REVIEW

of the materials for participation in a competition for academic position "Associate Professor" in the field of higher education 5, Technical sciences, professional field 5.3. Communication and Computer Technology for the needs of the the Department "Distributed Information and Control Systems" at the Institute of Information and Communication Technologies - BAS, with one candidate participates - Chief. Assist. Dr Elisaveta Dimitrova Trichkova - Kashamova

by Prof. DSc Velislava Noreva Lyubenova
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By order № 338 of 25.11. 2022 г. of the Director of the the Institute of Information and Communication Technologies (IICT) - BAS, I am included in the Scientific Jury in above-mentioned competition.

As s member of the Scientific Jury I have received:

1. Application for participation in the competition of Ch. Assist. Dr Elisaveta Dimitrova Trichkova - Kashamova.
2. Curriculum vitae on a European sample.
3. A copy of the diploma for the educational and scientific degree "Doctor".
4. Certificate of internship in the specialty.
5. List of the scientific publications for participation in the competition, which do not repeat the submitted for obtaining the educational and scientific degree "Doctor"
6. List of noticed citations in the publications for the participation in the competition.
7. Summaries of the in the publications for the participation in the competition for academic position "Associate Professor" - in Bulgarian and English.
8. Copies of the scientific publications for the participation in the competition for academic position "Associate Professor".
9. Information for fulfillment of the minimal national requirements and the requirements of the Institute of Information and Communication Technologies - BAS.
10. Information on the original scientific and scientific-applied contribution of the candidate.
11. Declaration that there is no legally proven plagiarism in scientific works.
12. Information on CD, according to the requirements of IICT.

Brief biographical data of the applicant

Dr Elisaveta Trichkova - Kashamova was born in 1978. In 2005, she graduated with master's degree in Information Technology and Software Engineering from University of Chemical Technology and Metallurgy, Sofia. Since 2005 until June 2010 works as a research assistant at the Institute of Computer and Communication Systems - BAS, from July 2010 to 2015 - as an assistant at the Institute of Information and Communication Technologies, and from 2015 until now she is Ch. Assistant at the same Institute, where she has carried out scientific and research activities in the field of ICT throughout the years.

Fulfillment of the requirements of the Law on the Development of the Academic Staff of the Republic of Bulgaria (LDASRB) and the Regulations for its Implementation (RI of LDASRB)

According to the submitted materials for the competition, Ch. Assistant Dr Elisaveta Trichkova - Kashamova has acquired the eduational and scientific degree "Doctor" by the diploma № 000473 from 02.10.2014, awarded by IICT-BAS, in the scientific speciality "Communication

and Computer Technologies", with a dissertation on "Optimization of Processes in Information systems". This fulfills the requirement of Art. 24, para. 1, item 1.

The presented certificate for work experience in the specialty shows that Dr Trichkova - Kashamova works on a basic employment contract at IICT-BAS and has work experience over 18 years and work experience as an Ch. Assistant - 7 years, which meets the requirements of Art. 24, para. 1, item 2.

In compliance with the requirements of Art. 24, para. 1, item 3, from the candidate, 25 scientific papers are presented for participation in the competition, which do not repeat those presented for the acquisition of educational and scientific degree "Doctor". Of these, 22 are reports at scientific conferences, 3 are articles in in scientific journals and series.

According to the presented reference for fulfillment of the minimal requirements of the IICT-BAS by Ch. Assistant Dr. Trichkova - Kashamova, it covers the minimal requirements for indicators A, C, D, E and F for professional filed "Communication and Computer Technologies". This fulfil the requirements of Art. 2b, para. 2 and para. 3, under Art. 2b, para. 5 and of Art. 24, para. 1, item 4,

It is accepted the presented by the candidate in the competition declaration that there is no proven plagiarism in the scientific papers submitted for this competition. This fulfills the requirements of Art. 24, para. 1, item 5.

Characteristics of scientific and scientific-applied production

Total of 25 scientific articles for review are presented by Dr. Trichkova-Kashmova:
✓ 10 scientific publications (habilitation thesis) that are referenced and indexed in Scopus;
✓ 2 scientific publications that indexed in Scopus;
✓ 13 scientific publications in journals and conferences' proceedings with scientific review.

