

OPINION

for a competition for acquiring the academic position "Associate Professor"

in the field of higher education:	4. Natural sciences, Mathematics, and Informatics
professional field:	4.6. Informatics and Computer Science
scientific speciality:	Informatics (Context-Aware Information Systems)
published in:	State Gazette no. 91 / 02.11.2021 and on the IMI website
for the needs of:	Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences (IMI-BAS) Software Technologies and Information Systems Department
prepared by:	Assoc. Prof. Krassimira Ivanova, PhD. IMI-BAS
member of the scientific jury of the competition, according to:	Order № 341 / 23.12.2021 of the Director of IMI-BAS

Only one candidate has submitted documents for participation in the announced competition:

Assist. Prof. Boris Blagovestov Shishkov, PhD

I. General description of the submitted materials

1. Details of the application

To participate in the competition, Assistant Professor Dr. Boris Shishkov has attached all required documents, lists and references.

Regarding the fulfilment of the minimum requirements by a candidate in a competition for the academic position of "Associate Professor" at IMI-BAS, Dr. Boris Shishkov presented:

- PhD degree from the Technical University of Delft, The Netherlands, dissertation: Structuring software systems based on adaptive business modules; legalized in Bulgaria with diploma 000048 / 22.02.2016 (completed 50 points in group "A");
- monograph: Boris Shishkov. Designing Enterprise Information Systems, Merging Enterprise Modelling and Software Specification. ISBN: 978-3-030-22440-0, Springer, 2020, 234 p. (completed 100 points under group "B");
- 20 publications indexed in Scopus, of which 16 are in editions with SJR (a total of 368 points, with a required 220 points in group "Г");
- 27 citations of 6 of his publications in Scopus (a total of 162 points, with a required 70 points in group "Д");

- in the presented table for the fulfilment of the minimum requirements, the candidate has not submitted data on group "E", although according to the requirements of RCPASDOAP¹ in IMI there are 20 points required for that group. But in the presented materials Dr. Shishkov has described 8 projects, in which he participated in or was a consultant. Among them, as a participant in national projects we can highlight "DP-ICC", "A-MUSE", "AWARENESS", "BETADE", and as a participant in international research projects - "Li-La", "AOSD" (funded by EC) (a total of 80 points), so that it covers and significantly exceeds the minimum requirements on this point as well.

The candidate has submitted 16 publications in publications with SJR, which significantly exceeds the additional requirement of Art. 3, para 1, item 2 of RCPASDOAP in IMI "at least 5 of the presented publications should be in editions with IF or SJR".

The candidate has been working under an employment contract at IMI as an assistant since 01.01.2015, which fully satisfies the requirement of Art. 24, para 1, item 2 of LDAPRB².

The list describing the general publishing activity of Dr. Boris Shishkov includes 3 monographs and 70 peer-reviewed publications in various national and international publications.

The total list of submitted citations includes 119 sources. The diversity of the citing author groups is impressive, which shows the recognizability of the results achieved by the candidate.

The documents for the competition also present the positive opinions about the candidacy of Dr. Boris Shishkov by Prof. Neli Maneva (IMI-BAS), Prof. Alexander Verbraek (Technical University of Delft), Prof. Ivan Ivanov (Empire State College of the State University of New York) and Assoc. Prof. Martin van Sinderen (University of Twente).

2. Content analysis of the scientific and applied research of the candidate, contained in the materials for participation in the competition

In the presented Author's statement featuring the scientific contribution of the submitted works with which the candidate participates in the competition, a good description is given of the individual focuses in the candidate's work related to research in the field of context-based information systems. The following can be distinguished as original contributions:

- Methodological bases for software design based on models of relevant business processes have been developed. Based on this, a method for component-based software design based on the models of the environment (business) environment – SDBC (Software Derived from Business Components) has been created and is being developed. This symbiosis is at the heart of the development of context-based information systems. The possibility of combining the SDBC method with the ISDL (Interaction System Design Language) to refine the modelling of business processes [monograph, 3s, 9s, 17s, 20s] is considered;
- The key modules of a context-based information system have been identified: (1) DAP (Data Acquisition & Preprocessing), including the acquisition and preprocessing of contextual

