

## **O P I N I O N**

about the concurs for occupation the academic position „Professor”,  
professional direction 5.3 „Communication and Computer Technics“,  
educational discipline „Artificial Intellect”,  
published in the State Gazette issue 38/10.05.2019

Candidate: assoc. prof. eng. Todor Dimitrov Ganchev, PhD

Member of the scientific jury: prof. eng. Borislav Yordanov Bedzhev, DSc

### **1. General characteristic of the research and the scientific-applied activity of the candidate**

In the above mentioned concurs for occupation the academic position „Professor” participates one candidate – assoc. prof. eng. Todor Dimitrov Ganchev, PhD. He has presented 1 educational handbook in Bulgarian language, prepared in collaboration with two co-authors and 50 scientific works, among which 2 are in Bulgarian language and 48 are in English language. The candidate has prepared in collaboration with: one co-author 10 publications, two co-authors - 14 publications, three co-authors - 14 publications, four and more co-authors – 11 publications. A dividing protocol about the quotas of participation of the authors has not been presented so I accept that they have equivalent contributions in the preparing of the publications.

In accordance of the scientific forum, where the publications are presented, they are classified as follows:

- 14 are scientific articles in journals: [B4.8, B4.9, B4.10, Г7.3, Г7.4, Г7.5, Г7.6, Г7.9, Г7.10, Г8.1, Г8.2, Г8.4, Г8.5, Г8.15], among which 9 are indexed in SCOPUS: [B4.8, B4.9, B4.10, Г7.3, Г7.4, Г7.5, Г7.6, Г7.9, Г7.10], while 7 have „impact“ factor (Thomson Reuters impact factor): [B4.8, B4.9, B4.10, Г7.3, Г7.4, Г7.5, Г7.10];

- 36 are scientific papers as 26 among which are presented at conferences, indexed in SCOPUS: [B4.1-B4.7, B4.11-B4.13, Г7.1, Г7.2, Г7.7, Г7.8, Г7.11-Г7.22], 7 are published in collections with ISBN: [Г8.3, Г8.7, Г8.8, Г8.9, Г8.11, Г8.12, Г8.13] and 3 - in the Annual of the TU-Varna (it has ISBN also): [Г8.6, Г8.10, Г8.14].

The look up in the Google Science shows that the publications of the candidate have more than 2000 citations, but for the participation in the concurs only the known citations of 7 publications [B4.9; B4.10, Г7.5, Г7.8, Г7.9, Г7.12, Г7.18] are presented. They are cited commonly 152 times in another’s publications, indexed in SCOPUS.

The index of Hirsh of the candidate is 24 in Google Scholar and 17 in Scopus.

The materials of assoc. prof. eng. Todor Ganchev, PhD, presented in the concurs, exceed the minimal national requirements for the area of high education 5. Technical sciences of the Rules for applying of the Low for development of the academic staff in Republic of Bulgaria (LDASRB).

### **2. Estimation of the pedagogical preparation and activity of the candidate**

Since 1994 assoc. prof. eng. Todor Ganchev, PhD has worked as a lecturer in the department “Electronic technics and microelectronics” with Technical University (TU) - Varna and as a researcher with the University of Patra, Greece. Besides, the candidate has worked as a guest lecturer with universities in Greece and Brazil. He has conducted the lectures of the disciplines: “Artificial Intellect”, “Digital signal processing”, “Microprocessor systems” and “Microprocessor technics” with students of different specialties. He has been scientific supervisor of 5 PhD students, among which two have successively defended their

dissertations. In general, the educational and pedagogical activity of assoc. prof. eng. Todor Ganchev, PhD is diverse and productive.

