O P I N I O N

under the competition for the academic position of "**Professor**" in the professional field 4.6.
Informatics and Computer Science, specialty "Informatics (Blockchain Technologies and
Models)",
announced in SG No. 87/15.10.2024
with a candidate: Assoc. Prof. Irina Alexandrovna Radeva, PhD
Member of the scientific jury: Professor Tatyana Atanasova, PhD

By Order No. 312/13.12.2024 of the Director of IICT-BAS, Corresponding Member
Sv. Margenov, issued on the basis of a decision of the Scientific Council of IICT (Minutes No.
12 of 27.11.2024), in accordance with Article 4, paragraph 2 of the Act on the Development of
the Academic Staff of the Republic of Bulgaria and Article 2(2) of the Regulations for the
Implementation of the Act on the Development of the Academic Staff of the Republic of
Bulgaria, I am appointed as a member of the Scientific Jury of the competition announced in
State Gazette No. 87/15.10.2024 for the academic position of "**Professor**" in the professional
field 4.6. Informatics and Computer Science, specialty "Informatics (Blockchain Technologies
and Models)", for the needs of the Department of Intelligent Systems at IICT-BAS. Only one
candidate has submitted documents for participation in the competition - **Associate Professor
Irina Alexandrovna Radeva, PhD**. I attended the first meeting of the Scientific Jury on
17.12.2024 and received the materials of the competition on electronic media.

1. General description of the submitted materials

The conditions that must be met by the candidates for the academic position of
"professor" are defined in Art. 29 of the Academic Staff Development Act in the Republic of
Bulgaria and Art. 60 of the Regulations for the Implementation of the Law on the Development
of the Academic Staff in the Republic of Bulgaria.

The submitted documents for participation in the competition for the academic position
of "Professor" comply with these conditions and contain a curriculum vitae according to the
European standard; a copy of the announcement in the State Gazette; a copy of diploma No
000213/08.11.2012 for the educational and scientific degree "Doctor"; a copy of Certificate
No. 001286/18.06.2018 for occupying the academic position of Associate Professor in the
specialty Informatics and Computer Science; certificate of experience in the specialty (35
years, of which 6 years and 5 months as an associate professor); a list of scientific publications
for participation in the competition, which do not repeat those submitted for the acquisition of
the educational, scientific degree "Doctor" and for the academic position of "Associate

Professor"; list of citations; abstracts of the scientific publications for participation in the competition - in Bulgarian and English; copies of scientific publications in full text for participation in the competition; reference for the fulfillment of the minimum requirements of IICT; reference for the fulfillment of the minimum requirements NACID; reference for the original scientific and applied scientific contributions; a declaration that there is no plagiarism in scientific papers proven in accordance with the statutory procedure.

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

Assoc. Prof. Irina Radeva was a part-time lecturer at the Department of Business Administration - New Bulgarian University, Sofia for the specialties "Financial Markets and Instruments" and "Money and Capital Markets" in the Master's program.

3. Main scientific and applied scientific contributions

28 scientific publications of Assoc. Prof. Irina Radeva were presented in connection with participation in a competition for the academic position of "Professor". Of these, **20** publications form the basis for evaluating the candidate according to the attached references for registration in NACID and for meeting the minimum requirements of IICT-BAS. Publications outside the list of those necessary to fulfill the minimum national requirements expand the scope of Assoc. Prof. Irina Radeva's research with the topics of intuitionistic fuzzy sets, risk analysis, decision-making models in digital risk management, intelligent agents and ontologies, use of a multi-criteria approach for forecasting and data analysis in the context of Industry 4.0. These publications do not repeat those presented for the acquisition of the scientific degree "Doctor" (2012) and for occupying the academic position of "Associate Professor" (2018). The references with the information under Art. 60, para. 3 are performed in excess. A list of 140 citations in Wos or Scopus for the period 2019 – 2024 is presented.

