

OPINION

Competition for Academic Position "Associate Professor"

in area 5. "Technical Sciences",
Professional field 5. 2 "Electrical engineering, Electronics and Automation"
Scientific discipline: " Application of the principles and methods of cybernetics in various fields of science"

Information Processes and Decision Support Systems Department, announced in State Gazette issue 81 of October 11, 2022. by Institute of Information and Communication Technologies – BAS (IICT-BAS)

with the only candidate: senior research associate Ph.D. Ilian Ivanov Petrov from IICT-BAS

Member of the Scientific Jury, Order No 359/09.12.2022 assoc. prof. Vera Angelova Angelova-Dimitrova, Ph.D.,
Institute of Information and Communication Technologies – BAS, Sofia 1113, ul. "Acad. G. Bonchev", bl. 2.

Senior research associate Ph.D. Ilian Ivanov Petrov has submitted all the necessary documents, publications and declarations in accordance with the Law on the Development of Academic Staff in the Republic of Bulgaria (LDAS in RB), the Regulations for its implementation, the Regulations for the Acquisition of Scientific Degrees and Academic Positions at the Bulgarian Academy of Sciences and the Regulations for the Specific Conditions for Acquiring Scientific Degrees and for Occupying Academic Positions at IICT-BAS. The candidate participates in the competition with 20 publications, presented in full text and a list of 20 citations.

1. Compliance the requirements of art. 53, para. 1, Regulations for implementation of LDAS in RB

a) p. 1 and 2

Senior research associate Ph.D. Ilian Ivanov Petrov obtained his Ph.D. in the specialty of "International Economics" in 2015 at the Russian State University for oil and gas "I. M. Gubkin", Moscow, Russia. From 2019 until now he works as a senior research associate at IICT-BAS.

b) p. 3 and 4

The 20 full-text scientific publications presented for the competition are published after 2015 - the year of acquiring the Ph.D. degree. All the 20 publications presented for participation in the competition are individual papers of senior research associate Ph.D. Ilian Ivanov Petrov. Of these, 17 are visible in the world scientific database Scopus.

For participation in the competition senior research associate Ph.D. Ilian Ivanov Petrov has presented a list of 20 independent citations. Of these, 14 citing publications are visible in the world scientific databases Scopus or Web of Sciences. Citation 2.4. Borissova, D., Dimitrova, Z., Garvanova, M., Garvanov, I., Cvetkova, P., Dimitrov, V., Pandulis, A.: Two-stage Decision-Making Approach to Survey the Excessive Usage of Smart Technologies. Problems of Engineering Cybernetics and Robotics, ISSN: 0204-9848, Vol. 73, 2020, pp. 3-16, URL: <https://www.iict.bas.bg/pecr/2020/73/1-PECR-3-16.pdf>

is incorrectly referenced in indicator E12, as the source of this citation is not a scientific publication visible in world scientific databases Scopus or Web of Science and should be reported in indicator E14: "Citations or reviews in non-refereed journals with scientific review". I adjust the number of points by indicators D12 and D14 from $15 \cdot 10 + 5 \cdot 2 = 160$ to $14 \cdot 10 + 6 \cdot 2 = 152$ /see Table 1/.

In the List of Citations of Scientific Publications senior research associate Ph.D. Ilian Ivanov Petrov gives 4 citations of publication [3], while in Reference - fulfillment of the minimum requirements of IICT for associate professor has indicated 3. I adhere to the citation sources listed in the Reference and in the calculation of the number of points by indicators citing sources.

The number of points by indicators of the submitted publications and citations exceeds the minimum national requirements and the additional minimum requirements of IICT-BAS by groups of indicators C, D and E. The declared participation of the applicant in two scientific projects with the Scientific Research Fund satisfies the additional minimum requirements of IICT-BAS by the group of indicators E:

Group of indicators	Required minimum, NACID	Required minimum, IICT-BAS	Submitted for participation in the competition	Adjusted number of points
But	50	50	50	50
In	100	100	660	660
Y	200	220	300	300
E	50	50	160	152
Is	0	20	20	20

Table 1. Number of points per indicator

c) p. 5

Senior research associate Ph.D. Ilian Ivanov Petrov has no plagiarism in scientific works proven by the law.

2. Evaluation of the scientific and applied activities of the candidate and contributions in the materials submitted for review

The scientific and applied results of the candidate are in the field of information theory and the concept of entropy and their application in the assessment of diversity, uncertainty and chaos in complex dynamic systems with a gradually increasing and practically unlimited number of elements. Improved concepts for assessing the hierarchy through the formulated

Hierarchies Index with logistic model and sigmoid form of the graph of the base function and Hierarchies Index with a power model and simplified graph, which the candidate successfully applies in industrial and market structures (energy balance structures, for categorization of market structures and competitive interactions) are proposed. A combined approach is proposed, based on analytical hierarchy and weighting of criteria, through application of entropy of information, in multicriteria decision making in the analysis of information systems, energy systems and markets and pandemic processes.

In the publications, the candidate demonstrates in-depth theoretical knowledge and a high level of competence in the analysis of complex industrial and market systems. The results obtained are concrete and practically applicable and confirm the significance of the candidate's contributions.

I have no critical remarks or recommendations.

Conclusion

The documents and materials submitted by senior research associate Ph.D. Ilian Ivanov Petrov, meet the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria, the Regulations for the Application of the LDAS in RB, the Regulations on the Terms and Conditions for the Acquisition of Scientific Degrees and Positions at the Bulgarian Academy of Sciences and the Regulations on the Specific Conditions for Acquiring Scientific Degrees and for Occupying Academic Positions at IICT-BAS. The results achieved by Chief Assistant Ph.D. Ilian Ivanov Petrov correspond to the, and in most groups of indicators - exceed the additional requirements of IICT-BAS to occupy the academic position "Associate Professor".

Based on the submitted documents and publication and the analysis of their significance and the contributions contained therein, **I give a positive conclusion about the selection of Chief Assistant Ph.D. Ilian Ivanov Petrov to the academic position of Associate Professor at IICT-BAS** and recommend to the Scientific Jury to propose to the Scientific Council of IICT-BAS the candidate **Chief Assistant Ph.D. Ilian Ivanov Petrov** for the selection in the academic position "Associate Professor" at IICT-BAS, for the needs of the Department of Information Processes and Decision Support Systems, in professional field 5.2 "Electrical Engineering, Electronics and Automation" specialty: "Application of the principles and methods of cybernetics in various fields of science".

Dec 28, 2022
Sofia

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