R E V I E W

by Prof. Dr. Vladimir Vassilev Monov

Institute of Information and Communication Technologies

Bulgarian Academy of Sciences

of scientific works and documents submitted for participation in a competition

to occupy the academic position "professor"

at the Institute of Information and Communication Technologies

Bulgarian Academy of Sciences

field of higher education: 4. "Natural sciences, mathematics and informatics"

professional direction: 4.6. "Informatics and Computer Science"

specialty: "Informatics (Blockchain technologies and models)"

In the competition for the academic position "professor", announced in the State Gazette, no. 87 of 15.10.2024 for the needs of the "Intelligent Systems" Department of the Institute of Information and Communication Technologies (IICT), the only candidate participating is Assoc. Prof. Dr. Irina Aleksandrovna Radeva from IICT-BAS.

1. General presentation of the received materials

By Order No. 312 of 13.12.2024 of the Director of IICT, I have been appointed as a member of the scientific jury for the announced competition. By decision of the scientific jury from a meeting held on 17.12.2024. my participation in the work of the jury was determined by the preparation of a review of the presented materials. As a member of the scientific jury, I received in electronic form the following documents and works of the candidate, on the basis of which the present review was prepared:

1. Curriculum vitae according to the European model with attached lists of publications and participation in projects;
2. Copy of diploma No. 000213/08.11.2012 for the educational and scientific degree "doctor";
3. Copy of Certificate No. 001286/18.06.2018 for an academic position "associate professor" in the specialty "Informatics and computer science"
4. Certificate of work experience in the specialty;
5. List of scientific publications for participation in the competition, which do not repeat those presented for the acquisition of the educational and scientific degree "doctor" and for the academic position "associate professor";
6. List of citations;
7. Summaries of scientific publications for participation in the competition in Bulgarian and English;
8. Copies of the scientific publications for participation in the competition;
9. Certificate of fulfillment of the minimum requirements of IICT;
10. Reference of the original scientific and scientific applied contributions;

11. Declaration that no plagiarism in scientific works has been proven according to the legally established procedure.

The submitted documents and scientific works of the candidate fully meet the requirements for admission to participation in the competition for the academic position of "professor", defined by Art. 29 of the ZRASRB and Art. 10 para. (1) of the Regulations on the specific conditions for acquisition of scientific degrees and for holding academic positions at the Institute of Information and Communication Technologies.

2. Brief biographical data of the candidate

Assoc. Prof. Dr. Irina Radeva graduated with a master's degree in finance at the University of National and World Economy, Sofia in 1995. She has successively held the positions of research assistant III, II and I degree at the Institute of Information Technologies of the BAS. She obtained an educational and scientific degree "doctor" in the specialty "Informatics" in 2012 at the Institute of Information and Communication Technologies of the BAS. In the period 2011-2018 she held the position of "assistant professor", and since 2018 currently holds the position of "associate professor" in the same institute. From 2020 until now, Dr. Irina Radeva works as an "associate professor" also at the Faculty of Economics of the Tracian University in Stara Zagora. It can be seen from the presented Certificate of work experience that she has a total work experience of 35 years, of which 6 years and 5 months as an associate professor at IICT-BAS. The scientific and research activity of Assoc. Prof. Radeva includes participation in over 20 national and international scientific research and scientific applyed projects, mainly in the field of informatics, software systems, development of blockchain technologies and models. The obtained results have been published in prestigious domestic and international publications. Assoc.Prof. Dr. Irina Radeva has teaching experience as a part-time lecturer at the New Bulgarian University, where she teaches courses from the university's master's program in the field of finance and capital markets. The attached curriculum vitae also contains data about the active scientific organizational and expert activity of Assoc. Prof. Radeva as a financial consultant in Bulgarian high-tech companies and an inspector in the Bulgarian Chamber of Commerce.

The presented biographical information shows the upward professional development and growth of the candidate, the presence of active research and expert activity, teaching experience and professional qualifications that meet the requirements for participation in the competition for the academic position of "professor".