¹ RCPASDOAP – Regulations for the Conditions and the Procedure for Acquiring Scientific Degrees and for Occupying Academic Positions

² LDAPRB – Law for Development of the Academic Personnel of the Republic of Bulgaria

information; (2) SD (Situation Detection), responsible for identifying the current situation, based on the information obtained; (3) AS (Adaptation to Situation), concerning the adaptation of the system to the situation; and (4) SOD (Situation-Specific Service Offering & Delivery), concerning the very provision of services tailored to the current situation [2s];

- Three fundamental perspectives on the adaptation of context-based systems are outlined: (1) depending on the state of the user, (2) depending on the internal state of the system or (3) depending on social requirements [7s];
- Particular attention is paid to the need to link business processes and software that supports them by proposing a method of software design, in which software modules are linked to specific business models [18s, 19s, 20s];
- The research of the offered models and technologies in specific applied areas can be evaluated as applications of scientific achievements in practice – such as monitoring in emergencies [1s, 4s, 5s], holistic conceptual model for border control [11s], intelligent electricity consumption. at the level of the household, neighbourhood, city [12s], supporting the learning process by obtaining personalized learning content and implementation tasks [13s], etc. Of particular importance in context-sensitive systems is the ability to monitor the contextual states of the user [16s].

3. Evaluation of project work and other activities

Dr. Boris Shishkov has participated in 8 foreign and international research projects. In addition, he has an active organizational activity (40 participations in program or organizational committees of scientific events and editor in 53 volumes of international scientific events).

According to reports issued by the relevant educational institutions, Dr. Shishkov has lectured in courses: "Data Analytics" (2018) and "System Analysis" (2021) at Delft University of Technology, as well as "Modeling of processes and systems" (2018 -19 and 2019-20), "Data Mining" (2020-21 and 2021-22) and "Business Modelling and Software Design" (2020-21 and 2021-22) at UniBIT.

4. Remarks and recommendations

Dr. Boris Shishkov has a good publishing activity, and the presented monograph shows the already accumulated complex knowledge in the field, so I recommend to start publishing in journals with IF, convinced that the quality of the materials presented by him will quickly receive well-deserved recognition.

5. Personal impressions of the candidate

I have been working with Dr. Boris Shishkov in the same section since his admission to IMI, and recently in a joint team related to research on the architectures of systems that collect data from autonomous vehicles. One of the things that makes a very good impression on me is his organisational skills and ability to coordinate the work of the team to achieve a set goal promptly on time.

6. Conclusion for this application

The scientific achievements of Dr. Boris Shishkov meet the requirements of the Law for development of the academic personnel of the Republic of Bulgaria and the Regulations on it, the Regulations for the conditions and the procedure for acquiring scientific degrees and for occupying academic positions at the Bulgarian Academy of Sciences and the specific regulations for the IMI-BAS. The candidate satisfies and significantly exceeds the minimum national and institutional requirements in the professional field and no plagiarism has been established in the scientific papers submitted at the competition. I give my **positive assessment** of the candidacy.

II. Overall conclusion

After getting acquainted with the materials and scientific papers presented in the competition, analysis of their significance and the scientific, scientific-applied and applied contributions contained in them, I find it reasonable to give my positive assessment and recommend the Scientific Jury to propose to the Scientific Council of the Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences to elect Assistant Professor Boris Blagovestov Shishkov to take the academic position of "Associate Professor" in the field of higher education 4. Natural Sciences, Mathematics and Informatics, Professional field 4.6. Informatics and Computer Science (Context-Aware Information Systems).

02.02.2022

Sofia, Bulgaria

Signature:

(Assoc. Prof. Krassimira Ivanova)