

OPINION

of the materials submitted for participation in the competition for occupying an academic position Associate Professor in the field of higher education 5. Technical sciences, professional direction 5.2. Electrical Engineering, Electronics and Automation, (Digital Signal Processing)
by Ass. Prof. Nikola Draganov Ph.D, member of the scientific jury

In the competition for the academic position "Associate Professor", announced in the Official Gazette 31 of 19.04.2022, for the needs of the department "Electronics and Microelectronics" at the "Faculty of Computing and Automation" at the Technical University of Varna with candidate Eng. Firgan Nihatov Feradov Ph.D.

Reason for writing of opinion is order No 425/20.06.2022. of the Rector of the Technical University - Varna for the appointment of a scientific jury, on the basis of art. 32, paragraph 1, item 1 of the Law on the Higher Education in the Republic of Bulgaria, art. 4, para. 2 of the Law on the Development of Academic Staff in the Republic of Bulgaria, art. 57, para. 2 of the Regulations for the implementation of the Law on the Development of the Academic Staff in the Republic of Bulgaria, art. 21, paragraph 2 of the Regulations for the terms and conditions for occupying academic positions at the Technical University of Varna, Decision of the Faculty Council of the "Faculty of Computing and Automation", Protocol No 30 of 13.06.2022. and Decision of the Scientific Jury for the selection of reviewers, taken at its first meeting, held on 21.07.2022 with protocol No X-93.1.

1. General characteristics of the candidate 's research and applied scientific activity. The candidate participates with a total of 19 scientific publications, of which 18 are indexed in the SCOPUS database, 12 in the IEEE Explore database, and 2 in the Web of Science database. Five of the featured publications are standalone.

The candidate's research work, according to the submitted materials for the competition, can be systematized in the following directions: "Industrial electronics" (B4.1, B4.2, B4.7 and B4.8) and "Biomedical electronics", in which the scientific publications can be differentiated into two other sub-areas "Computer processing and modeling of mammary gland lesions" (B4.3, B4.4, B4.5 and B4.6) and "Research and processing of electroencephalographic signals" (B4. 9, B4.10, B4.11, Г7.1, Г7.2, Г7.3, ГД7.4, Г7.5, Г7.6, Г7.7 and Г8.1).

According to the presented report on the scientific research activity, chap. Assoc. Ph.D. Eng. Feradov participated in a total of 13 projects, as follows: 6 funded by the State Budget, of which he is the head of the one from the last year (NoПД8/2015 "Development and improvement of methods for automated analysis of EEG signals with the aim of detecting negative emotional states and neurological disorders", NoНП2/2015 "Technological support for improving the quality of life of people with Alzheimer's", NoНП8/2019 "Development and research of electronic modules for monitoring and control with elements of artificial intelligence", NoНП4/2020 "Research of techniques and technologies for intelligent design of a specialized power supply unit, part of a system for "fast" charging of storage batteries used in electric transport", NoНП3/2021 "Information system for optimal construction of electronic components" and NoНП4/2022 "Research of techniques and technologies for intelligent design of power supply units in the implementation and management of electrochemical processes"), 3 under the Scientific Research Fund ania (NoДН17/2 "Innovative technologies for the detection of tumor formations through phase-contrast image diagnostics", NoКП-06-ПН37/1 "Ergonomic study of the working environment through innovative computer models, with the aim of preventing musculoskeletal disorders", NoКП-06-ПН-37/18 "Investigation of the possibilities for the development of intelligent human-machine interfaces, in the direction of recognition of risky cognitive and emotional states"), 1 under the Operational Program HRD (NoBG051PO001-3.3.06-0005 "Development of the potential of doctoral students, postdoctoral students, young scientists and engineering sciences specialists at TU-Varna and their contribution to the development of a knowledge-based economy"), 2 funded by international EU programs (No692097 "Three dimensional breast cancer Models for X-ray IMaging research - MaXIM^A"

European Commission; Program: Horizon 2020 Framework Program and " Cloud EARTH innovation: Innovation Capacity Building for the Use of Big Data in Environmental Sciences , Sustainability and Circular Economy in HEIs and Their Entrepreneurial Ecosystems "Funding institution: European Institute of Innovation & Technology; Program: EIT HEI Initiative) and 1 funded by other national programs (№10ИФ-02-13/28.11.2019 "Observation and interpretation of physiological states through artificial intelligence" Funding institution: National Innovation Fund, Program: "Supporting the research and development of enterprises and organizations for scientific research and dissemination of knowledge").

