

STATEMENT

concerning a contest for obtaining an academic position “Associate professor” in the area of higher education 5. Technical sciences in the professional field 5.3 „Communication and Computer Engineering“, in the scientific specialty „Communication network and systems“ announced in State Gazette (SG) 45/ 28.05.2021, for the needs of Department “Distributed Information and Control Systems”, ICT BAS with candidate Assist. prof. Vladimir Nikolaev Ivanov M.Sc., Ph.D.

by Professor eng. Grisha Valentinov Spasov, PhD, Technical University of Sofia, Plovdiv Branch, Member of the Scientific Jury

For the participation in the competition are presented documents by **Assist. prof. Vladimir Nikolaev Ivanov**, PhD, ICT-BAS Sofia, department DICS. All documents are submitted in due time and meet the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for its Implementation and the Regulations of ICT-BAS.

1. Overall characteristic of the applicant’s research and scientific applied activity

Assist. prof. Vladimir Nikolaev Ivanov, Ph.D, presented the scientific papers outside the dissertation thesis for the Doctor degree, as follows:

Scientific works	Number - points
Dissertation for the award of educational and scientific degree "Doctor"	50 points
Monographic work (equivalent publications in specialized scientific editions indexed in world-renowned Scopus and Web of Science databases – (group of indicators C, minimum 100 points)	1 – monography Total: 100 points
Publications outside the above, (group of indicators D, minimum 220 points) of which:	23 Total: 423 points
- publications in specialized scientific editions indexed in world-renowned databases of scientific information Scopus и Web of Science (G 7)	7 Total 173 points
- publications in unrefred magazines with scientific review or published in edited collective volumes (G 8)	16 Total 250 points
A set of indicators D, (minimum of 60 points) of which:	Total: 116 points
- Citations or reviews in specialized scientific publications indexed in world-known scientific data databases Scopus и Web of Science (D 12)	11 Total 110 points
- Citations in monographs and scientific publications with scientific review (D 13)	6 points
Group of indicators E, (at least 20 points) of which:	Total: 105 points
- Participation in a national scientific or educational project	40 points
- Participation in an international scientific or educational project (E19),	20 points
- Leader of a national scientific or educational project (E 20),	40 points
- Raised funds for projects managed by the applicant (E22).	5 points
Minimum required points per group for associate professors according to the ICT BAS - 450	Total: 794 points of all sets of indicators

Among the presented in the competition 23 scientific papers and monography, 12 are written by the candidate itself, 10 are with 2 authors and 1 with 3 authors. More than half of the publications (13) are written in English and 12 in Bulgarian.

A monographic work titled "Management of Transport Systems and Processes", published in Avangard Prima Publishing House, Sofia, 2021, ISBN 978619239527-8, was presented by the candidate.

No declarations by co-authors have been submitted for the collective works presented by the candidate, so I accept that the participation of all co-authors is equivalent.

I accept that all presented scientific papers are relevant to this contest.

2. Evaluation of the research and scientific-applied activity of the candidate

The research and scientific-applied activity of the candidate is focused entirely in the field of this competition.

The candidate was the leader of two scientific contracts: Contract between IICT and BAS-Central Office Sofia: "Identification and processing of urban traffic parameters and their application for real-time management"; Contract with the NSF, competition Young Scientists 2018: "Modern digital methods and means for research and modeling of transport flows". He has also participated as a member of the team in 4 national research projects and one international.

The foregoing gives me a good reason to give high assessment of the research and applied research of the candidate.

3. Main scientific and applied contributions

The main scientific and scientific-applied contributions of the candidate in the presented publications and the monographic work on the competition could be classified in the following areas: modeling and optimization of transport traffic, methods and means of traffic flow management, application of programmable logic (FPGA) in different fields.

- 3.1. A method for optimization of transport flow for urban transport traffic management is proposed on the basis of optimization formal description through two-stage optimization.
- 3.2. New approaches and new methods and means for data and signal processing in the management of transport systems and flows are proposed.
- 3.3. Simulations and hardware realizations of systems and devices for traffic flow management based on the digital module for signal processing DSP48A1, built into the structure of the FPGA series Spartan 6 on Xilinx, are proposed.
- 3.4. An algorithm for recognizing road traffic from video surveillance has been developed, which is applicable for road traffic management.
- 3.5. An algorithm for recognizing vehicles in motion and controlling traffic in an urban environment is proposed.
- 3.6. FPGA-based technical means of devices have been designed, which implement a moving average, PID controller and pulsar signal processing.
- 3.7. Video surveillance is proposed to measure the intensity of transport traffic through FPGA based instruments, which allows automatic determination of traffic parameters.

In result of checking the Scopus system and excluding citations from the co-authors, the reviewer accepted 11 indexed citations (110 points), which significantly exceed the minimum requirements for the academic position of Associate professor of IICT-BAS Sofia.

4. Significance of the contributions to the science and practice

The significance of the candidate's contributions to science and practice is indisputable. Assistant Professor Dr. V. Ivanov is a scientist with proven research interests in the field of optimization and management of transport traffic, as well as in the application of programmable logic (FPGA) in various fields.

The evaluation of the presented works of the candidate shows that the quantitative indicators and the minimum requirements of IICT-BAS Sofia for holding the academic position "Associate Professor" are fulfilled, even some of the indicators are over fulfilled. The scientific production of the candidate is known in Bulgaria and abroad.

5. Critical remarks and recommendation

As a critical remark to the candidate, I would point out the non-well specified presentation of the citations of the publications in the competition.

My main recommendation to the candidate is to focus his efforts on establishing a group of young researchers - students and PhD students, in order to create a team with sufficient capacity to participate in significant research projects.

The candidate's research qualities are beyond doubt. The presented publications and documents on the competition are very well formed.

I would like to wish to Assistant Professor Dr. Vladimir Ivanov to continue with the same enthusiasm his research and applied activity.

CONCLUSION

According to the submitted documents and the above analysis of the candidate's work, as well as on my personal conviction, I believe that Assist. prof. Dr. Vladimir Nikolaev Ivanov, has scientific and applied contributions to a sufficient degree. He also has substantial pedagogical work as well as innovative developments. I believe that the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, as well as the Rules of the Law and that of the IICT BAS, Sofia are fulfilled.

Finally, based on my knowledge of the scientific papers presented and the scientific and applied contributions contained therein, I find it reasonable to propose Assist. prof. Dr. Vladimir Nikolaev Ivanov to obtain the academic position "Associate professor" in the professional field: **5.3 Communication and computer equipment, scientific specialty "Communication network and systems"** in the current competition.

04.09.2021



(Professor eng. Grisha Spasov, PhD)