3. Compliance with minimum national requirements and IICT requirements

The presented Certificate of fulfillment of the minimum national requirements and the requirements of IICT-BAS includes data on:

- Habilitation work - scientific publications in editions that are referenced and indexed in world databases with scientific information: 3 items with IF and SJR, which are in the Q2 quartile of WoS;

- Scientific publications in editions that are referenced and indexed in world databases with scientific information outside of the habilitation work: 17 items, of which 4 with SJR rank and 13 in editions referenced and indexed in Scopus;

- Citations in scientific publications, monographs, collective volumes and patents, referenced and indexed in world databases with scientific information: 140 items in publications indexed in WoS and/or Scopus;

- Participation in a national scientific or educational project: 18 items;

- Participation in an international scientific or educational project: 4 items;

- Leader of a national scientific or educational project: 7 items.

- Funds raised in projects managed by the applicant (1 point for each BGN 5,000): 115 points.

The reference has been correctly prepared, and the presented data convincingly show that the candidate has met and exceeded the requirements for occupying the academic position of "professor" in all indicators as follows.

Indicator Б: achieved number of points 120 with a minimum required number of 100 points,

Indicator Г: achieved number of points 290 with a minimum required number of 260 points,

Indicator D: achieved number of points 840 with a minimum required number of 140 points,

Indicator E: achieved number of points 515 with a minimum required number of 150 points.

4. Scientific research and teaching activity

For participation in the competition Assoc. Prof. Dr. Irina Radeva has presented 28 scientific papers, 24 in English and 4 in Bulgarian. All of them were issued in the period 2019-2024 and do not repeat those for acquiring the educational and scientific degree "doctor" and occupying the academic position "associate professor". 20 of the publications are indexed and referenced in the scientific information databases WoS and/or Scopus, and 7 of them are in publications with IF and/or SJR rank. They are classified as follows: 3 publications in the Q2 quartile of WoS, 2 publications in the Q2 quartile of Scopus, and 2 publications in the Q3 and Q4 quartiles of Scopus, respectively. Of the scientific works presented, 12 are journal articles, 13 are reports in proceedings of international scientific conferences and 3 are independent book chapters.

All works presented for the competition are in the field of informatics and fully correspond to the subject of the announced competition. As a thematic orientation, they are dedicated to the development of blockchain technologies and models, intercriteria analysis, risk management methods and procedures, development and testing of software systems with application in the field of

intelligent agriculture. In terms of content, the candidate's works contain original scientific, scientifically applied and applied results in the researched areas.

The research activity of Assoc. Prof. Dr. Irina Radeva is distinguished by active participation in national and international research projects and scientific programs. In the period 2004-2024 she participates in the work of 4 international projects, as well as in 18 national academic and educational projects, 7 of which she is the leader of. From 2018 to 2024 she works actively in the implementation of 2 national scientific programs (NSP), respectively as the leader of the Work Package in the NSP "Intelligent Crop Production" and a participant in the NSP "Intelligent Animal Breeding".

The pedagogical activity and professional experience of Assoc. Prof. Radeva, as a lecturer in the "Business Administration" Department of the New Bulgarian University, is in the field of finance, where she teaches courses on "Financial Markets and Instruments" and "Money and Capital Markets" from the university's master's program. The scientific organizational and expert activity of Assoc. Prof. Dr. Irina Radeva deserves a ipositive assessment as of a consultant in Bulgarian companies and an inspector in the Bulgarian Chamber of Commerce.

In general, the scientific works and materials presented for the competition undoubtedly demonstrate the high results achieved by the candidate in scientific research activities, in-depth knowledge and competence in the field of informatics and information technologies, as well as accumulated experience and expertise in the implementation and management of scientific and research projects.

5. Citations

The list of citations of the works of Assoc. Prof. Dr. Irina Radeva contains data on 140 noticed citations in the period 2019-2024. They are in the works of our and foreign authors, in prestigious editions, which for the most part are indexed and referenced in the world databases of scientific information WoS and Scopus. With this, the results of the candidate's works have obviously aroused interest and become available to the scientific community at home and abroad.

6. Basic scientific, scientific-applied and applied contributions

I accept and positively evaluate the contributions formulated in the applicant's Reference of the original scientific and scientific applied contributions. In summary, they can be listed as follows.

Scientific contributions.

