

# OPINION

On the materials for participation in a procedure for obtaining an academic position "Assoc. Professor", in professional field 5.2. "Electrical engineering, electronics and automation", announced in the State Gazette No. 81 of October 11, 2022 for the needs of the "Information Technologies in Security" Department, with candidate Dr. Georgi Ivanov Sharkov

**Scientific jury member:** Prof. Kiril Metodiev Alexiev, PhD, ITSDP Department, ICT - BAS, Sofia 1113, 25A Acad. G. Bonchev Str.

## I. General description of the applicant and submitted materials

One candidate took part in the competition – Assist. Prof. Georgi Sharkov, PhD. The candidate defines himself in the provided CV as "dedicated to research and innovation with practical application in the field of cyber security and collective resilience, cyber risks and digital dependency, design of complex systems of systems (SoS), development of competitive ICT and digital ecosystems, e-skills and competences, creating the future e-leaders."

Dr. Georgi Sharkov defended his doctoral dissertation on the topic "Presentation and interpretation of knowledge from the field of membrane biophysics" in 1993 (Diploma No. 28911/05.05.1993, confirmed by protocol No. 10-PVAK/25.04.1993). In the list of publications submitted for review there are three from the period before the dissertation defense - G02/1990, G25/1991, G26/1989. I do not have access to the list of publications on the dissertation in order to check whether there is an overlap between presented now publications and those made on the dissertation, but in the Statement of Contributions the candidate explicitly declares that these are publications not used in the dissertation work.

The general list of publications of the participant in the competition, Dr. Georgi Sharkov, contains 38 titles submitted for review. The types of scientific works are grouped as follows:

No.	Types of scientific works	Total number
1.	Chapters in collective monography	2
2.	Articles in periodic issues (journals)	14
3.	Proceedings of conferences	22
	Total	38

32 of the publications presented for review were developed in co-authorship (with 16 of them being the lead author), and the remaining 6 - independently. There are 2 publications in Bulgarian and 36 in English.

11 publications with a starting year of 1995 and 39 citations (self-citations excluded) are registered in SCOPUS. The estimated h-index is 3.

7 publications with 61 citations (excluding self-citations) are indexed in WoS. The calculated H index is 2.

There is no proven plagiarism in the publications submitted for evaluation.

According to the PPZRASRB and the rules established in IICT - BAS, candidates for the academic position "Assoc. Prof." in professional direction 5.2. "Electrical engineering, electronics and automation" must have accumulated: 50 points per group of indicators **A**; at least 100 points per group of indicators **B**; at least 200 points per group of indicators **G**; at least 50 points per group of indicators **D**.

According to the submitted documents, the candidate covers:

- 50 points by group of indicators **A**;
- 269.5 points. by group of indicators **B**;
- 238.8 points by group of indicators **G**;
- 210 points by group of indicators **D**.

Therefore, the minimum national requirements and the additional requirements under Art. 1a, para. 2 and para. 3 of the PPZRASRB for the occupation of the academic position "Associate Professor" in the relevant professional direction are performed by the candidate Georgi Sharkov.

## **II. Analysis of the candidate's scientific and applied achievements**

The candidate defines two scientific and four applied contributions. Contributions are well substantiated and validated with the publications. I accept contributions so worded.

Dr. Sharkov's active participation in the training of specialists in the given field by participating in the training of students in three universities, conducting various professional courses, organizing and participating in national exercises, etc., is impressive.

The main research and application areas in which the candidate has worked and achieved results are in the area of security, resilience and operational risks of complex interconnected systems. A significant part of the articles submitted for review are devoted to the development and adaptation of models and standards for the design and production of software systems and IT services with high reliability, quality and security, as well as the development and application of modern achievements of artificial intelligence in the field of cyber security and defense.

In the subject area of his research Assist. Prof. Dr. Georgi Sharkov fully meets the needs of the "Information Technologies in Security" Department in the announced competition.

### III. Significance of contributions to the science and the practice

Our modern society is highly dependent on information technologies that have entered all spheres of life. This dependency can easily turn into a vulnerability. The development of cyber-security and cyber-defense against unlawful encroachments on our data, information infrastructures, digitally driven sectors is of paramount importance today. The candidate is one of the leading specialists in the field in Bulgaria and a participant in the creation of the new international standards for cyber security.

### IV. Critical notes and recommendations

I have no significant critical remarks about the candidate.

My comment includes one critical note and one recommendation.

An inaccuracy was made in the description of the first scientific contribution. There is stated that the classic network communication layers include the levels up to Layer 7 of the OSI model. In fact, network communication layers end at the TCP level, which is Layer 4.

It is noticeable that some major contributions are validated in publications not included in Section B. For example, the overall model (Scientific Contribution 1) is presented in G16, the conceptual model from Scientific Contribution 2 in G3. Without detracting from the author's contributions, the real validation of new knowledge reached by the scientific community could be achieved through publications in IF journals from Q1, which I highly recommend to the applicant.

### V. Conclusion

The presented materials prove good in terms of volume and quality scientific research and teaching activities of the candidate Dr. Sharkov. All requirements of ZRASRB and IICT - BAS for occupying the academic position "Assoc. Prof." in a professional field 5.2. "Electrical engineering, electronics and automation" have been fulfilled. I give a positive assessment and I recommend the Honorable Scientific Jury to award Assist. Prof. Dr. Georgi Ivanov Sharkov the academic position "Assoc. Prof." according to the procedure for obtaining academic position announced by IICT-BAS.

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Sofia

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