iosif Avramov

Member of the Scientific Jury Prof. Dr. Dimitar Nedelchev Karastoyanov, IICT - BAS

General characteristics of the dissertation

The dissertation has a volume of 222 pages, divided into 9 chapters, introduction and conclusion. 2 Appendices are also presented. The bibliography is from 71 sources.

1. Relevance of the problem developed in the dissertation in scientific and scientific-applied terms

The dissertation of Krasnomir Krachunov is in the scientific and applied field for finding and researching a set of general cognitive systems (knowledge), through which simple elements to build a basis for building systems of types of intellectual knowledge, which is the purpose of the dissertation. There is a lot of research and development in the world on individual topics, but in total they are rare in our country. This determines the relevance and innovation of research and development of Krasnomir Krachunov.

2. Degree of knowledge of the state of the problem and the literature.

An extended detailed literature review of the considered practices in our country and around the world, existing, new and innovative methods, techniques and technologies for research and analysis has been made. The presented material shows in-depth knowledge of the developed topic, what are the current problems in the field, as well as the potential opportunities for their solution. On this basis, the purpose and tasks of the dissertation are formulated.

3. Compliance of goals and objectives with the achieved results.

The review, analysis and conclusions of the theoretical research made and realized by the doctoral student, existing methods and means for expert analysis, give the opportunity to develop and apply approaches for differentiation of a set of unprovable and irrefutable knowledge, which can only be observed. refer to natural phenomena that cannot be proven or disproved.

From well-formulated, substantiated and motivated goals and tasks, the doctoral student has contributed to the realization of the dissertation and the real contributions. The obtained results show that the doctoral student has successfully chosen the research apparatus for obtaining new results with scientific-applied and applied contributions.

The main goals of the dissertation are:

To find the availability of general knowledge that serves, in part or all, as a starting point in modeling knowledge for different intellectual systems. To determine the place of general knowledge in a formal presentation of all knowledge.

Arrange the general knowledge in a certain system or build a model.

Finding an appropriate and convenient way to present general knowledge for use in communication and computer technology.

In order to achieve these goals, it is necessary to separate the common phenomena from the many known and studied phenomena and, as far as possible, to find and build a system in which these general phenomena are connected in certain ways.

4. Brief analytical characteristics and assessment of the reliability of the material.

Chapter 1 consists of Introduction, purpose and methodology of the research.

Chapter 2 presents an analysis of the existing situation.

Chapter 3 provides a rationale for the study.

Chapter 4 sets out the formalization of knowledge, ideal and abstract objects and systems, and generalities.

Chapter 5 presents general provisions and definitions on the topic of knowledge.

Chapter 6 sets out a method for determining general conditions in nature.

In Chapter 7 the topic is communication - areas of knowledge application.

Chapter 8 discusses telecommunications and smart city financing.

Chapter 9 presents the contributions and perspectives of the dissertation.

In Annex 1, the concept of "tact" is studied, and in Annex 2 - the concept of "rectilinear motion of a rigid body".

5. Scientific and scientific-applied contributions of the dissertation.

The contributions in the dissertation have mainly scientific-applied and applied character and are presented as follows:

1. Provisions have been found which apply to all natural manifestations and which are elementary and neither proven nor disproved.

2. Those unprovable and irrefutable positions that perform the functions of axioms or accepted positions are indicated and arranged in a system. A selection of manifestations in nature has been made, which are listed as common.

3. At least one found and desired result has been obtained - these initial phenomena as concepts and categories can and do serve as a basis for creative techniques.

4. The general provisions that can be defined as primitives are indicated.

5. The areas of application of knowledge are defined and can be determined by the following opposites: material-ideal, perceived-represented.

6. The connection between the main areas of knowledge and the logics by which knowledge is built and expressed is indicated.

7. In the developed example the way of using the available knowledge and their structuring according to the development is indicated.

I accept and evaluate positively formulated by the doctoral student the scientific-applied and applied contributions, reflected in the dissertation and the abstract.

6. Assessment of the degree of personal participation of the doctoral student in the contributions.

I believe that the dissertation and its contributions are the personal work of the doctoral student, under the extremely skilful guidance of his supervisor and with the help of participants from his team.

7. Evaluation of the publications on the dissertation.

The doctoral student has presented 6 publications on the dissertation, of which:

2 at the ADP Conference in our country,

1 in the Journal in Bulgaria,

1 of the Conference "Greening" in our country,

2 in the Yearbook of the Department of Telecommunications,.

In general, the publications presented in the dissertation reflect the essential part and the main results of the conducted research. With the publications made, the results of the dissertation have become available to our scientific community.

Some of the publications are before the doctoral term, which is not an obstacle to be used in the dissertation.

8. Using the results of the dissertation in practice.

The doctoral student has performed a large amount of work, characterized by comprehensiveness, depth and competence. The paper describes well the innovative approaches and methodologies in order to improve efficiency and quality. Specific methodologies for research and tests have been developed.

9. Assessment of compliance of the abstract and the requirements for its formation.

The abstract fully reflects the content of the dissertation. It meets the requirements and essentially reflects the set and solved goals and objectives, the results obtained and the main scientific-applied and applied contributions and presents exactly the main achievements in scientific work.

10. Opinions, recommendations and remarks.

I have no remarks that would call into question the authenticity of the results presented in the dissertation and the contributions.

I have shared some remarks of a technical and stylistic nature with the doctoral student.

I also recommend to the doctoral student more independent articles in foreign journals.

CONCLUSION

The remarks are mainly of a technical nature. In conclusion, I believe that the author has made an in-depth study of the problem, analyzed the results of the study and proposed a comprehensive solution in a new and promising area. The basic requirements of ZRASRB, of the Regulations for its application are fulfilled, as well as the specific requirements for acquiring a scientific degree in NBU in terms of scope, volume and quality of the dissertation.

On this basis, I appreciate the work and propose that the Honored Scientific Jury award Krasnomir Milkov Krachunov the scientific and educational degree "DOCTOR" in field 5. Technical Sciences; direction 5.3. Communication and computer equipment; specialty: Communication and computer technology.

Sofia, April 13, 2022

Reviewer:



(Prof. Dr. Dimitar Karastoyanov)