REVIEW

By Prof. Sotir Sotirov in the competition for the academic position "Professor" in the field of "5 Technical Sciences", in the professional field "5.3 Communication and Computer Engineering", scientific specialty "Theoretical Foundations of Communication Engineering" discipline " Information systems for data collection" with the only candidate Assoc. Prof. Dr. Eng. Valentina Ilieva Markova.

Biographical data

Assoc. Prof. Dr. Eng. Valentina Ilieva Markova is the only candidate in a competition for the academic position "Professor" in the field of "5 Technical Sciences", in the professional field "5.3 Communication and Computer Engineering", scientific specialty "Theoretical Foundations of Communication Engineering Discipline "Information systems for data collection". She graduated from the High School of Natural Sciences and Mathematics in Gotse Delchev, and later in 1998 from the Technical University of Sofia with a degree in Telecommunications. She acquired PhD degree in the scientific field "Theoretical foundations of communication technology" at the Technical University - Sofia with the dissertation "Design and implementation of linear digital circuits without multipliers." Since the beginning of 2016 she has been an associate professor at the Technical University of Varna in the Department of Communication Engineering and Technologies.

1. General description of the submitted materials

The works of the candidate are in a very interesting and relevant area, namely Data acquisition systems. All presented materials coincide with the scientific specialty of the announced competition. The materials presented for participation in the competition did not participate in the competition for the habilitation of Assoc. Prof. Markova.

2. General characteristics of the candidate's research and applied activity

The general assessment of the activity of Assoc. Prof. Dr. Eng. V. Markova can be classified as excellent and covers the field of " Data acquisition systems ", as this field coincides with the scientific specialty of the announced competition. This activity is proven by a large number of publications, citations, participation in projects, management of doctoral students, management of graduates, creation and maintenance of laboratory facilities etc.

Assoc. Prof. V. Markova has been participant 15 projects (in a total), as she has managed 7 of them, in three – she has been a coordinator. Five of the projects are international. Extremely impressive is the fact that Assoc. Prof. Markova has been the leader of 2 of the international projects funded by the IEEE. In total, a little over 1 million BGN have been attracted for TU-Varna under these projects. The projects involve academic staff, students and PhD students.

In connection with the scientific activity, Assoc. Prof. V. Markova has been a participating member of 5 editorial boards of the international conference proceedings. She has been a member of 11 organizing and program committees of scientific conferences. The candidate has a total of 124 and 83 after 2016 in scholar google and 73 in Scopus.

The presence of citations in high impact journals reflects the high quality of the candidate's publications.

Assoc. Prof. V. Markova has participated in 10 scientific juries as a reviewer, including juries outside the Technical University of Varna.

The candidate can be assessed as a very good pedagogue, researcher, organizer, leader, promoter of the latest achievements of science.

In the competition for the academic position "Professor" the candidate participates according to the requirements of the law as follows:

For the group of indicators of category "B" **ten publications are presented in refereed editions, indexed in SCOPUS**. These publications are thematically grouped together as ***"New methods for detecting emotional states, cognitive load and stress"*** and are equivalent to habilitation work. As of the publications included in Group B.4, two have been published in journals with impact rank indexed in SCOPUS, and the rest have been published in conference proceedings indexed in SCOPUS and / or the Web of Science.

The main contributions derived from the works in group of publications "V.4" are as follows:

1) Developed new methods for detecting negative emotional states and stress from physiological signals (photoplethysmogram, ECG, surface galvanic resistance of the skin - GSR) or speech,

2) Improved existing and created new methods for extracting descriptors from physiological signals,

3) Synthesized new intelligent architecture for highly responsible communications, which is sensitive and adaptable to the context of existing 3G / 4G / 5G networks.

In order to meet the requirements for the group of indicators in category "G" the applicant submits a total of 26 publications, of which:

- 21 publications are in SCOPUS, covering indicator "G.7" "Scientific publications in journals that are referenced and indexed in world-famous databases of scientific information " and
- 5 publications are covering the requirements of indicator "D.8" "Scientific publications in unreferred journals with scientific review or in edited collective papers ".

The publications related to the group of indicators of category "G" are thematically grouped as "Created new methods for collecting and processing of signals"

The main contributions derived from the developments in the group of publications "G" are:

1) Created new methods for processing and analysis of physiological signals

2) Created algorithms for processing and analysis of audio and speech signals Created resources and algorithms for ergonomic assessment of the working environment and prevention of musculoskeletal disorders

3) Created resources, research on the applicability of traditional modeling methods to the propagation of radio waves over the Black Sea

4) Created resources and software to support training, research and applied research activities at TU-Varna

5) Study of the applicability and effectiveness of innovative teaching methods for the specifics of engineering education at TU-Varna.

