

R E V I E W

regarding a contest for holding the academic position of **Associate Professor**,
professional direction: **5.2 Electrical Engineering, Electronics and Automation**,
academic discipline: **Digital Signal Processing**,
**Department of Electronic Equipment and Microelectronics, at the Faculty of Computer
Engineering and Automation**,
Contest announced in SG issue 31, 19 Apr 2022

Candidate: **Chief Assist. PhD eng. Firgan Nihatov Feradov**
Reviewer, Member of the Scientific Jury: **Assoc. Prof. PhD eng. Maik Jurgen Streblau**

1. General information and scientific biography

Chief Assist. PhD eng. Firgan Nihatov Feradov obtained his Bachelor's degree in Electronics from the Technical University of Varna in 2012. In 2014, he obtained his Master's degree in Electronics from the same university. In 2014 he was enrolled in a doctoral programme in the Electronization doctoral programme at the Technical University of Varna (TU-Varna), and in 2019 he successfully defended his dissertation on the topic of Study of EEG Signals Identifying Negative Emotional States, with Assoc. Prof. PhD eng. Todor Ganchev as his scientific supervisor. He was Assistant at the Department of Electronic equipment and microelectronics at TU-Varna from 20 Aug 2018 to 14 Feb 2020 when he became Chief Assistant in the same department.

Chief Asst. PhD eng. Firgan Nihatov Feradov is a prospect candidate for participation in the contest for holding the academic position of Associate Professor in the professional direction 5.2 Electrical Engineering, Electronics and Automation, academic discipline Digital Signal Processing, for the needs of the Department of Electronic Equipment and Microelectronics at TU-Varna.

The contest was proposed by the Departmental Council of the Department of Electronic Equipment and Microelectronics, Protocol No.11 of 9 March 2022, approved by the Faculty Council of the Faculty of Computing Equipment and Automation of TU - Varna, Protocol No.19 of 18 March 2022, and decision of the Academic Council at TU-Varna, Protocol No. 46 of 28 March 2022.

2. General description of the presented materials

For his participation in the contest, Chief Assist. PhD eng. Firgan Nihatov Feradov has presented Application to the Rector of TU-Varna, Curriculum Vitae, Employment Contracts for the AP of Assistant and AP of Chief Assistant, Doctor's Degree Diploma, a table certifying the fulfillment of the minimum national requirements for holding the academic position of Associate Professor as per the Rules of Application of the Bulgarian Law of Academic Staff Promotion Procedures and the minimum requirements of TU-Varna as per the Regulations on the Terms and Procedures for Holding Academic Positions at TU-Varna, a reference on scientific contributions, a list of scientific works submitted for participation in the contest for holding the AP of Associate Professor, list of scientific works for awarding Doctor's degree, list of scientific works and citations submitted for participation in the contest for holding the AP of Chief Assistant, abstract of the dissertation for awarding Doctor's degree, full-text version of his scientific works, summaries of his scientific works in Bulgarian and in English, list of citations presented for the contest, cited articles, documents proving the candidate's personal contribution to the modernization of the university material and technical facilities, a reference on his teaching work-load including individual plans for the period 2018-2022, a list of co-authored academic programmes, a list of reviews of scientific works and participation in the organization of scientific forums, reference on participation in national and international research projects, reference on international mobility, statement of credibility, statement of originality, statement of absence of plagiarism in the scientific works submitted for participation in the contest.

For his participation in the contest, Chief Assist PhD eng. Firgan Nihatov Feradov has presented a total of 19 scientific works, of which 5 articles in scientific journals and 14 reports at scientific conferences. Of the scientific articles and reports submitted for participation in the contest, all are in English, and 15 are indexed in the SCOPUS database. In 6 of the presented publications the candidate is the first author, in 2 he is the second author and in 6 he is the third or subsequent author. 5 publications are independent. One publication is included in the National Reference List of Modern Bulgarian Peer-reviewed Scientific Publications.

The submitted works, as a whole, are related to the current contest for holding the AP of Associate Professor and are in the professional direction 5.2. Electrical engineering, electronics and automation.

When comparing the presented materials with the minimum required points by groups of indicators for holding the academic position of Associate Professor according to the Regulations on the Terms and Procedures for Holding Academic Positions at TU-Varna, the following results are obtained:

Table 1.

