

**STATEMENT**  
**considering the procedure for**  
**„Associate Professor“**  
**in the field of 5. Engineering sciences,**  
**professional field 5.1. Mechanical Engineering,**  
**scientific specialty "Robots and Manipulators"**  
**(Electronic control and power supply systems in service robotics), announced in the "State Gazette", issue 61/ 29.07.2025, page 214 for the needs of the "RiMIS" section, at the Institute of Robotics - BAS.**

The statement was prepared by: Prof. Dr. Ivan Nikolov Chavdarov, Sofia University, 4.6. Informatics and Computer Science and 5.1. Mechanical Engineering / Robotics, in my capacity as a member of the scientific jury for the competition in accordance with Order No. 117/29.09.2025 of the Director of the Institute of Robotics - BAS.

The only candidate in the procedure who submitted documents is:  
**Ch. assistant dr. Eng. Yassen Kirov Paunski**, Institute of Robotics - Bulgarian Academy of Sciences, "RiMIS" section.

## **I. GENERAL DESCRIPTION OF THE SUBMITTED DOCUMENTS**

### **1. Application information**

All the documents presented by the applicant are in accordance with the requirements of required laws in republic of Bulgaria, namely: ЗПАКРБ, ППЗПАКРБ as well as, the Regulations on the conditions and procedure for acquiring scientific degrees and occupying academic positions (ПУРПНСЗАДСУ) at the Institute of Robotics - BAS.

For participation in the competition, the candidate Yassen Paunski has submitted a list of a total of 23 titles, including 23 publications in Bulgarian and foreign scientific journals and scientific forums, 0 studies, 1 monograph, 0 books, 0 certificates and patents, 0 textbooks and teaching aids. 1 other document (in the form of official notes and certificates from an employer, project manager, funding organization or project assignor, references and reviews, awards and other appropriate

evidence) supporting the candidate's achievements has also been submitted. The total number of points according to the Regulations for the implementation of the law on the development of the academic staff in the Republic of Bulgaria is 100 for indicators B3 and 4 (out of 100 required), 211.4 for indicators D7 and 8 (out of 200 required) and 70 for indicator D12 (out of 50 required), which satisfies the requirements for the position held.

Notes and comments on the documents. All submitted documents meet the requirements and regulations of the Institute of Robotics - BAS.

## **2. Candidate details**

Yasen Paunski graduated from the Master's degree in "Engineering Physics" at Sofia University "St. Kliment Ohridski" in 2001. In the period 2002-2003 worked as a physicist in the Laboratory of Nonlinear Optics, at Sofia University "St. Kliment Ohridski". 2004-2017 worked as an Electronics Engineer and is a partner in private companies working in the field of electronics and robotics. From 2017. Until now he has been working as an assistant and chief assistant at the Institute of Robotics at the Bulgarian Academy of Sciences (IR-BAS). In 2018, he defended his doctoral dissertation in Scientific specialty: 5 "Technical Sciences", 5.2 "Electrical Engineering, Electronics, Automation" (Robots and Manipulators) on the topic: "Research, modeling and implementation of a class of microprocessor systems based on modern RISC architectures for controlling mobile service robots" at IR-BAS.

## **3. General characteristics of the candidate's scientific works and achievements**

The scientific and applied work and results of Yassen Paunski can be defined in four main areas:

– Design and development of educational robots intended for application in education and social pedagogy. These works are mainly of an applied nature;

- Design and implementation of a prototype of a transport and logistics robot "Spartak";

- Development and experimental research of a specialized measuring instrument – a tribometer for measuring extremely small friction forces. These works are of a scientific and applied nature;

- Development and design of a control system for an innovative elbow orthosis based on electromyographic (EMG) signals from the active muscles of the hand.

