



REVIEW

by **Acad. Vassil Stoyanov Sgurev**,

Bulgarian Academy of Sciences,

on the competition for the academic position of "Associate Professor",

in the field of higher education:

5. "Technical sciences",

professional direction:

5.3. "Communication and computer technology",

scientific specialty: "Computer systems, complexes and networks",

announced in SG, issue 45 of 28 May 2021 suitable for the needs of

department "Communication systems and services" at

Institute of Information and Communication Technologies - BAS,

with a single participant:

Assistant Professor Ekaterina Angelova Ocetova-Dudin, PhD

By order № 178-1 of July 5, 2021 of the Director of the Institute of Information and Communication Technologies - BAS, I am included in the Scientific Jury in a competition for the academic position of "Associate Professor" in the professional field 5.3. "Communication and computer equipment", scientific specialty "Computer systems, complexes and networks", announced in SG, issue 45 of May 28, 2021, for the needs of the department "Communication systems and services" at ICT-BAS, with a sole participant in the competition ch. Assistant Professor Dr. Ekaterina Angelova Ocetova-Dudin.

As a member of the Scientific Jury I have received:

1. Application for participation in the competition of Ch. Assistant Professor Ekaterina Angelova Ocetova-Dudin.

2. Curriculum vitae according to the generally accepted sample.
3. A copy of the diploma for the educational and scientific degree "Doctor".
4. Medical certificate.
5. Certificate of criminal record.
6. Certificate of internship in the specialty.
7. List of the scientific publications with which the candidate participates in the competition, which do not repeat the submitted for obtaining the educational and scientific degree "Doctor".
8. List of noticed citations of the publications for participation in the competition for the academic position "Associate Professor".
9. Summaries of scientific publications for participation in the competition for the academic position of "Associate Professor" - in Bulgarian and English.
10. Copies of the scientific publications for participation in the competition for the academic position "Associate Professor".
11. Information for fulfillment of the minimum national requirements under art. 2b, para. 2 and 3 and the requirements of the Institute of Information and Communication Technologies - BAS, under Art. 2b, para. 5.
12. Information on the original scientific and scientific-applied contributions of the candidate.
13. Declaration that there is no legally proven plagiarism in scientific works.

This review has been prepared in accordance with the requirements of the Law for the Development of the Academic Staff in the Republic of Bulgaria (RAASRB) and the Regulations for its implementation (PPP) for holding the academic position of "Associate Professor", regulated in Art. 24. (1).

According to the submitted materials for the competition, ch. Assistant Professor Dr. Ekaterina Angelova Ocetova-Dudin has acquired the educational and scientific degree "Doctor", as evidenced by the diploma № RU-NS-2015-11 from

03.04.2015, awarded by RU "Angel Kanchev", in the scientific specialty "Communication Networks and Systems", with a dissertation on "Modeling and simulation of rare events in the handover of broadband cellular radio networks". Thus, her candidacy meets the requirements of Art. 24, para. 1, item 1.

The presented certificate for work experience in the specialty № 10-348 # 1 from 24.06.2021, shows that Ch. Assist. Prof. Dr. Ekaterina Angelova Ocetova-Dudin works on a basic employment contract at the Higher School of Telecommunications and Posts and has work experience as an assistant and chief assistant for over 10 years until the issuance of the document, which meets the requirements of Art. 24, para. 1, item 2.

In compliance with the requirements of Art. 24, para. 1, item 3, from ch. Assistant Professor Dr. Ekaterina Angelova Ocetova-Dudin, presented 34 scientific papers for participation in the competition, which are equivalent to a monograph, publications in specialized scientific journals, which do not repeat those presented for the acquisition of educational and scientific degree "Doctor". Of these, 14 are reports at scientific conferences, 13 articles in journals, 6 articles in series and one textbook. According to the presented reference for fulfillment of the minimum requirements of the Institute of Information and Communication Technologies - BAS by Ch. Assistant Professor Dr. Ekaterina Angelova Ocetova-Dudin, it covers the minimum requirements for indicators A, C, D, E and E for professional field 5.3. "Communication and computer technology". This fulfills the requirements of Art. 2b, para. 2 and para. 3, under Art. 2b, para. 5 and of Art. 24, para. 1, item 4.

This review has been prepared in accordance with the requirements of the Law for the Development of the Academic Staff in the Republic of Bulgaria (RAASRB) and the Regulations for its implementation (PPP) for holding the academic position of "Associate Professor", regulated in Art. 24. (1).

According to the submitted materials for the competition, ch. Assistant Professor Dr. Ekaterina Angelova Ocetova-Dudin has acquired the educational and scientific degree "Doctor", as evidenced by the diploma № RU-NS-2015-11 from 03.04.2015, awarded by RU "Angel Kanchev", in the scientific specialty "Communication Networks and Systems", with a dissertation on "Modeling and simulation of rare events in the handover of broadband cellular radio networks". Thus, her candidacy meets the requirements of Art. 24, para. 1, item 1.