Group of indicators	Contents	Indicator	Number of points required for the AP of Associate Professor	Candidate's number of points	
A	Indicator 1	1. Dissertation for awarding the doctor's degree	50	50	
C	Indicator 4	4. Habilitation work - scientific publications (not less than 10) in journals that are referenced and indexed in world- renowned databases of scientific information	100	152	
D	Sum of indicators 7 and 8	7. Scientific publications in journals that are referenced and indexed in world- renowned databases of scientific information	200	160	209
		8. Scientific publications in non-referenced peer-reviewed journals or in edited collective volumes		49	
E	Indicator 12	12. Citations or reviews in scientific journals referenced and indexed in world-renowned databases of scientific information or in monographs and collective volumes	50	100	
G	Indicator 29	29. Hours of lectures given at TU-Varna for the last three years (1 point for each delivered lecture class)	30	219	

After comparing the candidate's points with the minimum requirements for holding the AP of Associate Professor, the conclusion is that Chief Assist. PhD eng. Firgan Nihatov Feradov fully meets the minimum national requirements for holding the academic position of Associate Professor for the field of Technical Sciences in higher education as laid down in Art. 2b of the Bulgarian Law on Academic Staff Promotion Procedures and its Rules of Application as well as the minimum requirements according to the Regulations on the Terms and Procedures for Holding Academic Positions at TU-Varna.

3. General characteristics of the candidate's research and applied scientific activities.

The research and applied scientific activities of the Chief Assist. PhD eng. Firgan Nihatov Feradov are mainly represented in scientific publications distributed in the following direction: biomedical electronics, industrial electronics and artificial intelligence. Of the 19 publications accepted for reviewing, approximately 79% are indexed in the world-renowned SCOPUS scientific literature database. According to the prepared reference, out of a total of 19 scientific publications, 10 citations are available, which are visible in the SCOPUS scientific literature database.

For the period 2014-2022, the candidate has participated in a total of 13 projects, of which 2 were international EU programmes, 5 were national programmes and 6 were scientific and applied projects financed by TU-Varna through the Scientific Research Sector and the Internal Contests Sector.

The reference on International Mobility of Chief Assist. PhD eng. Firgan Nihatov Feradov shows a total duration of 172 days. Evidence material has been presented for two of the mobilities: a visit to the University of Herefordshire in the UK as a guest researcher with a duration of 148 days, carried out under the ERASMUS programme in the period 2016-2017, as well as a visit to the Arctic University of Tromsø with a duration of 8 days in order to perform tasks under the project **CloudEARTHinnovation: Innovation Capacity Building for the Use of Big Data in Environmental Sciences, Sustainability and Circular Economy in HEIs and Their Entrepreneurial Ecosystem** in the period Nov 2021-Dec 2021.

The research activities of Chief Assist. PhD eng. Firgan Nihatov Feradov define him as a researcher of good theoretical and practical knowledge successfully performing scientific research tasks in parallel with teaching activities and possessing a high potential for a successful future development.

4. Evaluation of the candidate's pedagogical preparation and activities

Chief Assist. PhD eng. Firgan Nihatov Feradov is an established lecturer at the Department of Electronic equipment and microelectronics of TU-Varna. His teaching activities include delivering lectures, performing laboratory exercises and course projects in the academic disciplines from the curricula for the Bachelor's and Master's programmes of TU-Varna. The disciplines in which he provides instruction are: Digital signal processing, Microprocessor systems, part 1, Microprocessor systems, part 2, Acquisition and processing of biomedical images, Biomedical signal processing.

Chief Asst. PhD eng. Firgan Nihatov Feradov has also participated in extracurricular activities with students, and has been the supervisor of 8 students doing their Bachelor's and Master's degrees in the period 2018-2022.

I am convinced that his scientific and teaching activities meet the requirements for holding the AP of Associate Professor.

5. Main research and applied scientific contributions

As a whole, I accept the candidate's references on his contributions and activities as mentioned above. Based on the publications submitted for review, it can be generally concluded that he has achieved a number of positive results in the field of research and applied science, and namely:

- New and confirming facts have been obtained evaluating and describing the influence of cognitive brain activity on the formation of emotional responses to multimedia stimuli. As a result, new requirements have been formulated for EEG signal recording protocols applicable to the study of emotional states [D. 7.3]
- New and innovative power electronic converter (PEC) electronic circuits have been suggested and evaluated, which are applicable to solar voltage converters, and control methods have been evaluated [C. 4.1], [C. 4.2].

- Algorithms have been suggested and validated, which are applicable to automated design and selection of components and topologies of power electronic converters [C.4.7], [C.4.8].
- New research resources have been suggested, created and evaluated, which are applicable to the research and diagnosis of mammary tumour formations [C.4.3], [C.4.4], [C.4.5].
- Based on a comparative analysis between real clinical images and experimentally captured phantom images, new anthropomorphic breast phantoms have been evaluated [C.4.6].
- A new application of established statistical descriptors for automated classification of cognitive load from photoplethysmographic signals and galvanic skin resistance recordings has been suggested and evaluated [4.10].
- New descriptors based on empirical signal decomposition for the automated recognition of states of cognitive load from photoplethysmographic signals have been suggested and evaluated [4.11].
- New and improved descriptors for automated classification of emotional states and cognitive activity from electroencephalographic recordings have been suggested and evaluated [D.7.1], [D.7.4], [D.7.6].
- New methods for automated classification of emotional states and cognitive activity from electroencephalographic recordings and multimedia stimuli from recordings of brain activity have been suggested and evaluated [C.4.9], [D.7.2], [D.7.5], [D.7.7].
- A database containing physiological signals has been compiled for the purposes of research on emotional states in humans, in particular [D.8.1].

