

STATEMENT

For the competition for the academic position "Professor" in professional field 5.2. Electrical engineering, electronics and automation, Specialty "Robots and Manipulators", announced in State Gazette issue 21 from 15.03.2022 for the needs of the Cyber-Physical Systems department at IICT- BAS

Member of the Scientific Jury: Prof. Eng. Ivo Malakov, DSc.
Technical University - Sofia

1. General information and biographical data

The only candidate in the competition is Assoc. Prof. Dr. Eng. Nayden Chivarov. He graduated from the Forest-Technical University, Sofia in 1997, majoring in Forestry Mechanisation. He defended his doctoral dissertation in 2001 at the Technical University, Vienna - Institute of Robotics, on "A set of robot tools for modular mobile robots." From 2012 to 2014 he was an associate professor at ISER-BAS, from 2015 he was an associate professor at the European Polytechnic University. Since 2019 he is an associate professor at IICT-BAS, and since 2020 he is the head of the Cyber-Physical Systems department at the same institute.

2. General description of the submitted materials

The candidate Assoc. Prof. Dr. Eng. Nayden Chivarov participates in the competition for the academic position of "professor" with a list of 10 scientific papers in publications, referenced and indexed in the world-famous database with scientific information - Scopus, according to indicator B of the requirements of the Regulations on the specific conditions for obtaining scientific degrees and holding academic positions at IICT-BAS. Of these, 1 is independent, 1 with 2 co-authors, 5 with 5 co-authors, 2 with 6 co-authors, and 1 with 7 co-authors, some of them, researchers from international project consortiums: "Network of ICT Robotics Clubs" № 2020-1-BG01-KA202-079200, ERASMUS + and "Cyber-physical system for intelligent surveillance and telemedicine for patients with COVID-19" IC-SK / 01 / 2021-2022, EBR Bulgaria - Slovakia.

There is also a list of 24 papers, other than those on indicator B. One of them is a published monograph, which is not presented as a major habilitation paper, and 13 are in publications that are referenced and indexed in the world-famous database of scientific information - Scopus. Of these, 2 have 2 co-authors, 1 has 3 co-authors, 9 has 4 co-authors and 1 has 6 co-authors. The remaining 10 papers are in unrefereed journals with scientific peer-review or in edited collective volumes, 3 of which are independent. Ten of the publications with the participation of Assoc. Prof. Chivarov are with SJR, and one has an impact factor.

A list of 17 citations of 9 papers is presented, all citations are in publications that are referenced and indexed in the world-famous database of scientific information - Scopus.

The candidate has also presented a list of 6 international and national projects in won competitions with his participation as a member of the team: 1 under the Erasmus program, of which he is the coordinator; 1 of the EBRD, of which he is the coordinator; 1 on H2020, in which he is a participant; 1 under the NSF, in which he is a participant; 1 under the NNP "Intelligent Animal Husbandry", in which he is the head of work packages 6 and 8 and 1 under the NSF, of which he was the head. A document for protection of intellectual property rights is also presented - Patent for invention № 66853 B1 "Autonomous personal service mobile robot".

Summary of the minimum national requirements and the requirements of IICT-BAS by groups of indicators for the academic position "professor" in field 5. Technical sciences, professional field 5.2 Electrical Engineering, Electronics and Automation and the evidence presented by the candidate is shown in the table:

Groups of indicators	Minimal national requirements	Minimal requirements of IICT-BAS	Declared points by groups of indicators by the candidate
A	50	50	50
B	-		-
C	100	100	178.5
D	200	220	279.58
E	100	120	170
F	150	150	227

The analysis of the data in the table shows that the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria, the Regulations for the implementation of the law on the development of the academic staff, as well as of the Regulations for the specific conditions for acquiring scientific degrees and for holding academic positions in IICT-BAS have been exceeded in all groups of indicators.

3. General characteristics of the research and applied research activities of the candidate

The candidate has submitted for participation in the competition a monograph and 33 scientific papers in a wide range of thematic areas, the main of which are:

1. Service robots to supporting the elderly and disabled - works № 1, 3, 17, 22 29, 33.
2. Educational robots for STEM education in Bulgarian schools - papers № 6, 8, 11.
3. Cyber-physical systems for intelligent management of animal husbandry complexes - works № 20, 24.
4. Cyber-physical systems for remote monitoring and tele-medical examinations in hospital care - papers № 7, 10, 23, 30.
5. Service robots for storage and delivery of finished products - works № 9, 12, 13, 14, 15, 25, 26.
6. Specialized gripper-dispenser for dosing a laboratory mill with grinding bodies - works № 5, 18.
7. Robot manipulator type SCARA for rehabilitation of upper limbs - works № 4, 34.
8. Algorithms using artificial intelligence for automatic recognition of faces and objects - labor № 19.

