

OPINION

by **Assoc. Prof. Elena Ivanova Stoyanova, PhD, Eng., Technical University of Gabrovo**

On the materials submitted for participation in a competition for filling the

Academic position of “**professor**”

In the field of higher education – **5. Technical Sciences,**

In the professional field – **5.3. Communication and Computer Engineering,**

Specialty – “**Automated Information Processing and Control Systems**”

In the competition for professor, announced in the State Gazette, issue 61 of 03.07.2026, and on the website of TU-Gabrovo for the needs of the Department of “Computer Systems and Technologies” at the Faculty of “Electrical Engineering and Electronics”, the candidate participating is **Assoc. Prof. Rosen Stefanov Ivanov, PhD, Eng.** – Technical University of Gabrovo.

1. Overview of the content and results of the submitted works

As a participant in the competition for the academic position of “professor”, Assoc. Prof. Dr. Eng. Rosen Stefanov Ivanov has submitted the documents in Web format, structured in accordance with the requirements of the Technical University of Gabrovo and the national requirements for acquiring academic positions, regulated by the Law on the Development of the Academic Staff in the Republic of Bulgaria (LDASRB). The documents provided are exceptionally well structured. The scientific publications are divided into three separate lists:

- Publications for the educational and scientific degree “doctor”
- Publications for the academic position “associate professor”
- Publications for participation in the competition for the academic position “professor”

For participation in the competition, Assoc. Prof. Rosen Ivanov has submitted a list of 35 scientific articles and conference papers, 1 monograph, and a list of 6 textbooks and teaching aids. Of the 35 submitted scientific articles and papers, Assoc. Prof. R. Ivanov is the sole author of 25.

The requirements under indicator B.4 are covered by 12 scientific articles and papers with Assoc. Prof. Rosen Ivanov as sole author. Six of these works are published in journals with an impact factor (IF). These publications meet the criterion for presenting a habilitation work.

The published monograph is not presented as the main habilitation work and covers the requirements of criterion G.5. Under indicator G.7, 6 scientific publications indexed in Scopus and/or WoS, 3 of which are articles in peer-reviewed scientific journals, have been presented. Under indicator G.8, Assoc. Prof. Ivanov has presented a total of 17 publications, of which 7 are in non-refereed scientific journals, 9 are in proceedings of scientific conferences, and 1 is published in the Annual of TU-Gabrovo.

To certify the quality of the scientific works, Assoc. Prof. Rosen Ivanov has presented information on the impact factor and the assigned quartile of the journals in which he has publications. To meet the requirements of criterion D.12, Assoc. Prof. Rosen Ivanov has presented a list of a total of 161 citations of the scientific works.

The indicators in group E are covered by:

- published textbooks and teaching aids, 6 in total (5 of them cover indicator E.23, one is related to indicator E.24);
- Project activity – participation in national educational or scientific projects (5 in number, E.18), leadership of national educational or scientific projects (5 in number, E.20).
- a doctoral student who has defended – 1

Table 1. Results by groups of indicators

Group of indicators	Content of the indicators	Minimum requirements for the AP “Professor”	Points acquired by Assoc. Prof. Rosen Ivanov according to the requirements
A	Indicator 1	50	50
B	Indicator 3	100	720
G	Sum of indicators 5 to 11	200	428.33
D	Sum of indicators 12 to 15	100	1610
E	Sum of indicators 16 to the end	100	410
	Total:	720	3218.33

Table 1 presents the number of points obtained by Assoc. Prof. Rosen Ivanov for meeting the requirements for the AP “professor”. As can be seen from the results in Table 1, the acquired **3218.33** points exceeded the required 720 points several times over.

2. General characteristics of the candidate’s activity

2.1. Teaching activity (work with students and doctoral students)

Assoc. Prof. Rosen Ivanov has been a lecturer in the Department of Computer Systems and Technologies since 1992. During this 34-year period he has provided instruction to students of the programs in the CST Department and the EE Faculty. At present, Assoc. Prof. Ivanov is the lead lecturer for 5 courses in the “bachelor” degree and 5 courses in the “master” degree in the curricula of the programs “Computer Systems and Technologies” (CST) and “Software and Computer Engineering” (SCE). For the courses he teaches, Assoc. Prof. Rosen Ivanov has written textbooks and teaching aids indicated in connection with indicators E.23 and E.24.

In 2026, a doctoral student supervised by Assoc. Prof. Rosen Ivanov successfully defended a doctoral dissertation.