### **3. Basic scientific and research contributions**

The contributions of the candidate can be classified as follows:

#### **3.1. Scientific, research and applied contributions in the area of automatic identification of human emotion**

3.1.1. New methods and algorithms are developed and known methods and algorithms are elaborated, intended for:

- identification of basic types of human emotions, discovery of negative emotional or stress conditions by the voice or by physiological signals (EEG, ECG, shallow galvanic resistance of the skin) [B4.1, B4.2, B4.3, B4.4, B4.6, B4.7, B4.11, B4.13];
- identification and interpretation of emotional speech and speech, pronounced in conditions of intensive physical or cognitive stress [B4.8, B4.9, B4.12];

3.1.2. Flexible dialogical systems with voice or multi-modal direction are created [B4.9, B4.10, B4.12, B4.13];

3.1.3. Systems for performing of biofeedback are developed [B4.9, B4.10, B4.12];

3.1.4. New resources, supporting the scientific explorations and research activities in the field of automatic identification of human emotions, are created [B4.5, B4.8].

#### **3.2. Scientific, research and applied contributions in the area of intelligent human-machine interfaces**

3.2.1. New methods and algorithms are developed and known methods and algorithms are elaborated, intended for:

- extraction of biometric, linguistic and paralinguistic information [Г7.3, Г7.7, Г7.14, Г7.16, Г7.17, Г7.20, Г7.21, Г7.22, Г8.4, Г8.5, Г8.13];
- identification of stress and negative emotional conditions by physiological signals [Г7.2, Г8.2, Г8.6, Г8.9, Г8.11, Г8.12, Г8.15];
- synthesis of speech [Г7.5, Г7.6, Г7.9, Г7.11, Г7.12, Г7.13, Г7.18];

3.2.2. Intelligent human-machine interfaces with enhanced noise resistance are created [Г7.4, Г7.8, Г7.10, Г7.15, Г7.19, Г8.8];

3.2.3. Probabilistic neuron networks (PNN) and local recursive probabilistic neuron networks (LRPNN) are realized and investigated [Г7.1; Г8.1; Г8.3; Г8.7; Г8.10; Г8.14].

### **4. Significance of the contributions for the science and the practice**

The above listed scientific and research contributions of the candidate represent proofs by new means of essential new aspects of existing scientific areas, problems, theories, hypotheses; creating of new classifications, methods, constructions, technologies and obtaining of confirmative facts.

Besides, the methodologies and laboratory complexes, created by assoc. prof. eng. Todor Ganchev, PhD, present a firm basis for conducting of perspective scientific investigations in the field of the Artificial Intellect by scientific teams of students, post-graduate students, PhD students and other scientific and engineer or technical staff of TU-Varna and other universities.

### **5. Critical notes and recommendations**

To the research activity and scientific production of assoc. prof. eng. Todor Ganchev, PhD, the following critical notes can be addressed:

First, despite of considerable quantity and quality of the scientific production the candidate has not presented any publications, prepared individually.

Second, a more intensive activity for creating and leading of scientific teams of students, post-graduate students and PhD students is necessary.

### **Conclusion**

The materials, presented by assoc. prof. eng. Todor Ganchev, PhD, for participation in the concurs, exceed significantly the minimal national requirements for the area of high education 5. Technical sciences of the Rules for applying of LDASRB and of the normative documents of TU-Varna for occupation of the academic position „Professor”. The analysis of his scientific production and the results of his professional activity shows that assoc. prof. eng. Todor Ganchev, PhD, is a complete and approved scientist with authority and he is a high qualified lecturer in the area of the concurs while his qualification correspond fully to: the requirements of the LDASRB, the Rules for applying of the LDASRB and the Rules for conditions and the order for occupation of academic positions in TU-Varna. Besides, the shortcomings, pointed out above, can be easily eliminated in his future work.

Accounting all the above stated, I recommend assoc. prof. eng. Todor Dimitrov Ganchev, PhD, to be elected for „Professor” in professional direction 5.3 „Communication and Computer Technics“, educational discipline „Artificial Intellect” in Technical University – Varna.

Shumen  
20.09.2019 г.

Member of the scientific jury:  
prof. eng. Borislav Bedzhev, DSc