The presented certificate for work experience in the specialty № 10-348 # 1 from 24.06.2021, shows that Ch. Assist. Prof. Dr. Ekaterina Angelova Ocetova-Dudin works on a basic employment contract at the Higher School of Telecommunications and Posts and has work experience as an assistant and chief assistant for over 10 years until the issuance of the document, which meets the requirements of Art. 24, para. 1, item 2.

In compliance with the requirements of Art. 24, para. 1, item 3, from ch. Assistant Professor Dr. Ekaterina Angelova Ocetova-Dudin, presented 34 scientific papers for participation in the competition, which are equivalent to a monograph, publications in specialized scientific journals, which do not repeat those presented for the acquisition of educational and scientific degree "Doctor". Of these, 14 are reports at scientific conferences, 13 articles in journals, 6 articles in series and one textbook.

According to the presented reference for fulfillment of the minimum requirements of the Institute of Information and Communication Technologies - BAS by Ch. Assistant Professor Dr. Ekaterina Angelova Ocetova-Dudin, this covers the minimum requirements for indicators A, C, D, E and E for professional field 5.3. "Communication and computer technology". This fulfills the requirements of Art. 2b, para. 2 and para. 3, under Art. 2b, para. 5 and of Art. 24, para. 1, item 4.

In this review is accepted the presented by the candidate in the competition Ch. Assistant Professor Dr. Ekaterina Angelova Ocetova-Dudin declaration that there is no proven plagiarism in the scientific papers submitted for this competition. This fulfills the requirements of Art. 24., para. 1, item 5.

The contributions in the works with which Ch. Assistant Professor Dr. Ekaterina Angelova Ocetova-Dudin participates in the competition, are in the areas of: Sensor computer systems, Computer simulation methods, Remote data exchange and Protection of computer and communication networks and systems.

The scientific and scientific-applied contributions of the candidate in the competition are generally reduced to the following:

1. A complex laser projection system for industrial applications is proposed, including drivers for laser beam control, software for generating high quality laser projections.

A system for controlling computers through gestures has been developed.

2. Simulation methods for modeling and verification of wireless networks are proposed. Estimates of the probabilities of rare events have been obtained using accelerated simulation methods. A specially created simulation software platform is used for this purpose. It is used in student learning processes.

Based on the IEEE 802.11, 802.16 and 802 standards, a method for selecting the type of wireless networks is proposed and the behavior of their bandwidth is studied.

Methods for managing the mobility of 5G and 6G networks are proposed.

3. Methods for approximation in the synthesis of technical means in communication systems have been developed. Evaluation methods are proposed using different types of approximation when sizing different communication systems.

4. Various research results have been obtained for the process of data exchange in medical applications, distance learning of students and business users of courier services. Results on the use of mobile internet have been obtained. The effectiveness

of the indicators included in the MCI mobile connectivity index is analyzed and the trends for the development of the services market and the challenges facing it are outlined.

5. A method is proposed to protect web-based applications from hacker attacks and vulnerabilities by a related operating system.

The security problems of the sensor networks based on the IEEE802.15.4 protocol are defined. Possible types of attacks and mechanisms for counteracting them are defined. The risks related to the technical and functional condition of the networks are analyzed.

A model of a communication network management system is proposed, as well as a way for effective protection.

The following general note can be made on the submitted works of the candidate in the competition – they are in a wide scientific field and different scientific fields. It should be recommended that future research be carried out in fewer scientific fields. This will lead to greater depth in the results obtained.

CONCLUSION

Under the announced competition, all the requirements of the Law for the Development of the Academic Staff in the Republic of Bulgaria (LASRB), the Regulations for its implementation, the Regulations for the terms and conditions for acquiring scientific degrees and for holding academic positions at BAS and the Regulations for the specific conditions are met for obtaining scientific degrees and for holding academic positions at the Institute of Information and Communication Technologies (IICT) are observed.

The candidate in the competition is a researcher and this is confirmed by the scientific achievements mentioned in this review. She also has the necessary experience and results in scientific and applied activities.

All this gives me reason to express my positive conclusion about the selection of the candidate in the competition and to convincingly recommend the Scientific Jury to unanimously vote on a proposal to the Scientific Council of IICT-BAS, to elect Ch. Assistant Professor Dr. Ekaterina Angelova Ocetova-Dudina for the academic position of "Associate Professor" in the professional field 5.3. "Communication and computer equipment", scientific specialty "Computer systems, complexes and networks".

31.08.2021

Sofia



/ acad. Vassil Sgurev /