

OPINION

regarding a competition for the occupation of the academic position "Associate Professor" in the area "5. Technical Sciences" in the professional field "5.2 Electrical Engineering, Electronics and Automation", announced in the State Gazette N° 81/11.10.2022 for the needs of the Department "Information Processes and Decision-Making Systems" with a single candidate Ch. Assistant Dr. Iliyan Ivanov Petrov

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By order N° 356 of 09.12.2022 by the Director of the Institute of Information and Communication Technologies (IICT) - BAS, I am included in the Scientific Jury for the above-mentioned competition.

As a member of the Scientific Jury I have received:

1. Curriculum vitae on a European sample.
2. A copy of the diploma for the educational and scientific degree "Doctor".
3. Certificate of internship in the specialty.
4. List of the scientific publications with which the candidate participate in the competition
5. List of noticed citations in the publications for the participation in the competition for academic position "Associate Professor".
6. Summaries of the in the publications for the participation in the competition for academic position "Associate Professor" - in Bulgarian and English.
7. Copies of the scientific publications for the participation in the competition for academic position "Associate Professor".
8. Information for fulfillment of the minimal national requirements and these ones of the Institute of Information and Communication Technologies - BAS.
9. Information on the original scientific and scientific-applied contribution of the candidate.
10. Declaration that there is no legally proven plagiarism in scientific works.
11. Information on CD, according to the requirements of IICT.

Brief biographical data of the applicant

Ch. Assistant Dr. Iliyan Ivanov Petrov received a Master's degree in "International Economic Relations" at the Moscow State Institute of International Relations in 1985. In the period 1991-1992, he completed the Professional Specialization "Monetary Circulation and Finances", University of Lorraine, Nancy, France. He received a master's degree in "Law" at the University of National and World Economy, Sofia, and then during the period 2011-2015 he was a doctoral student at the State University of Oil and Gas, Moscow, Russia. The wide spectrum of activities and positions held during his working career in national and international companies and institutions is impressive. From 2019 until now, he has been working at IICT-BAN as Ch. Assistant by carrying out work on projects and scientific activity in the field of information technologies. He is fluent in English, French and Russian.

Fulfillment of the requirements of the Law on the Development of the Academic Staff of the Republic of Bulgaria (LDASRB) and the Regulations for its Implementation (RI of LDASRB)

According to the submitted materials for the competition, the candidate obtained a scientific and educational degree "Doctor" in professional field 3.8 Economics, speciality International

Economics, on 15.12.2015 in Russia, and the diploma was recognized in Bulgaria with certificates No. 08-00-10/04.07.2019. This fulfills the requirement of Article 24, para. 1, item 1.

The presented certificate of work experience in the specialty shows that the candidate has 22 years of work experience, and as a chief assistant - 3 years, thus meeting the requirement of Article 24, Paragraph 1, Item 2.

In compliance with the requirements of Article 24, para. 1, item 3, from the candidate, 20 scientific works are presented for participation in the competition, which do not repeat the publications related to the acquisition of the educational and scientific degree "Doctor". Of these, 18 are reports at scientific conferences, and 2 are articles in scientific journals and series.

According to the presented reference for fulfillment of the minimal requirements of IICT-BAS by the candidate, it covers the minimum requirements for indicators A, B, C, D, E and F for professional direction 5.2 Electrical Engineering, Electronics and Automation. This fulfills the requirements under Article 26, Para. 2 and Para. 3, under Art. 26, paragraph 5 and on Art. 24, para. 1, item 4.

It is accepted the presented by the candidate in the competition declaration that there is no proven plagiarism in the scientific papers submitted for this competition. This fulfills the requirements of Art. 24, para. 1, item 5.

Characteristics of scientific and scientific-applied production

Total of 20 scientific publications for review are presented by Dr. Petrov:

- ✓ 11 scientific publications (habilitation thesis) in editions that are referenced and indexed in Scopus;
- ✓ 6 scientific publications in editions that are indexed in Scopus;
- ✓ 3 scientific publications in journals and conferences with scientific review.

Of the publications received for the competition, 17 are in editions indexed in Scopus. Five of them are with SJR, 1 publication is with quartile Q2, 1 - with Q3 and 3 - with Q4. All publications are self-contained.

A total of 20 citations of 12 publications are presented, of which 15 citations are in publications indexed in Scopus or Web of Science, 5 citations - in publications in international editions and 2 - those in national publishing houses.

