

OPINION

in a competition for the academic position of “Associate Professor” in the field of higher education 5. Technical Sciences, by professional field 5.2 “Electrical engineering, electronics and automation”, scientific specialty “Application of the principles and methods of cybernetics in various fields of science”, announced in “Dyrjaven Vestnik”

No. 81/11.10.2022

with candidate: Assistant Professor Dr. Iliyan Ivanov Petrov

Member of the scientific jury: Assoc. Prof. Dr. Eng. Tatiana Atanasova,
Institute of Information and Communication Technologies -
Bulgarian Academy of Sciences

By Order No. 356/09.12.2022 of the Director of IICT-BAS, Corr. Member Svetozar Margenov, D.SC., issued on the basis of a decision of the Scientific Council (Record No. 13 of 30.11.2022), in accordance with Art. 4, para 2 of Law for the Development of the Academic Staff of the Republic of Bulgaria and Art. 2 (2) of the Regulations for the Implementation of the Law for the Development of the Academic Staff of the Republic of Bulgaria, I have been appointed a member of the Scientific Jury of the announced in the “Dyrjaven Vestnik” No. 81/11.10.2022 Competition for occupation of the academic position of „Associate Professor” in the professional field 5.2 “Electrical engineering, electronics and automation”, scientific specialty “Application of the principles and methods of cybernetics in various fields of science”, announced for the needs of the section “Information processes and decision-making systems” at IICT-BAS.

Only one candidate has applied for participation in the competition - Assist. Prof. Dr. Iliyan Ivanov Petrov. I attended the first meeting of the Scientific Jury on 13.12.2022 and received the materials on the competition in electronic form.

1. General description of the presented materials

The conditions to be fulfilled by the candidates for the occupation of the academic position of “Associate Professor” are set out in Article 24 (1) of the Law on the Development of the Academic Staff in the Republic of Bulgaria and Article 53 (1) of the Rules for the Implementation of the Law on the Development of Academic Staff in the Republic of Bulgaria.

The submitted documents for participation in the competition for academic position “Associate Professor” meet these conditions and contain:

- CV according to the European model,
- a copy of the translated diploma of the scientific degree “candidate of sciences”,
- official note issued by IIKT-BAS certifying 22 years of work experience, of which 3 as Assistant Professor,
- a list of 20 scientific publications for participation in the competition,
- list of citations of scientific publications of the candidate,
- a list of summaries in Bulgarian and English of the scientific publications provided for the competition,
- copies of the scientific publications for participation in the competition,
- reference to the original scientific and scientific-applied contributions,
- certificate of fulfilment of the specific requirements of IICT-BAS,
- a certificate of fulfilment of the minimum requirements of the NACID,
- declaration of absence of proven plagiarism of scientific works in accordance with the law.

The presented reference for fulfilment of the minimum requirements of IICT-BAS contains the stricter criteria than the national ones and is filled with overlap.

2. Assessment of the pedagogical preparation and activity of the candidate

The candidate has teaching experience in the Banking and Finance program. For several years, he has been a lecturer on Corporate Finance and Credit Analysis modules in Master's level professional training programs.

3. Main scientific and applied contributions

The competition documents include a list of 20 publications that do not repeat the titles presented for the acquisition of the scientific degree “doctor” (2015). The 20 titles presented for participation in the competition can be systematized as follows:

- 15 (75%) publications indexed in Scopus/WoS,
- 2 (10%) are in scientific journals,
- 18 (90%) in conference proceedings,

- 20 (100%) publications are substantive.

The main thematic areas that summarize the presented works are:

- theoretical statements based on the principles of entropy and hierarchy,
- the methods for multi-criteria analysis and decision-making,
- application of the methods of multi-criteria analysis and decision-making in the study of complex systems and processes.

The candidate's significant scientific and applied scientific contributions are in the field of information entropy modelling and using the entropy approach for forecasting and data analysis.

The contributions in the publications submitted for participation in the competition can be briefly systematized as:

- new indices are proposed for assessing hierarchy and concentration in the analysis of diversity, uncertainty and risk of complex systems,
- the concept of information entropy is applied for analysis, selection, and definition of criteria weights in multi-criteria decision-making,
- an optimization of the AHP approach is proposed by grouping the evaluation criteria in logically structured blocks in multi-criteria analysis in the decision-making process,
- a solution for aggregated characterization of complex dynamic systems by combining hierarchy estimation and information entropy is presented,
- the principles of entropy are applied to analyse the spread of pandemic waves,
- a methodology was developed for modelling and visualizing the production of maximum and minimum entropy levels in Python/Pycharm environment.

The various concepts, approaches and solutions for modelling and visualization of information entropy, multi-criteria analysis and decision-making in complex systems research are detailed in the published scientific works submitted for participation in the competition. All of them represent significant and internationally recognized achievements in the work of the candidate.

4. Significance of contributions to science and practice

The quantitative indicators of the criteria for holding the academic position defined in the respective legal provisions are observed. The number of points from scientific publications presented in the reference for fulfilment of the minimum requirements of IICT-BAS in groups B, D and E exceeds the mandatory number.

This list of scientific productions shows the significant scientific contribution of the candidate in his professional field of entropy modeling, application of multi-criteria analysis methods and decision-making in the study of complex systems and processes.

All presented publications are independent, for the most part they are printed in editions indexed in global scientific-metric databases, which indisputably proves the candidate's abilities to conduct scientific research. This is a clear assessment of the candidate's recognition among scientific circles.

5. Critical remarks and recommendations

Some inaccuracies are noted in the indicated indexing of the candidate's publications and citations in the attached documents (Reference for the fulfilment of the minimum requirements of IIKT-BAS), but the required minimum points by groups of indicators for the academic position “docent” in professional field 5.2. Electrical Engineering, Electronics and Automation, scientific specialty “Application of the Principles and Methods of Cybernetics in Various Fields of Science” have been achieved and exceeded.

6. Conclusion

My assessment of the scientific and scientific-applied activity of Assist. Prof. Dr. Iliyan Petrov is convincingly positive. I believe that the requirements of the Law on the Development of the Academic Staff of the Republic of Bulgaria have been met, as well as the relevant Regulations for the implementation of the Law on the Development of Academic Staff, the Bulgarian Academy of Sciences, and the IICT-BAS.

The above gives me grounds to suggest to the esteemed scientific jury to vote a proposal to the Scientific Council of IICT-BAS to elect Assist. Prof. Dr. Iliyan Ivanov Petrov to 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”.

Sofia

23.01.2023 г.

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