

# **OPINION**

**of a dissertation  
for the acquisition of the educational and scientific degree "Doctor" in**

**Field of higher education – 5. Technical Sciences**

**Professional field – 5.3 “Communication and Computer Engineering”**

**Doctoral program – "Communication Networks and Systems"**

**Author: Eng. Teodora Valentinova Zhorova**

**Topic: Traffic Monitoring in Communication Systems with Artificial Intelligence**

**Member of the scientific jury: Prof. Emiliya Andonova Dimitrova, PhD**

## **1. Topic and relevance of the dissertation work**

The dissertation is developed in a good style in a volume of 193 pages and includes an introduction, four chapters, a conclusion, formulated contributions, publications of the author, a bibliography. Each chapter presents the main conclusions and results of the research. 161 literary sources are cited, the majority of which are in English and are from the last 15 years.

The research is aimed at developing methods and models for analysis and assessment of quality of service (QoS), quality of user experience (QoE), monitoring, diagnosis and prediction of disturbances in transmission communication environments, using Artificial Intelligence, Machine Learning and Deep Learning approaches. A comparative analysis of the effectiveness of the created methods and algorithms for diagnosing network traffic and access to Internet service has been conducted.

The proposed approach is not bound by specific technical requirements (to the type on the portable environment, length on the route, the standards for management on the network communication, quantity served users, technology for broadband access, etc.), which is why it can find wide application from the planning stage to operation both in local systems with relatively autonomous functioning and in large-scale telecommunication systems and information and communication infrastructures for administering network traffic. From this point of view, the dissertation work is characterized by a high degree of relevance.

## **2. Research methodology**

The research methodology includes the development of analytical components for cluster analysis, classification and recognition, function minimization through optimization methods and algorithms, regression diagnostics and modeling, using Artificial Intelligence, Machine Learning and Deep Learning technologies.

## **3. Contributions of the dissertation work**

I agree in essence with the proposed contributions of the dissertation work, classified by the doctoral student as six scientific-applied and three applied.

They can be attributed to *Creating new methods, models, algorithms and programs; Proving with new means significant new aspects of already existing scientific fields and problems; Obtaining confirmatory facts.*

#### **4. Publications and citations of publications on the dissertation work**

Seven publications have been presented on the dissertation work, one of them is in sole authorship – a report at the International Scientific Conference "UniTech - 2023" (Gabrovo). The remaining publications are co-authored, with 2 of them being in publications indexed in Scopus - reports were presented at scientific conferences abroad "EEPES - 2023" (Greece) and "Environment. Technologies. Resources - 2023" (Latvia).

Five scientific publications are in edited collective volumes – "Proceedings of University of Ruse" (2 issues), "Proceedings of International Scientific Conference UNITECH" (2 issues) and Proceedings of "Student Scientific Session SNS'24" (Gabrovo).

One of the co-authored publications has two authors, four have three authors, one has five, the doctoral student is in first place in one of them and in second place in four.

According to the requirements for acquiring the ESD "Doctor" at TU - Gabrovo, it is necessary (in addition to presenting a dissertation – Indicator A - 50 points) to meet the requirements for Publication Activity of at least 30 points and at least 5 publications, one of which is in sole authorship.

From the submitted scientific publications, the number of points under indicators G7 and G8 was determined as follows:

Indicator G7 – Scientific publications in refereed and indexed journals in world-renowned databases of scientific information – 2 (co-authored): **26.66 points**.

Indicator G8 – Scientific publications in non-refereed journals with scientific review or in edited collective works: 5 (1 in sole authorship, 4 co-authored): total **47.34 points**.

The total number of points under Indicator G is **74**, which significantly exceeds the requirements. The number of publications also meets the required conditions.

The papers presented are at prestigious scientific forums, including a publication in AIP Conference Proceedings with SJR ( 2025 ) = 0.146. The main results of the research are reflected in the dissertation. It can be considered that the necessary publicity has been achieved before the professional engineering community.

There is no data on citations of publications.

#### **5. Authorship of the obtained results**

A Declaration of Authorship by the doctoral student is attached to the submitted documents. Participation in three projects at the Center for Scientific Research and Technology at the Technical University of Gabrovo, funded by the state budget, can be accepted as evidence of active research activity.

#### **6. Comments, recommendations and remarks on the dissertation work**

I have no significant comments on the presented dissertation. I have some recommendations of a technical nature:

It is desirable that the bibliography be arranged according to the requirements (in alphabetical order, first – technical literature in Cyrillic, then – in Latin).

Technical and punctuation errors, incorrect articulation are noticed, which can be easily removed at least in the electronic versions of the dissertation and abstract sent to NACID.

I recommend that the doctoral student continue her research activities on this promising topic and publish in journals with an impact factor.

## **7. Conclusion**

I consider that the presented dissertation meets the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria.

The achieved results give me reason to propose that the educational and scientific degree "Doctor" be acquired by Eng. Teodora Valentinova Zhorova in the field of higher education - 5. Technical Sciences, professional field - 5.3. Communication and Computer Engineering, doctoral program – “Communication Networks and Systems”.

04.05.2026

**Member of the scientific jury:**

/Prof. Dr. Eng. E. Dimitrova, PhD/