The works presented for participation in the competition are in topical for science and practice thematic areas and the candidate uses modern methods and tools to solve problems and achieve the respective goals.

Assoc. Prof. Chivarov leads 2 international projects and participates in one international and 2 national projects. He is a member of the Technical Committee 9.5 of IFAC and of the Bulgarian Robotics Society. He actively participates in the work of a number of scientific forums on the topic of the competition.

The candidate is the inventor of Patent № 66853 B1 "Autonomous personal service mobile robot". In recognition of his professional competence and organizational skills in 2021, Assoc. Prof. Chivarov was awarded the annual award of Plovdiv Tech Park for his contribution to the development of information technology and robotics for the benefit of society.

The candidate has 12 years of teaching activity, of which 5 years he conducted seminars and laboratory exercises in Service Robotics at the Technical University - Vienna and 7 years lectures and laboratory exercises in robotics at the European Polytechnic University. He is a supervisor of 3 full-time and 2 part-time doctoral students.

I believe that the volume and quality of the results of research and applied research of the candidate meet the requirements for the academic position of "professor" and meet the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria, the Regulations for the implementation of the law on the development of the academic staff and the Regulations of IICT-BAS

4. Research and applied research contributions of the candidate

In the works of the candidate there are sufficient in importance and number contributions, mainly of scientific and applied nature, and in some there are scientific and / or applied elements. Their relevance and significance is confirmed by the fact that most of the publications are in authoritative specialized publications with SJR rank (10 copies), and one has an impact factor. The contributions correspond to the scientific specialty of the competition "Robots and Manipulators" and include:

- Development, prototyping and research of new service robots for storage and delivery of products; for improving the quality of life of people with disabilities; for the development of STEM education in schools in our country, as well as a manipulator type SCARA for rehabilitation and a specialized gripper-dispenser for dosing.

- Development of Cyber-Physical Systems (CPS) for intelligent management of animal husbandry complexes and for remote monitoring and tele-medical examinations in hospital care.

- Research and implementation of algorithms using artificial intelligence for automatic recognition of faces and objects.

Contributions can be attributed to the groups of proving with new means the essential new sides of already existing scientific fields, problems, theories, hypotheses; creating new classifications, methods, constructions, technologies and obtaining confirmatory facts.

5. Significance of the contributions to science and practice

I believe that the contributions of the candidate's work are relevant and significant for the development and enrichment of the research in the thematic areas in which he works. They correspond to the professional field and specialty in which the competition for professor is announced. The achieved results are also important for the practice with the necessary degree of applicability.

The great social importance of the developed robotic systems for support of the elderly and disabled, for transport and delivery of finished products and for STEM training of students, as well as the developed cyber-physical systems for remote monitoring and telemedicine examinations in hospitals should be emphasized.

According to the presented report, nine of the publications with the participation of Assoc. Prof. Chivarov have been cited 17 times in refereed and indexed publications. All this shows convincingly that the works of the candidate have received the necessary fame and recognition from the scientific community at home and abroad.

6. Critical notes and recommendations

From the presented scientific production for participation in this competition and my many years of personal impressions of the teaching, research and applied research activities of the candidate, I believe that he is a highly qualified and erudite, demanding scientist and teacher with a broad general culture, who enjoys a well-deserved authority among specialists at home and abroad.

I have no critical remarks with which to challenge the main scientific, scientific-applied and applied contributions of the candidate.

Critical remarks can be made about contributions that are not formulated in a generally accepted and validated manner. The candidate presented them as object-oriented results. Despite the fact that some works are a development of already published works, repetition of texts, figures and tables is allowed.

I recommend the candidate to concentrate his research work in less thematic areas and to intensify his participation as a leader of research projects.

Conclusion

Based on my acquaintance with the materials of the competition, the relevance and significance of the contributions made, my positive assessment of the overall activities of the candidate, I propose to the Scientific Council of IICT to elect Assoc. Prof. Dr. Nayden Nedkov Chivarov to the academic position of "Professor" in the specialty "Robots and manipulators", professional field 5.2. "Electrical Engineering, Electronics and Automation" in the "Cyber-Physical Systems" department of IICT-BAS.

16.06.2022 г.
Sofia

Member of the Scientific
(Proc.)

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