The citations of the publications of Dr. Petrov shows that he is known in the scientific community in the country and abroad with research from his scientific activity. His scientometric indicators several times exceed the minimum number of indicator points for professional field 5.2 Electrical Engineering, Electronics and Automation of IICT-BAS, which are higher than the minimum national requirements, as shown in the table below:

Group of indicators	National requirements (points)	Requirements of IICT (points)	Dr Petrov
A	50	50	50
B		-	-
C (B in bg)	100	100	660
D (Г in bg)	200	220	300
E	50	60	160
F	-	20	20

Overview of content and results in the presented works

The scientific works submitted for review can be summarized in the following areas:

1. Approaches to modeling and visualization of information entropy and their application in the study of complex systems.

Publications: Г7[6], B[10], Г8[3], B4[1], B4[4], B4[5], B4[8], B4[9], B4[11], Г7[1], Г7[3], B4[6], B4[7], Г7[4], Г8[1], Г8[2], B4[2], Г7[1], Г[4], Г8[2].

2. Improvement of methods for multi-criteria analysis and decision-making and their application in the study of complex systems.

Publications: Г7[5], B4[3], B4[5], B4[8], B4[9], B4[7], Г7[2].

It is noteworthy that publications Г7[1-4] и Г8[1,2] are not included in the contributions, although they are related to them. Publication Г7[2] is related to the second direction, and all the others - to the first.

Scientific and scientific-applied contributions

The contributions in the works with which Ch. assistant Dr. Petrov participated in the competition can be classified as follows:

I. Scientific contributions

I.1 Original approaches have been developed for modeling and visualizing the evolution of maximum and minimum entropy levels in systems with a gradually increasing and practically unlimited number of elements

I.2 On this basis, the developed approaches to the analysis of the complexity of the systems from the point of view of the concentration of distribution of resources and the resulting dominance and hierarchy in the interactions between the elements in the system have been improved.

II. Scientific-applied contributions

II.1 Improvement of methods for multi-criteria analysis and decision-making (MCADM)

II.2 Application of the improved theoretical statements and methodological approaches based on the principles of entropy and hierarchy and the methods of MCADM in the study of complex systems and processes in the following areas:

- ✓ Information systems.
- ✓ Energy systems and markets.
- ✓ Spread of dangerous pandemics like COVID-19.

I accept the information presented by Dr. Petrov in the reference for original scientific and scientific-applied contributions. His research and results can be evaluated as an enrichment of existing knowledge in the field of maximum entropy estimation, approaches to the analysis of complexity of systems in the form of evaluation indices and analysis of hierarchy and concentration, methods of multicriteria analysis and decision making.

The universality of these results is a prerequisite for their use in the analysis of diversity and/or hierarchy, uncertainty and risk of systems in various fields of science and practice. In this regard, their application for information systems (with computer systems of varying degrees of complexity, for the purposes of remote training and work, as well as for analyzing and evaluating the effectiveness of intelligent training systems), energy systems and markets (to analyze the structure of energy balances at the global and national level), as well as in the spread of pandemics such as COVID-19 (for predicting similar processes in addition to traditionally used models and indicators), demonstrated in some of the publications submitted to the competition, is particularly relevant and socially significant and useful.

Research and contributions from the candidate's scientific output have been approved at international scientific forums and scientific journals indexed in Scopus, which is a guarantee of the significance of the achieved results.

Dr. Petrov's publication activity shows his serious knowledge in the field of modern information and communication systems and networks, as well as his merits for the obtained results and contributions. I do not know the candidate personally, but I am particularly impressed by the fact that he works independently and has achieved significant results in his research, which are undoubtedly valuable from the theoretical and practical points of view.

Critical notes

As an omission, I note the fact mentioned above that not all posts are reflected in the contribution section (although they are relevant to it). In my opinion, in the structure of the contributions, those related to the publications equivalent to a monographic work should be distinguished from the contributions in the other publications, and this could be done on the basis of the presented works.

Conclusion

The candidate fulfills all the requirements of the Law on the Development of the Academic Staff of the Republic of Bulgaria and the Regulations for its implementation, the Regulations for the Terms and Procedures for Acquiring Scientific Degrees and for Holding Academic Positions at the Institute of Information and Communication Technologies.

Dr. Iliyan Petrov is an established researcher, and this is confirmed by his scientific achievements and contributions, as well as his results in scientific and applied activity.

All this gives me the reason to express my positive conclusion about the selection of the candidate for the competition and to confidently recommend that the Scientific Jury unanimously vote a proposal to the Scientific Council of IICT-BAS, to choose Ch. Assistant Dr Iliyan Ivanov Petrov for the academic position "Associate Professor" in professional field 5.2 Electrical engineering, Electronics and Automation, specialty „Application of the principles and methods of cybernetics in various fields of science“.

21.01.2023
Sofia

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