REVIEW

Authored by Prof. Dr. Eng. Stanislav Denchev Simeonov

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Concerning scientific production submitted for participation in the competition

for the academic position of "professor" in

the field of higher education – 5. Technical Sciences,

by professional field – 5.3. Communication and computer technology,

scientific specialty – “Automated Information Processing and Management Systems” (Internet-based systems, Databases in industrial systems, Technology of cyber-physical systems)

In the competition for a professor, announced in the State Gazette, issue 48/13.06.2025 and on the website of TU-Gabrovo for the needs of the Department of “Automation, Information and Control Engineering” at the Faculty of “Electrical Engineering and Electronics.”

As a candidate participates Assoc. Prof. Dr. Eng. Aldeniz Enverov Rashidov

Based on Order No. 3 01 432/02.10.2025 of the Rector of the Technical University - Gabrovo, I have been appointed as a reviewer for the procedure.

1. Brief Biographical Information

The only candidate in the announced competition for academic position PROFESSOR professional field 5.3 "Communication and Computer Engineering" is Assoc. Prof. Dr. Eng. Aldeniz Enverov Rashidov. He is an associate professor at the Faculty of Electrical Engineering and Electronics (EE) at the Technical University - Gabrovo.

Assoc. Prof. Dr. Aldeniz Enverov Rashidov graduated from the Technical University - Gabrovo in 1996, majoring in "Systems and Control (Computer Engineering)", with a qualification of Master - Engineer.

In 2006, Assoc. Prof. Rashidov defended his dissertation on the topic "Intelligent Methods for Data Search and Processing in a University Information System" - scientific specialty "Automated Systems for Information Processing and Management".

He has held the positions of assistant professor (since 1999), senior assistant professor (since 2003), and chief assistant professor (since 2006). Since 2010, he has been an associate professor at the Department of Automation, Information Control Technology, Faculty of Electronics and Electrical Engineering (EE) of the Technical University of Gabrovo. He has held the following administrative positions:

- Director of e-learning and distance learning;

- Head of the Information Assurance Sector.

He specialized in:

- Alanya Alaaddin Keykubat University - Alanya, Turkey;
- Nevşehir Haci Bektaş Veli University, Engineering Architecture Faculty - Nevşehir, Turkey;
- CEEPUS Summer School in Technical University – Brno, Czech Republic;
- Erasmus Program - Trakya University - Edirne, Turkey;
- Erasmus Program - Namik Kemal University - Corlu, Turkey.
- She participated in the following teaching mobilities:
- Databases – at Thrace University Edirne, Turkey;
- Web-based industrial information system - Namik Kemal University – Chorli, Turkey;
- Cyberphysical systems. Internet of Things (IoT). The Microsoft Azure platform, - Alanya Alaaddin Keykubat University, Turkey;
- Cyberphysical systems. Internet of Things (IoT). The Microsoft Azure platform - NEVŞEHİR HACI BEKTAŞ VELİ UNIVERSITY, Engineering Architecture Faculty, Turkey;
- Cyberphysical systems, CEEPUS 2021 Summer School, "Internet of Things – Challenges, Applications, Trends", Network: CIII-PL-1509-01-2021.

2. General description of the Submitted Materials

Art. 29 pt. 3 of the Law on the State of the Republic of Bulgaria on the State of the Republic of Bulgaria requires the candidate in the competition to have "published a monographic work or to have presented equivalent publications in specialized scientific publications. In his documents, the candidate has presented for participation in the competition a total of 55 scientific works, three books and two methodological aids. I could formally group them as follows:

- 12 publications, according to criterion B.4. (Habilitation thesis – scientific publications (not less than 10), in publications that are referenced and indexed in world-renowned databases of scientific information. Four of them (B4.1, B4.2, B4.3, B4.4) in publications with an impact factor, the remaining eight (B4.6, B4.7, B4.8, B4.9, B4.10, B4.11, B4.12) – conference reports;
- 10 publications under criterion Г.7. (Publications outside the group of monographic works, in publications referenced and indexed in world-renowned databases of scientific information);
- 33 publications under criterion Г.8 (Publications in non-refereed journals with scientific review);
- 3 published books, two independent and one co-authored by the candidate;
- 2 methodological aids, one independent and one co-authored by candidate;
- Two electronic courses.

The candidate is the scientific supervisor of 1 successfully defended doctoral student.

All works submitted for participation in the competition are outside those for the dissertation and for acquiring the title of "associate professor". They correspond to the topic of the competition and are accepted for review.

The scientific production submitted for the competition is summarized in Table 1.

The table shows that the materials many times exceed the requirements for occupying the academic position of "PROFESSOR".

Table 1. Scientific indicators.

Metrics	Content	Requirement from TU-Gabrovo	Done by the candidate
А	Thesis for ESD PhD	50	50
Б	Thesis for SD Doctor of science"	-	-
В	Habilitation work - scientific publications (not less than 10) in publications that are referenced and indexed in world-renowned databases with scientific information	100	630
Г	Sum of indicators 5 - 11	200	696,66
Д	Sum of indicators 12 – 15	100	269
Е	Sum of indicators from 16 to the end	150	290

3. Impact of the candidate's scientific publications in the scientific community (known citations)

The impact of the candidate's scientific works is related to the significance of the work topic and the contribution to their content. For the most part, the developments in the materials submitted for the competition advocate an innovative scientific approach to a solution.

