REVIEW

In a competition for the academic position of "Associate Professor",
Professional Area 5.3. Communication and Computer Technology,
Discipline "Optical cable lines and systems",
Announced in state newspaper № 31 / 19.04.2022
Candidate chief assistant professor Dr. Eng. Stela Savova Kostadinova
Member of the scientific jury: Assoc. Prof. Dr. Eng. Violeta Todorova Bozhikova,
Department of Software and Internet Technologies, Technical University of Varna

1. General characteristics of the research and applied research activities of the candidate.

The research activity of Dr. Eng. Stella Savova Kostadinova began in 2011, when she joined the department of "Communication Techniques and Technologies" (KTT) at TU-Varna as an assistant. She received Phd degree in professional area 5.3. "Communication and Computer Technology" and scientific specialty "Communication networks and systems" at TU-Varna in 2015. Since 2019, he has been a chief assistant.

Dr. Eng. Stella Kostadinova participates in the competition with the following scientific works and scientific-metric indicators:

- Dissertation work developed and defended in the professional area of the competition (5.3), referring to indicator 1.1 and providing 50 points.
- 34 scientific works, divided into the following groups:
1) 10 scientific publications in editions that are referenced and indexed in world-renowned databases referring to indicator 3.4, one of which, reported in June 2022. in a conference indexed in Scopus (BIA 2022) is in print. According to this indicator, the candidate scores 135 points, with at least 100 required.
2) 12 scientific publications in editions that are referenced and indexed in world-renowned databases with scientific information, referring to indicator 4.7, two of which, reported in 2021. (in BIA 2022) are in print. The total number of points of this indicator is 136.65. 12 scientific publications in non-refereed peer-reviewed journals or in edited collective volumes related to indicator 4.8. The total number of points from this indicator is 80. Thus, according to indicator 4, the candidate scores 216.65 points, out of the required 200.
- Citations: the presented citations are related to indicator 5 of the minimum national requirements and provide 280 points, with the minimum required - 50. All presented citations, which by number and points far exceed the minimum requirements, are in scientific publications, referenced and indexed in world-renowned databases, that is, refer to indicator 5.12.
- The candidate for associate professor participated in 6 research projects, with a scientific, applied and educational direction.

In conclusion: *according to points collected, the candidate covers all groups of indicators for the academic position of "Associate Professor" in the field of higher education "Technical Sciences".*

2. Assessment of the pedagogical preparation and activity of the candidate.

Dr. Eng. Stella Savova Kostadinova has more than 10 years of experience as an assistant and chief assistant at the Department of "Communication Techniques and Technologies" (KTT) at TU-Varna. From the submitted references for the last 3 academic years, it can be seen that she fulfills her academic standards and has classes in both the "Bachelor's" and the "Master's" Degree. He leads lectures in 4 disciplines, and laboratory exercises in 7 disciplines. She was the supervisor of 40 graduate students who successfully defended their thesis. The candidate does not indicate textbooks of which he is the author or co-author.

In conclusion: *the candidate has academic and pedagogical preparation for holding the post of Associate Professor.*

3. Main scientific and scientific-applied contributions.

I accept the presented 10 scientific and applied contributions in the scientific works indicated by the candidate, as they are formulated:

1. A methodology is proposed for statistical analyzes of various types of information arrays, for the assessment of disturbing effects on electrical signals of incoming and outgoing traffic flows in communication systems.

2. Analyzed and synthesized artificial neural networks for identifying voice commands in voice control systems.

3. An innovative approach is presented for applying discriminant analysis to identify electrical signals subjected to uniform and periodic noise levels without and with pre-FFT processing.

4. An assessment was made regarding the computational efficiency of artificial neural networks in the analysis of transmitted information flows to determine the type of defined traffic categories with the help of artificial intelligence.

5. The possibility of applying Artificial Intelligence in the analysis of M/M/c/k traffic data was investigated in order to define their category in relation to serviced circuits with different number of server stations.

6. Developed a Virtual Instrument (VI) using LABVIEW to test the performance of NFIS classification.

7. Types of classifiers for quantitative identification of teletraffic devices are proposed and studied.

8. Structures of adaptive neural-fuzzy interface systems for noise identification are investigated.

9. A laboratory model of a real optical DWDM network for signal transmission has been created.

10. The delays in an optical transmission network with a wave seal have been investigated and analyzed.

I would assign the proposed contributions to the following categories: contributions numbered 1, 3, 6, 7 and 9 to the category "obtaining confirmatory facts", contribution 2 to "proving by new means substantial new aspects of already existing scientific fields, problems, theories , hypotheses', and the remaining contributions (4,5, 8 and 10) to the category of 'obtaining confirmatory facts'.

4. Significance of contributions to science and practice.

The quality of the candidate's scientific output is impressive. Visible in Scopus are 20 publications and over 30 citations of the associate professor candidate. This is a testimony to the quality of the candidate's publication activity, to the significance of the contributions achieved and to their recognition by the scientific circles at home and abroad.

5. Critical remarks and recommendations.

The materials for the competition have been carefully prepared. I have no significant remarks. My recommendation to the candidate is to continue his scientific research work and publish teaching materials for the disciplines he leads.

CONCLUSION

The scientific production presented by Dr. Stela Kostadinova and the precise preparation of the documents comply with the Law for Development of the Academic Staff of the Republic of Bulgaria, the Regulations for its application and the Regulations for the terms and conditions for holding academic positions at the Technical University - Varna for the administrative position of "Associate Professor".

After getting acquainted with the summaries of the presented scientific papers, the announced scientific-applied and applied contributions and the established coverage of the minimum national requirements, I propose Dr. Eng. Stela Kostadinova to take the academic position "Associate Professor" in professional area 5.3 Communication and Computer Technology, discipline "Optical cable lines and systems ", at the Department of KTT, Faculty of Computer Science and Automation of the Technical University - Varna.

Date: 22.8.2022   Member of the scientific jury:
TU-Varna   / Assoc. Prof. Dr. Eng. Violeta Todorova Bozhikova