



## STATEMENT

on a competition for the academic position "Professor" under  
**5.3. Communication and computer technology, study discipline "Basic programming"**

announced in State Gazette No. 4 of 13.01.2023.

with Candidate Assoc. Professor, Dr. Eng. Milena Nikolova Mileva-Karova  
Member of the scientific jury Prof. Dr. Eng. Roumen Ivanov Trifonov

### 1. General characteristics of the candidate's research and applied scientific activity

To participate in the competition for a professorship, the only candidate presents 42 publications, of which 10 indexed in Scopus are equivalent to a monographic work. Apart from them, 2 more publications indexed in Scopus are presented in the competition. Of these, 9 are publications from international conferences in Bulgaria, 2 - from conferences abroad and 2 - in magazines abroad. The remaining 30 publications are in non-refereed journals and conferences with scientific review, with 4 being in journals abroad, 5 - from conferences abroad, 14 - in Bulgarian journals and 7 from international conferences in Bulgaria. Of the presented publications - 34 are in English and 8 in Bulgarian.

The candidate's scientific research focuses on Intelligent methods and algorithms for recognition, prediction, classification and encryption of information; Software applications in the field of encryption and data protection; Project management and information security; software applications for controlling robots; genetic algorithms machine learning.

She is the head of 7 national scientific or educational projects, participates in 1 international scientific project and 7 national and educational projects.

The analysis of the candidate's scientific-research, scientific-applied activity and citations shows that her achievements are sufficient for the fulfillment of the minimum national requirements for occupying the academic position of "professor".

### 2. Evaluation of the candidate's pedagogical training and activity.

During the last three academic years, the candidate has conducted 915 hours of lectures, led seminars and laboratory exercises, consulted and course projects. Outside the classroom, her educational activity is 1112 hours. She is the supervisor of 2 successfully defended doctoral students. With all of the above, I can conclude that the candidate has a high level of pedagogical training, and by the time of participation in this competition, she has demonstrated a large volume of teaching activity.

### 3. Basic scientific and scientific-applied contributions.

In the presented publications, equivalent to a monographic work (group B.4), 2 scientific ones are formulated (1. A conceptual design of a system for predicting the price of cryptocurrency using a neural network is proposed. [B.4-2] and 2. A proposed and a StyleGan model of an extended neural network for logo generation was implemented. [B.4-5] and 6 Scientific and applied contributions (1. An algorithm for transforming two-dimensional coordinates of a mobile robot into a three-dimensional coordinate system was proposed. [B. 4-1]; 2. Based on a comparative analysis of the accuracy and speed of various methods and algorithms for text classification in Bulgarian and in English, a modified algorithm for text classification with increased accuracy is proposed. [C.4-3, Q.4-4, Q.4-6]; 3. An approach for recognizing secret keys for information encryption and increasing their resistance using kNN and SVM machine learning algorithms is proposed. [Q.4-7, C.4-9] ;4 An algorithm for placing data in a uniform environment was synthesized and implemented, providing a suitable type of input data for machine learning algorithms. [Q.4-7, D.8-13] ; 5. An algorithm for recognition of iris parameters was synthesized

and implemented [B.4-8]; 6. A model is proposed for estimating the charge of lithium-ion batteries using machine learning. [Q.4-10]).

In the remaining 32 publications, other than those equivalent to the monographic work (group D.7 and D.8), 18 contributions are indicated, summarized in 5 main thematic directions.

Formulated conclusions and contributions are largely a personal matter and can be determined as sufficient for the purposes of the competition.

#### **4. Significance of contributions to science and practice.**

The relevance and significance of the results obtained from the scientific studies in which the candidate participates is proven above all by their citation by foreign scientists. The reviewed texts are at a good scientific level and are proof of the candidate's developed skills for theoretical summaries and substantiation, as well as for careful and reasoned analysis and search for engineering solutions.

The scientometrics of a candidate exceeds in terms of quantity and quality the criteria for occupying the academic position of "professor" in professional direction 5.3. Communication and computer technology.

During the review of the publications presented by the candidate, no evidence was found and/or no signals of copyright infringement of other researchers were found at the moment.

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

I have no significant critical remarks regarding the submitted materials for the competition.

### **CONCLUSION**

The submitted documents and scientific works on the competition by the only candidate are in sufficient volume, they significantly exceed the minimum requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (LAD), the Regulations for the Implementation of the Law on the Development of the Academic Staff in the Republic of Bulgaria (LAD) and The regulations for the terms and conditions for occupying academic positions at the Technical University of Varna (PUZAD at the Technical University of Varna). The depth of the analyzes and scientific research conducted by the candidate is indisputable, and I can positively assess their relevance and significance.

All this gives me the reason to propose Associate Professor Milena Nikolova Mileva-Karova to take the academic position "Professor" in the professional direction 5.3. Communication and computer technology, "Basic programming" course.

**Date: 07.06.2023**

**Member of the jury:**

**Заличена информация  
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*/Prof. Dr. eng.Roumen Trifonov /*