2. Evaluation of the pedagogical preparation and activity of the candidate. As a full-time teacher at the Technical University of Varna, Eng. Firgan Feradov, Ph.D., has four years of work experience. He has established himself as a young, established scientist and educator.

According to the report presented to me about the classes held at the Technical University - Varna, it is established that the candidate fulfills his study load in the bachelor's and master's courses at a high level, both in Bulgarian and in English. It conducts lecture courses and laboratory exercises in the specialties "Electronics", " Biomedical Electronics", "Software and Internet Technologies", "Computer Systems and Technologies" and "Internet and Communication Technologies", with a total horary of 254 hours. About the disciplines in which he teaches and in whose curricula he is a co-author ("Digital Signal Processing", "Microprocessor Systems 1 and 2", "Electronics", "Acquisition and Processing of Biomedical Images", "Processing of Biomedical signals", "Testing and verification of electronic devices" and "Electronic and microprocessor technology") Dr. Feradov has further developed existing and developed new teaching aids, laboratory mock-ups, teaching installations, for the provision of classes. It is necessary to note that the scientific research activity of Dr. Feradov helps him to create author's specialized software products (virtual tools), allowing their application not only in scientific research, but also in educational and methodological work.

In addition to research and classroom work, Dr. Feradov also supervises graduate students (8), participates in State Examination Committees, is responsible for 1st and 2nd year students, administers the distance learning system for the Electronics and Microelectronics department, is responsible for the organization of the study activity, organizes Erasmus student mobility, student candidate campaign, etc.

3. Basic scientific and scientific-applied contributions. I consider the formulated contributions in the presented works to be worthy. They are of a scientific-applied and applied nature and are related to the creation of new methods for solving existing scientific problems in the field of industrial electronics and biomedical electronics. The original scientific contributions in the publications presented as equivalent to a habilitation work are:

- New and innovative electronic circuits of power electronic converters (PECs) used in solar voltage converters are proposed and evaluated, and control methods applied in PECs are evaluated (B4.1, B4.2).
- New algorithms used for automated design and selection of components and topologies of power electronic converters are proposed and validated (B4.7, B4.8).
- anthropomorphic medical phantoms and research resources applicable to the research and diagnosis of mammary tumors are proposed, created and evaluated (B4.3, B4.4, B4.5, B4.6).
- New and improved descriptors for the automated classification of cognitive load from photoplethysmographic signals and galvanic skin impedance recordings are proposed and evaluated (B4.10)
- New and improved descriptors and methods for automated classification of emotional states and cognitive activity from electroencephalographic recordings have been proposed and evaluated (B4.9, Г7.1, Г7.2, Г7.3, Г7.4, Г7.5, Г7. 6, Г7.7).
- A database including EEG and FPG signals and GSC recordings aimed at researching the physiological manifestations of emotional states in humans was created and evaluated (Г8.1).

4. Significance of contributions for science and practice. Evidence of the significance of the contributions for science and practice are the citations indicated in the competition documents. A list of 10 citations in authoritative scientific publications, referenced and indexed in global databases of scientific information, is presented. This gives me reason to conclude that the candidate in the competition is a

well-known author, both in the country and abroad, whose scientific works are known to a wide range of researchers and scientists in the field in which they are published. The quantitative parameters, according to the minimum requirements of Rules for the Terms and Conditions for Occupying Academic Positions at the Technical University of Varna and the minimum national requirements for occupying the academic position "Associate Professor" have been met.

5. Critical notes and recommendations. After a detailed examination of the competition materials provided to me and the scientific works attached to them, I do not find any significant omissions. I recommend the candidate to systematize his developments, forming a monographic work, and also preparing articles with IF.

Conclusion

Those presented by Ch. Assistant Dr. Eng. Firgan Nihatov Feradov scientific materials give me reason to unequivocally assume that they meet the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Rules for its Implementation and the Rules for the Terms and Conditions for Occupying Academic Positions at the Technical University of Varna.

On the basis of the above, I give my consent and a positive assessment by offering Ch. Assistant Dr. Eng. Firgan Nihatov Feradov to occupy the academic position of Associate Professor in the field of higher education 5. Technical Sciences, Professional Direction 5.2 Electrical Engineering, Electronics and Automation" at the Technical University of Varna.

Заличена информация
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Prepared by:
/Assoc. Prof. Eng. N. Draganov Ph.D/