REVIEW

in a competition for the academic position of "Professor" in the scientific specialty "System Programming", professional field
5.3 "Communication and computer technology", field of higher education
5. "Technical sciences", announced in SG no. 5 of 17.01.2020

Member of the scientific jury: Prof. Sotir Sotirov

1. Brief biographical reference

Stanislav Simeonov was born on May 11, 1963 in the town of Sevlievo. He graduated from the First Primary School "Hristo Botev", Sevlievo and the Technical University of Chemnitz, Germany. In 1994 he defended his dissertation on "Control software for raster electron microscopes, with a view to their application in microelectronics", supervised by Prof. Dr. Hans Lipmann at the Technical University of Chemnitz, Germany.

He was successively an assistant professor and later an associate professor at the Burgas Free University. Since 11. 2011 he is an associate professor at the University "Prof. Dr. Asen Zlatarov "Burgas, where he was head of the Department of Computer Systems and Technologies, and later Deputy Dean for Research at the Faculty of Technical Sciences.

2. The research activity of the candidate

The candidate participates in the competition with 1 monograph, 60 publications and 1 textbook. 58 of the candidate's publications are in English and 2 are in Bulgarian. 3 of the publications are independent and 57 are co-authored, in 28 of them the candidate is the first author. 29 of the publications are in magazines and conferences abroad. 21 publications are in indexed editions with a total IF of 19,703.

The scientific papers contain results in the following areas:

• Operating systems - real time, system programming, computer networks - in this area are placed 23 publications

• Modeling of linear and nonlinear processes. Neural and generalized networks - 12 reports and articles have been developed in this area. Impressive are several publications with a high impact factor, published in world-famous magazines.

• Computer interfaces and specialized interfaces for the blind - there are 18 publications on this topic. Interesting is the fact that there is a protected patent for a Braille display, developed by a team from the Institute of Information and Communication Technologies - BAS.

• Mobile robotics and computer controlled electronics - there are 7 publications on this topic.

The applicant's contributions can be summarized as follows:

- Classification of objects for management in real time is made. [1];

- Real-time operating systems have been studied. - [1, 8, 9, 10, 11];

- Development of theoretical models for real-time multitasking planning, as well as the recalculation of the conditions for maintaining the real-time criterion [8, 9, 10, 11];

- Implementation of a working version of a general-purpose operating system, together with the addition of a real-time allocator [11, 12, 13, 14];

- Theoretical model and development of distributors, based on fast timers, together with the

6

available software environment for implementation in real-time operating systems running in virtual machines [10, 11, 12, 13, 14];

- Modeling and parameterization of distributors in real-time operating systems [10, 11, 12, 13, 17];

- Practical realization of the developed concepts in real systems of real time type - [2, 6, 7, 17, 18];

- Performance studies of file systems based on uniform criteria, with a view to their application as an element of real-time systems [13, 14];

- Development and implementation of an independent system interface, with universal application in information systems [21];

- Theoretical concept for realization of linear structures and stacks in kernel mode of the operating system, for recognition and processing of attacks in computer networks [4, 5, 16, 19, 20];

- Formation of criteria and development of filters in core mode, for detection and protection of attacks in computer networks with high performance [16, 19, 20];

- Development of a theoretical model for creating a virtual driver, with application in high-intensity communications in computer clusters and parallel systems - [22, 23];

- Description with impulse differential equations of nonlinear systems based on neural networks [24, 25, 28, 29, 30];

- Mathematical modeling of neural networks using pulse differential equations [24, 25];

- Study of the dynamics of systems described by neural networks [25,28, 29, 30];

- Study of theoretical and applied aspects in the field of analysis and development of nonlinear systems with impulses, as well as stability criteria [30];

- Target impulse disturbances in the dynamics of the systems and on their basis their possibility for control by means of impulses is investigated [25, 29, 30];

- Investigation and calculation of a set of criteria for exponential stability by using the continuous Lyapunov function [25, 26, 28, 30];

- The impulse effect on the stability of a class of n-dimensional neural networks at unlimited delays and extreme values for the pulse size has been studied theoretically and on the basis of simulation [24, 25, 29, 30];

- Study of the effectiveness in finding stability criteria based on computer simulations of the results [25, 29, 30];

- Investigations of the influence of technological parameters in the production of products from composite materials with certain mechanical properties [27];

- Control and targeted change of the mechanical properties of composite products and the application of the method in the production of tubular profiles [27];

- Structural modeling of processes using the means of generalized networks [26, 31, 32, 33, 34, 35];

- Modeling and research of the joint work of group communications with a view to their application in modern IT - provisioning [32];

- Modeling and research of linear systems [32];

- Simulation of the stability of linear systems [32];

- Study of the software interface of open source systems [36, 37, 38, 40, 49];

- Presentation of a general structure of a specialized computer interface for the blind [36];

- Model for voice communication in a specialized interface for the blind [42, 43, 44, 45];
- Using solenoids creates an opportunity for realization and program model of interface for the blind [39, 41, 51, 52];
- Operating systems are used in both computers and control devices - [37, 40, 52, 53];
- - Classification of real-time systems in accordance with the requirements for operation of specialized interfaces [1, 59, 54];
- Formal description of the elements in a real-time operating system [57];
- Formal description and modeling of the movement of specialized mobile installations [55, 57, 60];
- Control of the parameters during navigation of autonomous robotic installations [55, 56];
- Corrections in the movement of mobile chain installations [57, 60];

search. A system for digital storage of three-dimensional images of statues and additional sculptural components, their classification and possibilities for reproduction and assembly of originals has been implemented [60];
- Design network models and create distributed databases connecting private collections and visualization capabilities [60];

I do not review materials with numbers 6, 11, 16, 23, 30, 35, in which I am a co-author. The applicant's materials are accompanied by declarations for equal participation of most co-authors.

From a reference in SCOPUS as of 17.08.2020, it can be seen that the applicant has 21 documents in the database, cited 34 times in 29 publications with H index 4.

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

Assoc. Prof. Dr. Stanislav Simeonov works at the University "Prof. Dr. Asen Zlatarov "- Burgas since 2011, where he lectures on:
• Computer networks and communications;
• Communication Equipment;
• Wireless networks;
•   Computer architectures;
•   Computer Systems;
• Unix / Linux;
• Network administration;
•   System programming;
• Signals and systems

4. Main scientific and scientific-applied contributions

I accept the contributions presented by the candidate.

5. Critical remarks and recommendations

• I recommend Stanislav Simeonov to focus his research in a narrower field, in order to obtain more significant results and publish them in important scientific journals.

Conclusion

The indicators of the activity of the candidate Stanislav Denchev Simeonov exceed the requirements for holding the academic position "Professor" of the Law for the development of

the academic staff in the Republic of Bulgaria, the Regulations for its application and the Regulations for the conditions for holding academic positions of the University "Prof. Dr. Asen Zlatarov "- Burgas.

On this basis and knowing his research and teaching activities, I propose that Assoc. Prof. Dr. Stanislav Denchev Simeonov be elected to the academic position of "Professor" in a professional field 5.3. "Communication and Computer Engineering" in the scientific specialty "System Programming" at the University "Prof. Dr. Assen Zlatarov" - Burgas

August 17, 2020   Prof. Sotir Sotirov