The main thematic areas that summarize the presented works are: modeling of decentralized blockchain implementations; application of a multi-criteria approach to the evaluation of blockchain software; integration of blockchain technology with tasks for large language models; practical approaches to the application of blockchain technology in smart agriculture. The most works are on the topic of the competition and reflect the modern rapidly changing trends in the development of information technologies. Impressive are the studies conducted in the last 3-4 years, which focus on the advantages of blockchain technology as a decentralized environment that facilitates data traceability and is resistant to unwanted changes.

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

- Models of decentralized blockchain applications for data storage;

- A method for traceability of data and events with blockchain technologies;
- Approach to the integration of smart contracts for decentralized data exchange;
- An approach to applying a quasi-multi-criteria risk management algorithm in blockchain implementation based on risk tolerance;
- A model for choosing blockchain software as a multi-criteria task in conditions of fuzziness;
- Architecture for distributed storage of scientific data from plant genetic studies;
- Infrastructure model for smart agriculture with distributed processing of sensor IoT data;
- Blockchain Supply Chain Model for Smart Crop Production.

Particular attention in a number of the presented publications is paid to security issues and vulnerability analysis of applications in data-sharing platforms.

I also note the availability of some of the developed software solutions in a GitHub repository with open access.

4. Relevance of contributions to science and practice

The quantitative indicators of the criteria for occupying the academic position of "Professor", defined in the relevant legal provisions, have been observed. The number of points from scientific publications presented in the reference for the fulfillment of the minimum requirements of IICT-BAS in groups В, Г and Д exceed the required points. The scientific production proposed for participation in the competition shows a significant scientific contribution of Assoc. Prof. Irina Radeva on the topic of the competition in her professional field of Blockchain technologies and models of decentralized applications in the study of complex systems. In addition to the scientific contributions, Assoc. Prof. Irina Radeva also presents the original applied contributions, where approaches to the implementation of blockchain technology, with a focus on smart agriculture, are proposed, namely a decentralized open-source platform SCPDx. Another applied contribution is the developed open-source web application for testing and evaluating various large language models (LLMs) using Retrieval-Augmented Generation (RAG).

Publications from recent years are indexed in global scientometric databases. This undoubtedly demonstrates the candidate's abilities to conduct scientific research in modern areas of information technology development. The reference in Scopus for Assoc. Prof. Irina Radeva shows 30 documents, h-index 7 with 122 citations without self-citation. A serious

number of citations in Scopus and Wos is a clear assessment of the candidate's recognition among the scientific community.

5. Critical remarks and recommendations

There are some inaccuracies in the indicated indexing of the candidate's publications in the attached documents (Reference for the fulfillment of the minimum requirements), but the required minimum points by groups of indicators for the academic position of "professor" in the professional field 4.6. Informatics and Computer Science, specialty "Informatics (Blockchain Technologies and Models)", by Assoc. Prof. Irina Radeva have been achieved and exceeded.

As a recommendation, I would suggest the achieved results by Assoc. Prof. Irina Radeva to be expanded in a dissertation for the acquisition of the scientific degree of "Doctor of Science". This would emphasize her own contribution to scientific research in view of the work carried out in publications No. 27 and 28.

6. Conclusion

My assessment of the scientific and applied activities of Assoc. Prof. Irina Radeva, PhD is convincingly **positive.** I believe that the requirements of the Act on the Development of the Academic Staff of the Republic of Bulgaria have been met, as well as the respective Regulations for the implementation of the Act on the Development of the Academic Staff of the Republic of Bulgaria, of the Bulgarian Academy of Sciences and of IICT-BAS. The above gives me grounds to propose to the honorable scientific jury to vote on a proposal to the Scientific Council of IICT-BAS to elect **Associate Professor Irina Alexandrovna Radeva, PhD** to the academic position of **"Professor"** in the professional field 4.6. Informatics and Computer Science, specialty "Informatics (Blockchain Technologies and Models)".

Sofia,

24.01.2025

Mem. На основание ЗЗЛД