

OPINION

on the competition for the academic position of "Associate Professor" for the needs of the "Cyber-Physical Systems" section at the Institute of Information and Communication Technologies - ICT-BAS, announced in the State Gazette issue 105/13.12.2024

Field of higher education: 5. Technical sciences;

Professional field: 5.2. "Electrical engineering, electronics and automation";

Specialty: "Application of the principles and methods of cybernetics in various fields of science".

Candidate: Assist. Professor Dr. Eng. Stanislav Dimitrov Dimitrov

Member of the scientific jury: Prof. D.Sc. Ivaylo Milanov Pandiev - FEET, TU – Sofia

1. General characteristics of the candidate's research and applied scientific activities

In the competition for the academic position of "Associate Professor", announced in the State Gazette, issue 105 of 13.12.2024 and on the website of ICT-BAS for the needs of the "Cyber-Physical Systems" section, the sole candidate participating is Assist. Prof. Dr. Stanislav Dimitrov Dimitrov.

Assist. Prof. St. Dimitrov graduated from the University of Chemical Technology and Metallurgy in 2008 and obtained a bachelor's degree in "Automation and Information Technologies", and in 2010, he graduated from the same university and obtained a master's degree in "Information Technologies". In 2017, he earned the academic and educational degree of "Doctor" (PhD) in the scientific specialty "Application of the principles and methods of cybernetics in various fields of science" in the "Hierarchical Systems" section at ICT - BAS. From 2009 to 2017, he was a programmer at ICT - BAS, and from 2017 to 2019, he was an Assistant Professor in the Department of Informatics of the Faculty of Mining Electromechanics – MEMF at the University of Mining and Geology "St. Ivan Rilski". Since October 01, 2019, he held the position of Assistant Professor in the "Cyber-Physical Systems" section at ICT-BAS, where he continues to work. Assist. Prof. St. Dimitrov is a member of the Union of Automation and Informatics "John Atanasov".

The materials submitted by the candidate correspond to the theme of the competition, therefore I accept them for evaluation. I am not a co-author of any of the candidate's scientific publications. Assist. Prof. St. Dimitrov meets the national minimum requirements, as well as those of ICT - BAS for holding the academic position of "Associate Professor", as follows:

Indicator A (50 points for the candidate out of a required 50 points) – an academic and educational degree of "doctor" (PhD) diploma with № 000878 of 27.04.2017, issued by the Institute of Information and Communication Technologies – Bulgarian Academy of Sciences, is presented. The title of the dissertation is "Application of the principles of control theory to program systems" in the Professional Field 5.2. Electrical Engineering, Electronics and Automation;

Indicator B (300 points for the candidate out of a required minimum of 100 points) – the candidate has presented 10 scientific publications [B4.1 – 10] referenced and indexed in world-renowned databases of scientific information. Two publications [B4.5 and B4.6] are single authored while the rest are co-authored with two or three authors. The candidate is the first author of four publications [B4.4 – 7], and the second or third author of six publications [B4.1, B4.2, B4.3, B4.8, B4.9 and B4.10]. Four of these publications [B4.2, B4.6, B4.7 and B4.8] have an SJR indicator, one of which [B4.2] is in a scientific journal of the Bulgarian Academy of Sciences and is designated with a quartile (quarter) Q2;

Indicator G (235 points for the candidate out of a required minimum of 200 points) – the candidate has presented a total of 21 publications, with nine publications under indicator G7 [G7.1 – 9] and 12 publications presented under indicator G8 [G8.1 – 12]. All publications have two or more authors, and in ten of these publications [G7.1, G7.2, G7.5, G8.1, G8.2, G8.4, G8.6, G8.7, G8.8 and G8.11] the candidate is first author. Four of the publications [G7.3, G7.7, G7.8 and G7.9] have an SJR indicator, and three of them [G7.3, G7.8 and G7.9] are published in scientific journals that are recognized within a quartile ranking, specifically, publication [G7.3] in Q1, and publications [G7.8] and [G7.9] in Q3;

Indicator D (120 points for the candidate out of a required minimum of 50 points) – A reference in the SCOPUS database shows the presence of over 40 citations, and the candidate participates in the competition with 12 citations (excluding self-citations by the author or co-authors) in scientific publications, referenced and indexed in the world-renowned databases with scientific information for four publications [B4.4, G7.3, G7.7 and G7.8]. For publications [B4.4] and [G7.3], two citations are noted, and for publications [G7.7] and [G7.8], four citations are noted.