Among the 26 publications presented to meet the minimum requirements for a group of indicators in category "G", 8 are scientific publications in journals (of which 4 are indexed in SCOPUS and have an impact rank SJR) and 18 are published in conference proceedings (of which 17 are indexed in SCOPUS, and 1 is in a collection of reports with ISBN).

An excerpt from the reference for the publishing activity is the following: 1 independent publication, in 15 publications the candidate is on the first place, in 12 of the publications is on the second place. I believe that every contribution that the candidate claims is with his participation.

Summary on the performance of the candidate for the academic position "Professor", with regard to the implementation of the minimum requirements and conditions for the individual groups of indicators for scientific field "5. Technical Sciences ", specified in" Appendix 1 "of PURZAD of TU-Varna, is presented in the following Table

Group of Indicators	Content of the indicators	Min. requirements for academic position "Professor"	Points of Assoc. Prof. Valentina Markova
A	Indicator 1	50	50
B	Indicator 2	-	-
V	Indicator 3 or 4	100	180
G	Sum of indicators 5 to 11	200	313.20
D	Sum of indicators 12 to 15	100	310
E	Sum of indicators 16 to 28	150	531
G	Indicator 29	120	1100.8
	Total of all indicators	720	2485

3. Main scientific and scientific-applied contributions

I accept the candidate's contributions described in the submitted materials.

The main contributions to the group of publications "V.4" thematically grouped together as "New methods for determining cognitive load and stress" are as follows:

1. Developed new methods for detecting negative emotional states and stress from physiological signals (photoplethysmogram, ECG, surface galvanic resistance of the skin) or speech, [V4.1; V4.2; V4.4; V.4.5, V4.9],

2. Improved existing and created new methods for extracting descriptors from physiological signals [V4.6; V4.8; V4.10],

3. A new intelligent architecture for highly responsible communications has been synthesized, which is sensitive and adaptable to the context of the available 3G / 4G / 5G networks. [V4.3; V4.7].

The publications related to the group of indicators of category "G" are thematically grouped as "Created new methods for collecting and processing of signals"

The main contributions to the publication group "G" are:

1. Created new methods for processing of physiological signals [G7.7; G7.15; G7.16; G.7.17; G7.18; G7.19; G7.20; G7.21; G8.1; G8.3; G8.5]

2. Created algorithms for processing of audio and speech signals [G7.1; G7.2; G7.8; G7.9, G7.10; G7.12; G.7.13]

3. Created resources and algorithms for ergonomic assessment of the working environment and prevention of musculoskeletal disorders [G7.4; G7.5]

4. Created resources and study on the propagation of radio waves over the Black Sea [G7.3; G8.2]

5. Created resources in support of research and applied activities [G.7.6; G7.14]

6. Research of innovative teaching methods [G7.11; G8.4]

Significance of contributions to science and practice

The candidate's contributions from the scientific papers are significant and are in the field of the competition. Documents for practical implementations and their effect have not been presented.

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

The academic work of Assoc. Prof. V. Markova fully corresponds to the scientific specialty and the discipline of the competition. She currently conducts classes in the disciplines "Communication Circuits", "Telephometric and Optical Measurements", "Automated Design in Communications", "Audio Engineering", "Audio Systems", "Information Systems for Data Collection" and "Graphic Modeling with LABVIEW",

For the last 3 years Assoc. Prof. Markova has been lecturing on the subjects "Data Collection Systems" and "Sensor Networks" at the Master's Degree. Assoc. Prof. Markova has 15 years of teaching experience. In my opinion, the overall assessment of the candidate for this type of activity is very good.

5. General conclusion

The scientific activity of Assoc. Prof. Dr. Eng. Valentina Markova meets the requirements of the Regulations on the terms and conditions for obtaining scientific degrees and holding academic positions at the Technical University - Varna, and most of it exceeds the requirements multiple times. The participations in publishing, organizing and project work presented by the candidate are more than impressive.

The teaching activity of Assoc. Prof. Dr. Eng. Valentina Markova is extremely diverse. She conducts classes in many disciplines, both in the Bachelor's degree and the Master's degree. I know the candidate and I have excellent impressions.

All the above is a reason to give a positive assessment of the materials with which the candidate participates in the competition for "professor" and to recommend to the distinguished members of the Scientific Jury, and subsequently to the distinguished members of the Faculty Council, to vote positively for Assoc. Prof. Dr. Eng. Valentina Markova Academic position "Professor" in the field of "5 Technical Sciences", in the professional field "5.3 Communication and Computer Engineering", scientific specialty "Theoretical Foundations of Communication Engineering" discipline "Data acquisition systems".

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Signature: Заличена информация по Регламент (ЕС) 2016/679

Prof. S. Sotirov