The materials for the competition are accompanied by a bibliographic reference of 51 open citations of the candidate's works, which I allow myself to classify as follows:

- 17 publications, referenced and indexed in internationally acclaimed databases with scientific information
- 31 publications in monographs and collective volumes with scientific review;
- 3 publications in non-refereed journals with scientific review.

These data are convincing that the contributions made in the candidate's work are predominantly his own work and have found sufficient reflection in the scientific community.

I have not found any evidence of plagiarism.

4. Overview of the content and results in the submitted papers

The scientific papers submitted to me for review can be categorized into the following thematic areas:

4.1. Applications of artificial intelligence for automation and optimization of processes (B.4.1, B.4.2, B.4.3, B.4.4, B.4.5, B.4.7, B.4.9).

This group of scientific papers examines issues related to the application of artificial intelligence in automation and optimization processes. The integration of AI in scientific research, analysis of scientific publications, generation and evaluation of scientific hypotheses have been implemented. Based on additional analysis, corrections are made in terms of objectivity and accuracy of assessments. A concept for assessing the intelligence of AI systems has been developed. An architecture for digital olfaction has been created. Language models for recognizing, analyzing and reproducing odors have been presented.

4.2. Automated information processing and management systems (B.4.8. B.4.11, Г.7.3, Г.7.5, Г.7.7, Г.7.8, Г.7.10, Г.8.1, Г.8.2, Г.8.3, Г.8.4, Г.8.6, Г.8.7, Г.8.9, Г.8.12, Г.8.13, Г.8.17, Г.8.23, Г.8.24, Г.8.26, Г.8.27, Г.8.29. Г.8.31).

Here, research is mainly focused on the field of databases. Innovative methods for designing web databases based on a multi-layered architecture are applied. Attention is also paid to distributed databases. Decentralization of business structures is a prerequisite for increasing the scalability of information. This allows for the implementation of higher efficiency. Implementation is an innovative approach to making management decisions based on a cellular immune response. Such an approach makes it possible to eliminate subjectivity and overcome the limitations of mathematical modeling. Structures for storing and processing data in a cloud environment are also analyzed. Based on this analysis, the advantages and disadvantages of cloud architectures are defined in comparison with traditional ones. Management automation processes regarding academic resources are modeled.

4.3. Digitalization of educational and administrative processes (Г.7.6, Г.8.8, Г.8.10, Г.8.11, Г.8.15, Г.8.18, Г.8.24, Г.8.28, Г.8.30, Г.8.32, Г.8.33)

A methodology for managing scientific activity has been developed. The rules and tools for an approach that allows linking scientific research with market requirements have been developed. User preferences in educational environments have been analyzed. A concept for a survey system and its implementation have been developed, allowing for real-time processing of results. This direction also includes developments in terms of electronic and distance learning systems.

5. General description of the candidate's activities

5.1. Educational and pedagogical activities (work with students and postgraduate students)

The candidate's pedagogical experience is expressed in authorship and publication of textbooks and methodological aids, construction of laboratories, conducting classes, extracurricular work with students, etc. Assoc. Prof. Aldeniz Rashidov has been a lecturer since 1999 in the Department of Automation, Information and Control Engineering. The number of lecture courses he has led - according to the submitted reference 11 in Bulgarian and 6 in English - eloquently proves his qualities as a lecturer. Lecture courses have been led in the disciplines: "Microcontrollers in Control Systems", "Information Systems and Databases in Technical Safety", "Technology of Cyber-Physical Systems", "Internet-Based Systems", "Industrial Networks and Interfaces", "Databases in Industrial Systems", "Industrial Information Systems", etc. In the Bachelor's and

Master's Degrees. He has supervised 69 successfully defended graduates in the Bachelor's and Master's degree programs. He is the scientific supervisor of 1 successfully defended doctoral student. He has published three books, two independent and one co-authored, two teaching aids, one of which is independent and one co-authored. The presence of co-authors in the books and teaching aids presented in the competition documents indicates a high assessment by colleagues of this side of the candidate's pedagogical activity. Certificates for mobility and lecturing at foreign universities - in Turkey - have been presented.

5.2. Scientific and research activities

Assoc. Prof. Dr. Aldeniz Rashidov has participated in teams of 4 national and general education projects, 3 international projects, led a national project, participated and led 9 university projects. The candidate is a member of editorial boards of numerous scientific publications and international scientific conferences. Assoc. Prof. Rashidov is a member of IEEE and SAI. He has participated in scientific juries for awarding the educational and scientific degree "Doctor".