Of the publications received for the competition, 12 are indexed in Scopus (2 are with SJR). Of these, 11 are reports at scientific conferences and 1 is a journal article. 12 of the editions are independent and in 6 publications the candidate is in first place.

A total of 26 citations of 14 publications are presented, of which 16 citations are in publications indexed in Scopus or Web of Science, 8 - in publications in international editions and 2 - in national publishing houses.

The citations of the publications of Ch. Associate Dr. Trichkova shows that she is known in the scientific community in the country and abroad with research from her scientific activity. Its scientometric indicators several times exceed the minimum number of indicator points for professional field 5.3 Communication and Computer Technologies of IICT-BAS, which are higher than the minimum national requirements, as shown in the table below:

Group of indicators	Minimal requirements "Associate Professor" (5.3 Communication and Computer Technologies	Dr. Trichkova-Kashamova
A	50	50
B	-	-
C	100	370
D	220	263
E	60	180
F	20	110

General characteristics of the candidate's activity

Dr. Trichkova-Kashamova is an established specialist in the field of information and communication technologies, having over 50 publications in the country and abroad and participating in over 20 national and international projects. Of them, 5 national and 3 international participated in this competition. The national ones are financed by the Scientific Research Fund and the Ministry of Transport and Economy. The international ones are in line with European framework programs and in line with the Erasmus+ program.

She is given course of lectures in "Optimization for web search engines" at the New Bulgarian University and trained specialists under the "Student Practices - Phase 2" program, a project of the Ministry of Education and Science, financed by Operational Program "Science and Education For Intelligent Growth" She has presented scientific reports at seminars at the University of Portsmouth, School of Computing, UK under the Erasmus and Erasmus+ programs between the 2014 and 2016 academic years.

She participated in an international school organized by the Department of Computer Systems at the University of Manchester, as well as a SPRERS training workshop organized by the Western University in Timisoara, Romania.

Dr. Trichkova-Kashamova works not only with MS Windows, but also with Linux and Ubuntu operating systems. She works with databases and languages - PHP, MySQL, XML, HTML, CSS, xForms, JQery, JavaScript, with application program Web Servers - Internet Information Service (IIS), Apache, etc.

Overview of the content and results in the presented works

The scientific works submitted for review can be summarized in the following areas:

1. Optimization of information flows in computer and communication networks by determining an optimal network structure.

2. Intelligent management in the field of animal husbandry by using the potential of various types of modern systems and technologies.

3. The application of Workflow technologies for the automation of information activities and services.

4. Quantitative assessment of the quality and effectiveness of information systems in various subject areas.

The first direction includes 4 publications from the list of publications for the competition - [2, 9, 15, 22].

A formal model for flow management in networks is proposed, including evaluation of service quality, continuity, and fault tolerance for technological and structural improvement of networks. This model is widely used in the management of communication flows in real time, in the management of transport systems in urban networks, in the optimization of information search.

The management of the communication network envisages maintaining and optimizing its operation, which includes mainly monitoring and changing the functions of the networks. Some basic network management concepts and basic Simple Network Management Protocol (SNMP) concepts are considered. A network management model applicable to most modern network management protocols, including SNMP, is presented. Research covers both SNMP-related security and basic device access security.

The second direction includes 5 publications from the list of publications - [1, 3, 4, 7, 8]. All of them are related to the implementation of the National Programme "Intelligent Livestock", financed by the Ministry of Education and Culture.

Several potential Farm Management Software (FMS) platforms that can be used to more efficiently organize farm processes are analyzed and discussed. A comparison is made between these platforms in terms of several key features, for example, financial management, embedded accounting, inventory management, etc., as well as some features from the user's point of view, such as ease of use, flexibility, affordability, and etc. Based on this comparison, a choice is made for the most acceptable and efficient FMS system solution.

An analysis of various key performance indicators in animal husbandry has been made. As a result of this analysis, a list of several indicators has been determined that meet the needs of the farm animal population monitoring study.

The possibilities of applying IoT ("Internet of Things") technologies and methods to improve efficiency and productivity in the livestock sector are analyzed.