In conclusion, the contributions in the presented publications can be attributed to the category: experimentally obtained new data, proving with new means of already existing theories and hypotheses and confirmatory data, creating of new methods and models, obtaining confirmatory facts.

6. Significance of the candidate's contributions to science and practice.

The current relevance of the research in the field of electronics makes the teaching, research works and publications of Chief Assist. PhD eng. Firgan Nihatov Feradov significant for science and education.

The significance of the scientific contributions of Chief Assist. PhD eng. Firgan Nihatov Feradov to science and practice is evidenced in the publications and citations by independent authors, as well as in his participation in international scientific conferences and research projects.

Chief Asst. PhD eng. Firgan Nihatov Feradov is well-known to the scientific community at home and abroad and is undoubtedly a good specialist in the field of electronics.

The quantitative indicators of the criteria for holding the academic position of Associate Professor have been met by the candidate, and in some groups of indicators he significantly exceeds the minimum requirements.

Critical notes and comments.

I find the documentation presented to be well organized and structured. I have no significant comments on the materials submitted for participation in the contest. I have only a few remarks, as follows:

- In my opinion, the scientific works presented in indicator C.4, according to Appendix 1 of the Regulations on the Terms and Procedures for Holding Academic Positions at TU-Varna, are not the most optimal variant that the candidate can offer. With a slightly different structuring of the scientific works in the corresponding groups of indicators, the ones presented under indicator C.4 could be combined in a monograph.
- In indicator G.29, according to Appendix 1 of the Regulations on the Terms and Procedures for Holding Academic Positions at TU-Varna, the data on the delivered lecture courses are taken only from the annual individual plans, and then only for part of the disciplines over the period 2019-2022.

After making an additional inquiry into the final reports on the auditorium occupancy for the specified period, the value of this indicator, according to the disciplines chosen by the candidate, has been adjusted and presented in the table above.

I think that it is more correct for this indicator to be calculated on the basis of all lecture courses delivered during the specified period.

- Having made an inquiry into the SCOPUS and WoS databases by the date of preparation of this review, I have found that scientific works C.4.11, D.7.6 and D.7.7 are not visible. This necessitates their transfer to indicator D.8, according to Appendix 1 of the Regulations on the Terms and Procedures for Holding Academic Positions at TU-Varna. The change in values for the corresponding indicators is reflected in Table 1.
- The contributions listed in the candidate's reference need to be specified in terms of their nature, namely to be clearly defined as scientific ones or scientific and applied ones, or applied ones.
- Obviously, as Chief assistant and Assistant at TU-Varna, the candidate has taken part in the development of a number of scientific projects. The evaluation of his scientific output would benefit from the presentation of more detailed information regarding the research work in the mentioned projects.

7. Reviewer's personal impressions and opinion.

My personal impressions from my more than 4-year-long professional acquaintance with Chief Assist. PhD eng. Firgan Nihatov Feradov are excellent. As a responsible researcher, he strives for comprehensiveness and accuracy of his research works, of their layout and publication.

The impression created by the materials presented for the contest is also very good.

For me, as a reviewer, there is no doubt that the main contributions in the works presented for the contest are the candidate's personal works and works done with his direct participation.

Undoubtedly, Chief Assist. PhD eng. Firgan Nihatov Feradov has established himself as a good specialist in the field of electronics with a marked interest in modern achievements in this scientific field and great potential for future development.

CONCLUSION

The materials presented in the contest for holding the AP of Associate Professor allow to evaluate the teaching and research activities and qualities of the Chief Assistant candidate. PhD eng. Firgan Nihatov Feradov and to define him as a highly qualified and established scientist in the field of electronics with national and international authority.

The minimum requirements for holding the academic position of Associate Professor in professional direction 5.2 Electrical engineering, electronics and automation, determined by the Regulations on the Terms and Procedures for Holding Academic Positions at TU-Varna, which also cover the minimum national requirements according to the Rules of Application of the Bulgarian Law on Academic Staff Promotion Procedures, are completely fulfilled.

Based on my acquaintance with the presented scientific works, their importance and the scientific and scientific-applied contributions contained in them, I find it reasonable to recommend Chief Assist. PhD eng. Firgan Nihatov Feradov for holding the academic position of Associate Professor in professional direction 5.2 Electrical engineering, electronics and automation in the discipline Digital signal processing.

Заличена информация
по Регламент (ЕС)
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Date: 16 Aug 2022

REVIEWER:

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/Assoc. Prof. PhD eng. Maik Streblau/