

OPINION

regarding a competition for the occupation of the academic position "Professor" in the field of higher education 5. Technical sciences, professional direction 5.2. Electrical engineering, electronics and automation, scientific specialty "Application of the principles and methods of cybernetics in various fields of science", thematic area "Robotic systems with human-machine interface" for the needs of the Department "Interactive robotics and control systems" Institute of Robotics-BAS

candidate: Assoc. Prof. Dr. Maya Ivanova Dimitrova

Member of the scientific jury: Prof. DSc. Velislava Noreva Lyubenova, Institute of Robotics – BAS

By Order No. 69/31.05.2023 of the Director of IR-BAN, I have been approved as a member of the Scientific Jury for the competition for the academic position of "Professor", announced in SG no. 26 of 21.03.2023. The only candidate in the competition is Assoc. Prof. Dr. Maya Ivanova Dimitrova.

Brief biographical data and fulfillment of minimum requirements

Maya Ivanova Dimitrova was born on 12.05.1961 in the city of Sofia. Graduated with honors from the Department of Psychology, University of St. Petersburg, Russia in 1985 with qualifications as a psychologist and teacher. During the period 1993-1994, she completed a master's degree with honors at the Faculty of Psychology, University of Warwick, UK. She obtained the educational and scientific degree "Doctor" in 2002 at the Institute of Control and System Research - BAS, with the thesis topic: "Adaptive human-computer interface". She has been working in the Central Laboratory of Control Systems at the BAS since 1989, initially as a psychologist at the Department "Systems with hybrid intelligence", as an assistant at the Department "Systems with artificial or hybrid intelligence" since 1993. During the period 1994-2007, she is Chief Assistant at the Department "Hybrid Systems and Management" at the Institute of Control and System Research (ICSR) - BAS. From 2007 until now, she worked as an Associate Professor in the Department "Hybrid Systems and Management", ICSR - BAS, Department "Hybrid Systems" (2010-2016), Institute of Systems Engineering and Robotics - BAS and from 2017 until now in the Department "Interactive robotics and control systems" of the Institute of Robotics - BAS.

The submitted documents and scientific works of the candidate meet the minimum requirements for admission to participation in the competition for the academic position of "Professor", defined by Art. 29 of the Law on the development of the academic staff of the Republic of Bulgaria (LDASRB), Regulations for the application of the Law on the Development of the Academic Staff of the Republic of Bulgaria (RALDASRB) and the Internal Regulations of IR-BAS.

According to LDASRB, candidates for the academic position of "Professor" must meet the requirements of Art. 29(1):

1. To have acquired the educational and scientific degree "Doctor".
2. To have held the academic position of "Associate Professor" in the same or in another higher school or scientific organization for no less than two academic years or...
3. To have submitted a published monographic work or equivalent publications in specialized scientific publications, which do not repeat those submitted for the acquisition of the educational-scientific degree "Doctor" and for occupying the academic position of "Associate Professor".

4. To have presented other original scientific research works, publications, inventions and other scientific and scientific-applied developments or artistic achievements, which are evaluated as a whole;

5. To meet the minimum national requirements under Art. 2b, para. 2 and 3, respectively, to the requirements under Art. 2b, para. 5;

6. Not to have plagiarism or unreliability of the presented scientific data in the scientific works proven in accordance with the law.

The requirements under Art. 29(1), item 1 are fulfilled, since with diploma No. 27845/15.04.2002 the Higher Attestation Commission awards the educational and scientific degree "Doctor" of Maya Dimitrova for a successfully defended dissertation in the scientific specialty "Application of the principles and methods of cybernetics in various fields of science".

The candidate meets the requirement of Art. 29(1), item 2, because with diploma No. 24541/30.08.2007, the Higher Attestation Commission awards the scientific title "Associate Professor" of Dr. Maya Dimitrova in the same scientific specialty.

Assoc. Prof. Dr. Maya Dimitrova fulfills the requirement of Art. 29(1), Item 3, as she presented 11 publications, equivalent to a monographic work, which do not duplicate the publications for holding the academic position "Associate Professor" and for acquiring the educational and scientific degree "Doctor".

Assoc. Prof. Dimitrova meets the requirement of Art. 29(1), item 4, as he submitted other original research works and publications, a total of 21. She submitted a Reference of Fulfilment of National Minimum Requirements, which shows that the applicant fulfills and re-fulfills the requirements of this Reference.

Group	Contents	min. points for professor	Points for Assoc. Prof. M Dimitrova
A	Indicator 1	50	50
B	Indicator 4	100	191
Г	Indicator 7 Sum of indicators from 5 to 11	200	205
Д	Sum of indicators from 12 to 15	100	824
E	Sum of indicators from 16 till the end	150	345

In my opinion, although they have SJR and Q4, publications 4.11 (group B) and 7.1 (group Г) are more appropriate to be transferred to indicator 8 of group Г, since they are referenced in Scimago, and from 2018 they are not referenced in Scopus. This can lead to a problem in interpreting the referencing requirement in the WoS and Scopus databases. This does not affect the candidate's total number of points, nor does it affect compliance with the minimum requirements. Points from group B become 151, group Г – 245.

Regarding the requirement of Art. 29(1), item 6, I am not aware of received reports under Art. 4 para. 11 of LDASRB and no plagiarism was found in the candidate's works. There is a declaration signed by Associate Professor Dimitrova that the results and contributions in his scientific production are original and not borrowed.

