OPINION

by Assoc. Prof. Dr. Eng. Vladimira Krasteva Ganchovska

Member of the Department of Computer Systems and Technologies at the University of Food Technology - Plovdiv

of a dissertation for the award ofeducational and scientific doctorate degree

in: field of higher education 5. Technical sciences

professional field 5.3 Communication and computer technology

Doctoral program Automation of areas of the intangible sphere (medicine, education, science, administrative activities, etc.)

Author: *M. Eng. Ivaylo Detelinov Uzunov*

Тема: *SIMULATION MODEL AND FINAL SOLUTIONS OF SECURITY SYSTEMS.*

Научен ръководител: *Prof. Dr. Eng. Slavi Yasenov Lyubomirov.*

1. General presentation of the procedure and the doctoral student

The set of materials on paper presented by M. Eng. Ivaylo Detelinov Uzunov is in accordance with Art. 36 (1) of the Regulations for the Development of the Academic Staff of the University of Plovdiv and includes the following documents:

– a request to the Rector of the University of Plovdiv to disclose the procedure for defending a dissertation;

– CV in European format;

– minutes from the department council, related to reporting the readiness to open the procedure and preliminary discussion of the dissertation work;

– dissertation;

– abstract;

– a list of scientific publications on the topic of the dissertation;

– copies of scientific publications;

– declaration of originality and authenticity of the attached documents;

– a certificate of compliance with the specific requirements of the respective faculty.

M. Eng. Ivaylo Detelinov Uzunov was born on 13.03.1987. In 2016, he obtained a Bachelor's degree in Computer and Communication Systems at the Technical College - Smolyan. In 2019, he graduated from Plovdiv University "Paisii Hilendarski" and obtained a Master's degree in Telematics. The candidate is enrolled as a full-time doctoral student in the Department of "ELECTRONICS, COMMUNICATIONS AND INFORMATION TECHNOLOGIES" of Plovdiv University "Paisii Hilendarski", and from 01.03.2024 he was enrolled with the right to defend by order No. RD -21-508/28.02.2024.

2. Relevance of the topic

In today's digital world, all major social activities take place online. This is associated with a large set of information, including personal data of both individuals and legal entities. The need to develop effective strategies for protecting network infrastructures and web applications is a key factor for the sustainability and competitiveness of organizations.

3. Knowing the problem

The overview part of the dissertation is 38 pages long. It includes 94 literary and 143 electronic sources, most of which are from the last 10 years. This shows that the doctoral student has become deeply familiar with the topic and contemporary trends in solving the tasks of the dissertation.

4. Research methodology

I believe that the approaches chosen by the doctoral student for conducting research on network information systems in terms of security meet the defined tasks and the set goal of implementing a simulation model and final solutions for security systems.

5. Characterization and evaluation of the dissertation work and contributions

The dissertation is 176 pages long. It is structured in an introduction, four chapters, general conclusions, scientific and applied and applied contributions, a list of terms and abbreviations used, a list of the author's publications, bibliography and Appendix 1. In the first chapter, the types of computer threats are classified and the summary is made that their effective management requires a multidisciplinary approach. In the second chapter, the main methods and approaches for encrypting information are studied, including cryptographic models and simulation analysis in security systems. A study of network information systems in terms of security is done in the third chapter of the dissertation. In the fourth chapter, methods for checking and eliminating gaps leading to potential unauthorized access by third parties are studied and presented, in order to reduce attacks and improve security.

The doctoral student has defined 10 contributions, 5 of which are defined as scientific and scientific and applied, and the rest as applied. I believe that the defined contributions reflect the results achieved and are directly related to the set goals and objectives.

6. Assessment of the doctoral student's publications and personal contribution

The doctoral student has attached 5 articles to the dissertation, one of which is independent, and the remaining 4 are co-authored and he is the first author. Two of the articles are in English, and the rest are in Bulgarian. The publications correspond to the topic of the dissertation and reflect the results obtained. The submitted publications exceed the minimum national requirements for acquiring the ONS "doctor".

7. Autor's abstract

The abstract submitted for review is 31 pages long and meets all the regulatory requirements of the Act on the Development of the Academic Staff in the Republic of Bulgaria (ADSRB), the Regula-tions for the Implementation of the ADSRB and the relevant Regulations of the Paisii

Hilendarski University. The defined goal and objectives, summaries of all points of the dissertation, the main experiments and the results obtained are included. The main conclusions for each of the points and the defined contributions are presented.

8. Recommendations for future use of the dissertation contributions and results

Some formal errors were noted in the editing of the text in the dissertation and the abstract. This note does not concern the essence of the work and does not reflect on my personal positive assessment.

I recommend that in view of the dynamically changing cyber environment and the increasing complexity of attacks, future development of the research be directed towards the integration of artificial intelligence and machine learning for analysis and early detection of anomalies in network security.

CONCLUSION

The dissertation of M. Eng. Ivaylo Detelinov Uzunov fully complies with the requirements of the Act on the Development of the Academic Staff in the Republic of Bulgaria (ADSRB), the Regula-tions for the Implementation of the ADSRB and the relevant Regulations of the Paisii Hilendarski University.

Based on the results obtained in the dissertation work, I give **my positive assessment**. ***I propose to the esteemed scientific jury to award the educational and scientific degree "doctor"*** to M. Eng. Ivaylo Detelinov Uzunov in the field of higher education 5. Technical sciences, professional field 5.3 Communication and computer technology, doctoral program Automation of areas of the intangible sphere (medicine, education, science, administrative activities, etc.)

13.04.2025 г. **Prepared the opinion: .....**

/Assoc. Prof. Vladimira Ganchovska /