Additional information addressing other criteria in the competition is also presented. The candidate has also given a reference for participation in five national scientific and educational projects. All projects are related to the topic of the publications presented in the competition, with four of the projects have been completed, and one of them, funded by the Scientific Research Fund of the Ministry of Education and Science, is currently ongoing and is expected to be completed by 2027.

The materials and certificates presented by the candidate in the competition prove the fulfilment of the criteria. They do not repeat those required for an academic and educational degree of "Doctor" (PhD) and academic positions. They meet and exceed all the requirements for holding the academic position of "Associate Professor," and with some indicators, surpassing the minimum requirements by two-fold. Assist. Prof. St. Dimitrov has also presented a declaration about the absence of proven plagiarism in his scientific works.

2. Basic scientific and scientific-applied contributions

In the competition for the academic position of "Associate Professor", the candidate claims **scientific contributions** related to the modelling and definition of management optimization tasks and **scientific-applied contributions** related to the application of the developed optimization models using ICT solutions. Some **contributions of a methodological nature** are also defined and related to the analysis and development of innovative training approaches.

I accept the claimed contributions with the clarification that some of them can be combined and described more briefly, thereby reducing their number.

The scientific contributions are in the field of research approaches and methods for optimizing transport traffic management. Based on the conducted scientific research, models for optimizing urban traffic management have been proposed, which is a complex task due to the interrelationships between intersections and the dynamic behavior of transport flows.

The first group of **scientific-applied contributions** of the candidate are related to the development of models for the analysis and optimal management of raw materials, animal feed and storage spaces in various types of business entities (livestock farms, as well as a furniture enterprise). This includes exploring different approaches to enhance management effectiveness and create opportunities for releasing financial resources that can be redirected toward other activities. The second group of **scientific-applied contributions** is related to the study of mathematical approaches to the optimization of management of various business entities. In addition, models for quantitative analysis, data forecasting and resource redistribution have been developed.

The candidate's methodological contributions aim at analyzing and evaluating innovative approaches to teaching students by studying the use of computer systems, educational materials in electronic format, and the application of educational games in the learning process.

3. Significance of contributions to science and practice

The contributions presented in the competition are significant, both for the scientific development of information and communication technologies, and for creating new approaches for optimal management of various systems. The candidate has conducted research on various transport flows in an intensive urban environment, as well as research on challenges faced by the management of various business entities. As a result of the analysis, mathematical models for optimal management of transport traffic and business entities have been proposed.

Based on the materials submitted in the competition, I am confident that all quantitative indicators of the criteria for holding the academic position of "Associate professor" have been met. The scientific works presented along with their citations prove the recognition of the candidate among scientific community both nationally and internationally. The works of Assist. Prof. St. Dimitrov are useful for researchers, teachers, students and engineers from industry who work in the field of information and communication technologies, as well as in the field of transport theory and management.

4. Critical remarks and recommendations

I have no substantial remarks or recommendations concerning the candidate's scientific works. The candidate should try to broaden his research work and scope in this important field of science. The candidate made a technical error (to his detriment) by scoring the publication [B4.7] with 20 points instead of 30 points. Although the description of the contributions is fragmented and verbose, I highly appreciate the stated contributions and the educational and methodological contributions.

CONCLUSION

The presented materials comply with the requirements of the Law on the Academic Staff Development in the Republic of Bulgaria, the Regulations for its application, the internal Regulations for the conditions, procedures and requirements for the implementation of the Law on the Academic Staff Development in the Republic of Bulgaria in the BAS and the internal Regulations for the conditions and procedures for appointing academic positions at the IICT – BAS. After reviewing the candidate's scientific works, their significance, and the scientific, scientific-applied and methodical contributions they encompass, I find it appropriate to recommend Assist. Prof. Dr. Stanislav Dimitrov Dimitrov for the academic position of "Associate Professor" in the professional field 5.2 "Electrical Engineering, Electronics and Automation" in the section "Cyber-Physical Systems" at the Institute of Information and Communication Technologies at the Bulgarian Academy of Sciences.

Date:

MEMBER OF THE SC

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