Scientific-research, scientific-applied and expert activity

The scientific research in the presented works is in the fields of human-robot systems, humanoid robots, rehabilitation robotics and socially competent robotic systems.

The cognitive, neuro-cognitive and social aspects of human-robot systems modeling, modular neural networks for human-robot interaction style diagnostics, concepts and approaches for modeling learning processes, for designing intelligent agents with autobiographical memory, to design high-level synthetic sensors to improve human-robot communication, to design humanoid robots capable of performing professional roles, and more, have been investigated.

Assoc. Prof. Dr. Dimitrova is the Head of international project "CybSPEED: Cyber-Physical Systems for Pedagogical Rehabilitation in Special Education" (2017-2022) and Head of the team of the partner organization IR-BAS of a national project financed by the Scientific Research Fund (2020-2024). He is a participant in 3 national and 2 international projects.

The candidate has in-depth knowledge, high competence and accumulated experience in the field of human-machine interface robotic systems.

Assoc. Prof. Dr Dimitrova is an invited participant in the scheme for consulting a Member of the European Parliament and a scientist, organized by the Unit for Scientific Forecasts of the European Parliament in cooperation with the Joint Research Center of the European Commission. She is a project evaluator and a participant in the panel of evaluators for the EC Horizon 2020 and Horizon Europe programs since 2014. so far, as well as reviewer of international journals: International Journal of Humanoid Robotics (IJHR), Journal of Electrical and Electronic Systems, Lovotics, Frontiers in Psychology (Frontiers in Robotics and AI).

Assoc. Prof. Dimitrova completed a short-term specialization in Japan at the Kyushu Institute of Technology in February-March 2015 and participated in TERRINet|The European Robotics Research Infrastructure Network in 2016-2017.

She is a member of the Management Board of COST Action ("Multi-paradigm modeling in cyber-physical systems") 2016-2018, of the Union of Scientists - branch V. Tarnovo, of Psychonomic society, of Women in Cognitive Science, of IEEE and of the Society of Psychologists in Bulgaria.

Publication activity and citations

The candidate submitted a list of a total of 32 publications for the competition, of which 2 with impact factor, 5 with SJR, 1 referenced in WoS, 2 – in Scopus. One of them is with Q1, 2 – with Q2 and 3 – with Q4. These publications do not duplicate those for occupying the academic position "Assoc. Prof. " and for acquiring the educational and scientific degree "Doctor". Eight of the publications are independent, and in 27 publications Associate Professor Dimitrova is in first place, which clearly confirms her leading role in the investigations and preparation of the presented works.

Assoc. Prof. Dr Dimitrova presented a list of 114 citations of publications with her participation, with a large part of the citations being from foreign authors in publications indexed and referenced in the WoS and/or Scopus databases. I believe that her scientific results have become known and have been evaluated by scientists in the field of her research in our country and around the world.

Main scientific-applied and applied contributions

I accept and positively evaluate the stated 14 contributions of Associate Professor Dr. Dimitrova, which are scientific and scientifically applied. Eight of them are mainly related to specialized scientific publications, equivalent to a monograph on Cognitive, neuro-cognitive and social aspects of human-robot systems modeling. One of her indisputable scientific

contributions is the development of a conceptual model of neuro-cognitive processing of semantic/abstract and perceptual/concrete information in the learning process of human-robot interaction, based on modern research of EEG signals as markers of cognitive processes. Another scientific contribution concerns a proposed structural approach for the analysis of security aspects and user acceptance of socially competent robotic systems.

The remaining 6 contributions concern the other publications presented for the competition. All contributions are in the thematic area of the competition - Robotic systems with human-machine interface.

Personal impressions

I have known Assoc. Prof. Dr. Maya Dimitrova since the establishment of the Institute of Control and System Research in 1994, the predecessor of the current Institute of Robotics. Over the years, she developed herself as a competent, efficient and collegial scientist who developed her potential as a researcher. She was the supervisor of two successfully defended PhD students. Her expert qualities are also highly appreciated at the European level, evidence of which is the above-mentioned expert and consulting activity, as well as the leadership of the international CybSPEED project.

Her scientific publications on the issues of the competition have been approved in authoritative domestic and international editions and scientific forums. The presented production, results and achievements confirm Associate Professor Dimitrova as a highly qualified specialist in the field of her competence.

CONCLUSION

Bearing in mind the above, I consider that Assoc. Prof. Dr. Maya Ivanova Dimitrova fully meets the conditions, criteria and requirements for the selection of the academic position of "Professor" according to the Law on the Development of the Academic Staff of the Republic of Bulgaria, the Regulations for the application of the Law on the Development of the Academic Staff of the Republic of Bulgaria, the Regulations on the terms and conditions for acquiring scientific degrees and holding academic positions at the Bulgarian Academy of Science and the internal rules for the development of the academic staff of the Institute of Robotics at the BAS. On this basis, I give my positive vote and propose to the members of the scientific jury to vote positively for the selection of the candidate, and to recommend to the members of the Scientific Council of the IR-BAS **Assoc. Prof. Dr. Maya Ivanova Dimitrova** to take the academic position of "**Professor**" in the field of higher education 5. Technical sciences, professional direction 5.2. Electrical engineering, electronics and automation, scientific specialty "Application of the principles and methods of cybernetics in various fields of science", the subject area "Robotic systems with human-machine interface" for the needs of the Department "Interactive robotics and control systems" of Institute of Robotics-BAS.

9.07.2023

София

Member of the scientific jury: Prof.DSc Velislava Lyubenova