

STATEMENT

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ABOUT

**documents and scientific papers presented in a competition for the academic position
“Associate Professor”**

Field of higher education: 5. Technical sciences;

Professional field: 5.2 Electrical engineering, electronics and automation;

By order No 75/27.03.2026 of the IICT-BAS, I am included in the Scientific Jury of the competition for the academic position “Associate Professor” published in the State Gazette No 10/27.01.2026. Materials for the competition are submitted by the only candidate Yordanka Boneva, Ph.D., Chief assist. prof. at IICT-BAS. As a member of the Scientific Jury, I have received the following materials from the candidate, meeting the requirements of IICT-BAS:

1. Application for participation in the competition;
2. European CV;
3. Copy of diploma for the educational and scientific degree “Ph.D.”;
4. Certificate of internship in the specialty;
5. List of scientific publications for participation in the competition;
6. List of citations;
7. Summaries of scientific publications for participation in the competition - in Bulgarian and English;
8. Copies of scientific publications for participation in the competition;
9. Information on fulfillment of the minimum requirements of IICT;
10. Information on the original scientific and scientific-applied contributions;
11. Declaration that there is no legally proven plagiarism in scientific works.

General characteristics of the presented materials.

The attached CV shows that the candidate has received a master's degree from the University of Library and Information Technology, majoring in "Information Technologies in Media Business", is enrolling in doctoral studies at the Institute of Information and Communication Technologies - BAS, in the period 2017-2020. The certificate of fulfillment of the requirements of IICT-BAS for holding the academic position of "associate professor" shows that the requirements for all groups of indicators have been met, and have been

exceeded. The review of the materials submitted to me by the candidate Dr. Yordanka Boneva shows that they have been prepared in accordance with the Law on the State of the Republic of Bulgaria, the Law on the State of the Republic of Bulgaria, as well as the Regulations on the Specific Conditions for Acquiring Scientific Degrees and for Holding Academic Positions at IICT-BAS.

Evaluation of the scientific work.

To participate in the competition, the candidate participates with a list of 11 scientific publications in publications equal to a habilitation thesis, which are referenced and indexed in world-renowned databases of scientific information. Outside of this number, the candidate participates with 7 referenced and indexed publications in world-renowned databases, as well as 9 in non-refereed journals with scientific review or in edited collective volumes.

The scientific publications corresponding to the group of indicators B4 are 11. The publications in the group D are 7, referenced in world-renowned databases. The publications corresponding to the indicator D8 are 9.

In general, the submitted works contain scientific and scientifically applied results related to modeling, analysis and optimization of modern transport systems in an urban environment, fuzzy logic-based management in the Aimsun transport simulation environment, models of one, two and four intersections.

The results in the publications show that the candidate has in-depth knowledge in the field of the competition.

Evaluation of the citations.

In the presented list of citations, all cited works of the candidate are in works of authors in publications that are indexed and referenced in the scientific information database Scopus.

Scientific and scientific-applied contributions.

I accept and positively evaluate the scientific and scientific-applied contributions of the candidate, indicated in the attached reference for contributions. They fully correspond to the scientific specialty of the competition.

A hierarchical approach to urban traffic management has been developed, through which the throughput of intersections is increased and queues are reduced. A stochastic model of the transport system has been proposed, formalized as a linear-quadratic Gaussian problem and validated in AIMSUN, which shows better efficiency compared to the real state. Intelligent control has been implemented using a fuzzy controller, combining control theory and computer simulation, with proven advantages over analytical methods. A heuristic approach has also been developed using fuzzy logic to take into account the random nature of traffic.

Urban road traffic and traffic light signaling have been modeled in the AIMSUN environment, which allows the study of various scenarios for management and improvement of throughput and queue reduction. Microscopic simulation models have been developed and tools such as AIMSUN and TRANSYT have been used to analyze the impact of traffic light control on the environment and infrastructure solutions, demonstrating pollution reduction and efficiency of

existing solutions. Different approaches to traffic light optimization have been studied and compared, and the advantage of fuzzy controllers over classical methods has been demonstrated. In parallel, methodologies and analyses in the field of educational technologies have been developed, factors for using serious games in education have been studied, and approaches to risk management in agricultural sites have been systematized.

General characteristics of the candidate's activity.

The candidate for this competition, Dr. Boneva, has a bachelor's degree from TU-Sofia, majoring in "Computer Systems and Technologies", a master's degree from the University of Library Science and Information Technologies, majoring in "Information Technologies in the Media Business". She has worked at IICT-BAS for over 15 years, of which 4 years as a chief assistant. During this period, she was a doctoral student, programmer and chief assistant. The publications submitted for participation in the competition contain original scientific and scientifically applied results in the field of the field.

Critical notes and recommendations.

I have no critical remarks to dispute the candidate's scientific and applied contributions. I would recommend that in the candidate's future activities, he/she consider protecting intellectual property.

Conclusion

The materials of the competition and the presented results of the candidate satisfy all the requirements under the Act of the Development of the Academic Personnel of the Republic of Bulgaria, and the Rules of the Academic Personnel of the Republic of Bulgaria, the Rules for the conditions and the procedure for acquiring scientific degrees and for the occupation of academic position in the Bulgarian Academy of Sciences and the Rules for the specific conditions for the acquisition of the academic degrees and the occupation of academic positions in the Institute of Information and Communication Technologies. My assessment of the overall activity of the candidate is **positive**.

I strongly recommend the esteemed Scientific Jury to vote a proposal to the Scientific Council of IICT-BAS for the election of Yordanka Boneva. to the academic position of "Associate Professor" in Professional: 5.2 Electrical engineering, electronics and automation, for the needs of Department "Distributed Information and Management Systems" at the IICT-BAS.

Date:

04.05.2026

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