The results of the candidate's activities have been presented at international scientific forums in the country and abroad. Four articles have been published in scientific journals and 18 in conference proceedings. Nine of the presented works have been reviewed and referenced in the world databases (Scopus) and the remaining 14 have been published in non-refereed journals with scientific review



The works meet the minimum national requirements (under Art. 2b, para. 2 and 3 of the Law on Robotics and Robotics of the Republic of Bulgaria) and, accordingly, the additional requirements of the Institute of Robotics at the Bulgarian Academy of Sciences for occupying the academic position of "associate professor" in the scientific field and professional direction of the competition. The scientific works presented by the candidate do not repeat those from the previous procedures for doctor and chief assistant. There is no proven plagiarism in the scientific works presented in the competition according to the established procedure.

#### **4. Characteristics and evaluation of the teaching activities of the candidate**

No documents regarding the candidate's teaching activities have been submitted.

#### **5. Content analysis of the scientific and applied achievements of the candidate, contained in the presented materials**

A low-latency mobile robot control system has been developed using mobile networks (4G and 5G) and high-speed Wi-Fi wireless standard. A new method for estimating the speed and latency of the communication channel has been proposed. The results are reflected in 4 articles.

A power management system for small service robots based on a lithium-ion battery pack has been designed and built. All battery data is available to the host computer via the SMBus (System Management Bus) system management interface.).

A novel hybrid power system combining a hydrogen fuel cell and a lithium-ion battery is designed to power service robots. It dynamically distributes the energy flow between the fuel cell and the battery, using the battery to meet peak power demands and transient loads, and the fuel cell as the primary power source for continuous operation. The proposed architecture provides stable power output under various load conditions.

The candidate is one of the main participants in the creation of a new state educational standard and a curriculum for a new specialty "Robot Programmer" intended for secondary schools.

The first group of articles has scientific and applied contributions related to the enrichment of existing knowledge. The second and third groups find application of scientific achievements in practice. The fourth group is applied.

The works are presented in articles published in journals and at international conferences, there are 23 in total. Their distribution by scientific metrics is as follows: Q3 – 3 articles; SJR without quartile – 1; Refereed and indexed without SJR/IF – 5. One article is independent and the remaining

works are co-authored with other authors, assuming that the contribution of the authors is distributed more equally. A list of 7 citations is presented, with all citing articles being in journals referenced in SCOPUS or Web of Science. These indicators confirm the high value of the presented scientific works.

## **6. Critical notes and recommendations**

I recommend that the candidate's future work increase scientific and applied scientific activity. The results obtained should be supported by in-depth theoretical and experimental research that should be published in refereed journals indexed in international databases such as Scopus and Web of Science.

## **7. Personal impressions about the candidate**

I have known the candidate Yassen Paunski since 2017, and I have excellent impressions of his professional work. In addition, I can note his honesty and ability to work in a team. I welcome his work in creating a curriculum and a syllabus for the first specialty in Bulgaria "Robot Programmer". In addition, together with Yassen Paunski, we have participated in the training of teachers in the specialty "Robot Programmer" organized by the Ministry of Education, Science and Technology, where he performed excellently.

## **8. Conclusions about the application**

Having familiarized myself with the materials and scientific papers presented in the competition and based on the analysis of their significance and the scientific and applied scientific contributions contained therein, I **confirm** that the scientific achievements meet the requirements of the Law on the Protection of Scientific and Applied Scientific Research, its Regulations for its implementation and the relevant Regulations of the Institute of Robotics - BAS for the candidate to occupy the academic position of "associate professor" in the scientific field and professional field of the competition. In particular, the candidate meets the minimum national requirements in the professional field and no plagiarism has been established in the scientific papers presented in the competition.

I give my positive assessment of the application.

## II. GENERAL CONCLUSIONS

Based on the above, I **recommend** that the scientific jury propose to the competent body for the selection of the scientific council of the Institute of Robotics - BAS to elect Chief Asst. Prof. Dr. Eng. Yassen Kirov Paunski to occupy the academic position of "Associate Professor" in the professional field 5.1. Mechanical Engineering, scientific specialty "Robots and Manipulators" (Electronic control and power systems in service robotics).

Sofia, 29.10. 2025 г.

Written by: Prof. Dr. Ivan Nikolov Chavdarov