Overall, the candidate’s teaching activity is of a very high level, as evidenced by the textbooks and teaching aids developed for courses that are essential to the education of students in the SCE and CST programs.

2.2. Scientific and applied-scientific activity

The scientific activity of Assoc. Prof. Rosen Ivanov is focused mainly on three thematic areas:

- Outdoor navigation and positioning systems. The research is aimed at developing methods, algorithms and systems for outdoor navigation and positioning, with an emphasis on resource-constrained mobile platforms and applications for visually impaired people.
- Indoor navigation and positioning systems. The research in this thematic area is aimed at developing methods, algorithms and systems for navigation and positioning in indoor environments, with an emphasis on accessibility for visually impaired people, building modeling and localization using wireless technologies.
- Context-aware, IoT-based and personalized systems and services. The research in this thematic area covers the development of intelligent systems and services based on IoT, geofencing, microservices and artificial intelligence, with application in museum environments, healthcare and human-environment interaction.

2.3. Implementation activity

On the basis of the developed algorithms and systems for outdoor navigation and positioning, the following have been developed: a system for automatic tracking and localization of vehicles using GPS technologies, wireless communications and the Internet, and a Java mobile application for outdoor GPS navigation, adapted specifically for visually impaired people.

In the thematic area “Context-aware, IoT-based and personalized systems and services”, the following have been created: a mobile service for the interaction of blind people with objects in their surroundings through voice-annotated objects, and services for personalized content delivery in museum environments. A web application with a tangible interface has been developed, associating exhibits with NFC tags, BLE beacons or geofences, and automatically profiling users. A multi-institutional system for delivering multimedia content via BLE beacons has also been developed, applicable not only in museums but in a wide range of organizations. The ExhibitXplorer system has been created, with a distributed architecture combining geofencing, artificial intelligence and microservices, with integration of the GPT API for content generation.

On the basis of these facts, it can be concluded that the theoretical research also has its practical contribution to the development of real software applications that are successfully implemented in various organizations.

3. Contributions (scientific, applied-scientific, applied). Significance of the contributions for science and practice

The scientific, applied-scientific and applied contributions are described in detail by Assoc. Prof. Rosen Ivanov in the abstracts of the scientific works, organized by thematic areas. Most of the contributions are scientific and applied-scientific in nature, of which the following stand out:

- An algorithm for voice GPS navigation, including route navigation with and without an electronic compass, reduction of GPS data errors using a Kalman filter, dynamic course change and an SOS mode sending the location via SMS and MMS.
- An algorithm for online simplification of GPS tracks for mobile platforms, adaptive to the accuracy of the GPS receiver and the speed of movement.
- An approach for microscopic pathfinding and obstacle avoidance, which is part of a three-stage coarse-to-fine route planning strategy.
- An algorithm for microlocalization in large public buildings, combining BLE beacons, NFC tags and BIM data.
- An adaptive algorithm for signal preprocessing, enabling accuracy below 1 m even on platforms with low computing power.
- IoT-based approach for delivering personalized content to museum visitors.
- Building a system with a distributed architecture, combining geofencing, artificial intelligence and microservices with integration of the GPT API for content generation.

The main contributions of an applied nature are indicated in the section on implementation activity.

The contributions presented by Assoc. Prof. Rosen Ivanov reflect a large volume of scientific work; the publications in journals with IF and indexed in world-renowned databases prove the significance of the scientific research.

4. Assessment of the candidate's personal contribution

In the majority of the publications, Assoc. Prof. Rosen Ivanov is the sole author. The remaining publications are co-authored with doctoral students supervised by him, and a small part of the publications are co-authored with

other colleagues. This gives me grounds to consider that the stated scientific, applied-scientific and applied contributions are the personal work of the candidate.

5. Critical remarks and recommendations

I have no critical remarks regarding the candidate. The candidate's achievements exceed the minimum required for acquiring the AP "professor" several times over.

6. Personal impressions

I have worked in the same unit as Assoc. Prof. Rosen Ivanov for many years and I know him as an exceptional professional, demanding and extremely precise in his work.

Conclusion: In view of the above, I propose that Assoc. Prof. Rosen Stefanov Ivanov, PhD, Eng. be elected as "professor" in the field of higher education – 5. Technical Sciences, professional field – 5.3. Communication and Computer Engineering, specialty – "Automated Information Processing and Control Systems"

21.10.2026

Member of the jury:

/ Assoc. Prof. Elena Stoyanova, PhD, Eng. /