

O P I N I O N

in a competition for the academic position of "professor"
Field of higher education: 5 "Technical sciences,"
Professional field: 5.2 "Electrical Engineering, Electronics and Automation",
Specialty: "Robots and manipulators",
announced in SG No. 21 / 15.03.2022 for the needs of the section "Cyber-physical systems"
at the Institute of Information and Communication Technologies - BAS
Member of the Scientific Jury: Prof. Dr. Dimitar Nedelchev Karastoyanov
Institute of Information and Communication Technologies - BAS

By Order of the Director of IICT-BAS № 133 / 13.5.2022 I have been confirmed as a member of the Scientific Jury in the competition for the academic position "Professor", announced in SG no. 21 / 15.03.2022. The only candidate in the competition is Assoc. Prof. Dr. Naiden Nedkov Shivarov.

I. General characteristics of the presented materials

The submitted documents and scientific papers of the candidate meet the minimum requirements for admission to the competition for the academic position "Professor", defined by ZRASRB and the Regulations on specific conditions for obtaining scientific degrees and for holding academic positions at the Institute of Information and communication technologies, in most cases exceeding them.

II. Compliance with the minimum requirements in Bulgaria and in IICT

The presented Report includes data on:

- scientific publications, in journals that are referenced and indexed in world-famous databases with scientific information - 23, of which 10. equivalent to habilitation work;
- published monograph, not presented as a habilitation thesis - 1;
- scientific publications in unrefereed journals with scientific review or in edited collective volumes - 10;
- citations in scientific journals, referenced and indexed in world-famous databases with scientific information, or in monographs and collective volumes - 17;
- participation and management of research projects,
- granted patent for an invention with the participation of Dr. Naiden Shivarov.

Indicator	Minimum number of points	Number of points of the candidate
V	100	178.5
G	220	279.6
D	120	170
E	150	227

III. Scientific and applied research

The research in the presented works is mainly in the fields of: control of service robots and robotic manipulators, autonomous mobile robots, remotely controlled robots and training robots. Prototypes of a mobile training robot, a tele-controlled service robot, a companion robot for people with disabilities and a robotic manipulator for rehabilitation procedures have been developed.

The candidate's research in the field of cyber-physical systems and in the field of intelligent animal husbandry is presented.

In 2019, a patent was granted for the invention "Autonomous Personal Service Mobile Robot", with the participation of Dr. Naiden Shivarov.

In the period 2016-2021 Dr. Shivarov participated in one national and one international project and is the leader of the Bulgarian team in one international and one national research project.

The candidate has in-depth knowledge, high competence and experience in the development of mobile and service robots and robotic systems, in the construction and management of cyber-physical systems, has experience in the management and implementation of research projects.

IV. Publishing activity and citations

The scientific publications of the candidate presented in the competition include 34 scientific papers, of which 1 monograph (2020), 23 publications in journals referred to in SCOPUS and 10 other publications. The presented publications do not repeat the works of the candidate in the procedures for obtaining the educational and scientific degree "Doctor" and for holding the academic position "Associate Professor". All minus 1 publications are in the period 2019-2021.

All citations of the candidate's works are by foreign authors in publications indexed and referenced in the Scopus scientific information database. The cited works are also in the publications of well-known international organizations. I believe that the works of the candidate have become available to scientists in the field of robotics in our country and around the world.

V. Main scientific and scientific-applied contributions

I accept and appreciate the applicant's stated contributions. In summary, they are divided into the following groups.

1) Robots and robotic systems.

- NITROBOT mobile training robot (publications № 6, 8 and monograph № 11);
- service robot for finished products (publications № 9, 12, 13, 14, 15, 25, 26);
- specialized dosing dispenser (publications № 5, 18);
- a "grill" type manipulator for rehabilitation (publications № 4, 34);
- robot companion for people with disabilities (publications № 1, 3, 17, 22 29, 33);

2) Cyber-physical systems and artificial intelligence.

- Cyber-physical system for intelligent animal husbandry (publications № 20, 24);
- Cyber-physical system in hospital care (publications № 7, 10, 23, 30);
- Artificial intelligence for face and object recognition (publication № 19);

The scientific and scientific-applied contributions correspond to the scientific specialty of the competition "Robots and Manipulators". The candidate is a highly qualified specialist in the field of robotics and cyber-physical systems.

VI. Significance of contributions to science and practice

The scientific and scientific-applied contributions of the candidate are in the field of "enrichment of existing knowledge, development of new and improvement of known methods and approaches in the fields of service robotics, robotic and cyber-physical systems". The candidate's developments contribute to the expansion of the applications of robotics, intelligent systems and artificial intelligence in practice.

VII. Assessment of the degree of personal participation of the candidate in the contributions

I personally know the candidate Assoc. Prof. Dr. Naiden Shivarov and I have impressions from his scientific, research and applied activities and I believe that the declared scientific and scientific-applied contributions are his personal work.

VIII. Opinion, critical remarks and recommendations

In terms of volume and quality, the presented results exceed the minimum requirements for holding the academic position of "professor".

I have no critical remarks on the competition documents and the candidate's contributions.

CONCLUSION

All the requirements of the SRASRB and the Regulations for its implementation and the Regulations for the specific conditions for acquiring scientific degrees and for holding academic positions at IICT-BAS have been met. I confidently suggest to the esteemed Scientific Jury to vote positively for the election of Assoc. Prof. Dr. Naiden Shivarov for the academic position of "Professor" in the professional field 5.2 "Electrical Engineering, Electronics and Automation", specialty "Robots and Manipulators" in section "Cyber-physical systems" at IICT-BAS.

10.06.2022

Sofia

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