- Three models of blockchain technologies have been developed, using decentralized data storage and smart contracts to manage access, validation and data storage. The obtained results find application in intelligent agriculture and are presented in publications [8,14,15].

- Methods have been developed for determining and analyzing threshold values in multi-criteria decision-making using inter-criteria analysis (Publication [1]).
- An approach is proposed for multi-criteria selection of blockchain software in a fuzzy environment according to the needs of the organization and the evaluations of the experts (Publication [9]).
- A method for automated performance evaluation of large open-source language models in content generation with additional retrieval (Retrieval-Augmented Generation) was developed (Publications [25,26].

Scientific-applied contributions.

- A model for technology selection and risk assessment has been developed using an algorithm for multi-criteria analysis of different generalized risk categories (Publication [2]).
- Eight categories of risks related to the "human-digital environment" paradigm in the context of Industry 4.0 are systematized. (Publication [3]).
- Procedures for global risk management, adaptation to identified risk factors and integrated corporate risk management have been developed (Publications [4,11,13]).
- A multi-step decision-making model for digital risk assessment in agriculture was developed and tested (Publication [6]).

Applied Contributions

They include the development of: a supply chain model with five information channels based on blockchain technology, a knowledge base for smart agriculture with layers for dynamic collection and analysis of data from IoT sensors, a prototype of SCPDx platform (Smart Crop Production for Data Exchange) for smart agriculture data exchange with the integration of blockchain and distributed file systems, a decentralized application with a three-layer architecture for storing and exchanging data in a blockchain network. The results are presented in publications [10,14,15,17,19,23,28].

The listed contributions are contained in publications of prestigious editions and determine the candidate as a highly qualified specialist in the field of informatics with a specific focus on the development and application of modern blockchain technologies and models.

7. Significance of contributions to science and practice

Scientific and scientific-applied contributions in the candidate's works refer to the following main areas: *Blockchain technologies and models, Systems for multi-criteria decision-making using inter-criteria analysis, Risk management methods and technologies, Analysis and evaluation of large language models.* They can be evaluated as the enrichment of existing knowledge, the development of new and the improvement of known methods and approaches in these areas. The applied contri-

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butions in the candidate's works undoubtedly contribute to the wider implementation and expansion of the applications of informatics and information technology.

8. Assessment of the degree of the candidate's personal involvement in the contributions

I personally know the candidate Assoc. Prof. Dr. Irina Radeva, and I have direct impressions of her scientific and research activities, as well as of her active participation in the implementation of the NSP "Intelligent Crop Production". My acquaintance with the works presented for participation in the competition, as well as my impressions of the overall research activity of Assoc. Prof. Radeva gives me reason to assume that the declared scientific, scientific-applied and applied contributions are her personal work. I am not aware of any evidence of plagiarism in the works presented.

9. Opinion, critical remarks and recommendations

The scientific production of Assoc. Prof. Dr. Irina Radeva, presented for evaluation in the present procedure, demonstrates systematic and in-depth research activity in the field of modern information technologies, their development and practical application. The works presented contain original results of high scientific and applied value, which have been published in prestigious editions and received recognition from the scientific community. The candidate's scientific developments have practical applicability, and some of them are directly oriented in the field of modern intelligent agriculture. In general, the obtained results exceed the normative requirements for occupying the academic position "professor".

I have no critical remarks on the candidate's documents and works. Given the accumulated professional experience and significance of the achieved results, my recommendation to the candidate is for more active work in training doctoral students and young scientists.

CONCLUSION

The candidate's documents and materials submitted for the competition meet all the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for its Implementation and the Regulations for the Specific Conditions for Acquiring Scientific Degrees and for Holding Academic Positions at IICT-BAS .

After acquainting myself with the materials and scientific works presented in the competition, analyzing their significance and the contributions contained in them, I confidently give my positive assessment and propose to the respected Scientific Jury to vote unanimously on a proposal to the IICT Scientific Council for the election of Assoc. Prof. Dr. Irina Radeva in the academic position of "professor" in professional direction 4.6. "Informatics and computer sciences" specialty "Informatics (Blockchain technologies and models)" in Department "Intelligent systems" of IICT-BAS.

08.01.2025

Sofia

На основание

ЗЗЛД