5.3. Development activity

The candidate has participated in teams and has led projects that have resulted in the development and implementation of modules and technologies. Assoc. Prof. Rashidov has successfully developed the University Information System UMIS, implemented in TU Gabrovo, UHT Plovdiv and TU Varna. Implemented and in operation at TU Gabrovo are:

- Virtual environment for year-round online exams;
- Virtual environment for year-round reception of candidate student documents.

6. Contributions (Scientific, Applied Research, Practical)

I accept the contributions defined by the candidate. Having familiarized myself with the content of the materials submitted to me for review, I allow myself to classify the contributions as follows:

A. SCIENTIFIC CONTRIBUTIONS

- A concept for integrating AI into scientific research has been developed. A method for assessing the intelligence of AI systems (AISIQ) has been developed
- A digital olfaction architecture has been created that integrates an electronic nose, an aromatic generator and large language models (LLM) for odor recognition, analysis and reproduction.
- A DCLF+ method has been developed for designing distributed databases that meet the requirements of decentralized business structures;
- Development of an immune method for making management decisions based on the principles of the cellular immune response, eliminating subjectivism and overcoming the limitations of mathematical modeling.

B. SCIENTIFIC AND APPLIED CONTRIBUTIONS

- Algorithms for reviewing scientific manuscripts and project proposals via ChatGPT have been developed, including SWOT analysis and weighting factors that increase the objectivity, accuracy and efficiency of the process and those for selecting scientific topics,

automated summarization and formatting of citations, integrating relevance analysis, linguistic processing and scientific validity;

- Analysis of architectures for structuring, storing and processing data in a cloud environment, which provides a basis for increasing the accessibility and efficiency of databases for a wide range of users;
- A hybrid model for integrating centralized tables and information matrices has been developed, ensuring more effective structuring and processing of distributed data in dynamic environments;
- Universal database models and structures have been developed for automation of management decisions, which demonstrate the applicability of methodologies such as MAPSMET;
- Automated models for managing academic resources have been developed, which increase transparency and efficiency;
- A methodology for managing scientific activity has been developed, which connects academic research with market requirements.

C. DEVELOPMENT CONTRIBUTIONS

- An electronic voting system has been developed and implemented, which ensures security, transparency and reliability in the election processes;
- A scientific activity management system has been designed and developed based on a proposed methodology, which has been implemented for the optimization of academic processes;
- An electronic survey system has been designed and developed, based on the proposed methodology, which automates the survey processes;
- Virtual environments for electronic testing have been created, which automate assessment and provide interactive opportunities for exam management;
- A system for automating student admission and resource allocation has been implemented, which improves administrative efficiency;
- Mobile and distance learning platforms have been developed, which facilitate access to learning resources and increase the efficiency of the learning process;
- Methods for protecting web applications and preventing unauthorized access have been proposed, which increase the security of databases and servers in corporate and academic environments;
- Strategies have been developed to minimize bias and increase public trust in AI by creating ethical frameworks, regulatory mechanisms, and algorithmic adjustments.

7. Assessment of the candidate's personal contribution.

Of the 55 scientific papers, three books and two methodological aids accepted for review, 23 publications are independent, and in the rest, Assoc. Prof. Dr. Rashidov is a co-author. The materials do not present a dividing protocol for the percentage participation of the authors, which is why I accept their participation as equal. This, as well as the analysis of the scientific papers submitted for review, give me reason to believe that the contributions presented in point 6 of my review are the work of Assoc. Prof. Dr. Eng. Aldeniz Rashidov.

8. Critical remarks and recommendations

- I have no critical remarks. Based on an analysis of the papers submitted to me for review for participation in the competition, as well as my impressions of their content, I make the following constructive recommendations for the future work of Assoc. Prof. Dr. Eng. Aldeniz Rashidov:
- To focus on publishing a monographic work with summarized conclusions and results of his research work;
- To seek opportunities to form a team of scientists from various scientific organizations to participate in significant national and international projects.

I expect to hear the candidate's position on these issues in his presentation.

9. Personal impressions

Personally, I know the candidate vaguely. I gain impressions about him mainly based on the documents submitted. I have an opinion of a well-prepared researcher and experienced teacher. The recommendations indicated within the framework of this review are part of the impressions, based on the documents submitted and my assessment after acquaintance and analysis of the scientific production submitted for review.

10. Conclusion:

In order to justify my conclusion, I will allow myself to make the following generalizations:

- - The candidate has many years of professional and academic experience and is well acquainted with the current state of science in the competitive field;
- - Has a sufficient volume of scientific production with scientific, applied science and applied contributions, corresponding to the requirements for the academic position.

Based on the presented scientific works, the assessment of their significance and the scientific and applied contributions contained in them, I find it reasonable to give a positive comprehensive assessment and propose Assoc. Prof. Dr. Eng. Aldeniz Enverov Rashidov to be a "**professor**" in the field of higher education - 5. Technical sciences, professional direction - 5.3. Communication and computer technology, specialty - specialty - "Automated information processing and management systems" (Internet-based systems, Databases in industrial systems, Technology of cyber-physical systems).

20.10.2025г. Reviewer: _____

Burgas /Prof. Stanislav Simeonov, PhD/