The third direction includes 8 publications from the list of publications- [12, 18, 19, 20, 21, 23, 24, 25]. This research group is related to the implementation of an international project funded by the European Commission, VISP, No. 027178

Part of the research is focused on the use of the technologies of work process management systems (Workflow), enterprise resource planning systems (ERP) and customer relationship management systems (CRM). The application of these technologies to assist a virtual cluster of small ISPs in market research (marketing) and customer service delivery is discussed.

Making the right technology decisions requires an intelligent technology analysis and comparison of a large range of available modeling products, including specification, simulation and functional implementation of workflow management systems, with respect to key aspect that impacts the entire lifecycle of any e-business development, namely the choice of language to help guide processes in the context of web services.In the analysis and comparison of software products, carefully selected among a set of candidate technologies, two methodological problems arise. The first stems from the fact that different experts (with different qualifications and experience) evaluate a wide variety of different products in the absence of a common evaluation methodology, all of which can have a strong impact on the product evaluation results. The second methodological problem that arises from the results of the evaluation is its quantification, based on a common product comparison scale created to support the decision-making process for finding quality and promising software products.

For this purpose, a general evaluation scheme is proposed, which is based on objective requirements for products. An approved international standard ISO/IEC 9126 for the quality of software products was used. Following the general requirements of this standard, a common evaluation model has been developed that provides a framework for evaluating software products.

The articles provide analysis results and examples of the application of Workflow technologies as a good solution for the automation of information activities and services.

The fourth direction includes 8 publications from the list of publications for the competition- [5, 6, 10, 11, 13, 14, 16, 17].

A formal approach for quantitative assessment of the quality and efficiency of information systems is proposed. This approach is based on a mathematical method for determining the weighting coefficients on the opinions of experts when making multi-criteria decisions. These weighting coefficients characterize the degree of satisfaction with the respective indicator. The

aim is to minimize the subjective influence of the experts on the evaluation of the respective product. A common evaluation scheme is applied that is based on objective requirements for products as the ISO/IEC 25010:2011 standard is used.

A general evaluation template has been developed for evaluating software products. Based on the obtained summary results of the evaluation, an optimization task is defined and solved. It is determined in what direction the characteristics of the software product can be improved in order to increase the efficiency of its work. The proposed approach can be applied both in the educational sector for comparing and optimal distribution of information resources, and in different business sectors for evaluating software products in the field of work process management.

Scientific and scientific-applied contributions

The contributions in the works with which Ch. assistant Dr. Trichkova participated in the competition can be classified as follows:

Scientific contribution

1.An optimal solution for technological and structural improvement of a communication network based on topological synthesis through modeling and management of information flows has been determined.

Scientific-applied contributions

2. The potential of various types of modern systems and technologies for the application of intelligent management solutions in the field of animal husbandry is analyzed. As a result of the analysis, conclusions and recommendations were made, supporting the decision-maker, for sustainable development and management of the object (farm).

3. Methods, approaches and tools for modeling, implementation, monitoring and analysis of work (business) processes have been analyzed and a technological solution has been developed that allows the introduction of automation in information activities and services with the help of Workflow technologies.

4. An approach has been developed for quantitative assessment of the quality and efficiency of information systems in various subject areas

I accept the information presented by Dr. Trichkova in the reference for original scientific and scientific-applied contributions. Her research and results can be evaluated as an enrichment of existing knowledge in the field of optimization of information systems, modeling of work flows, automation in information activities and services, technological and structural improvement of a communication network through modeling and management of information flows, etc.

Research and contributions from the candidate's scientific output have been approved at international scientific forums and scientific journals indexed in Scopus, which is a guarantee of the significance of the achieved results.

The publication activity of Dr. Trichkova-Kashamova shows her in-depth knowledge of the field of modern information and communication systems and networks, as well as her merits for the obtained results and contributions.

Critical notes

In my opinion, in the structure of the contributions, those related to the publications equivalent to a monographic work should be distinguished from the contributions in the other publications, and this could be done on the basis of the presented works.

Conclusion

The candidate fulfills all the requirements of the Law on the Development of the Academic Staff of the Republic of Bulgaria (ZRASRB) and the Regulations for the Implementation of ZRASRB, the Regulations for the Terms and Procedures for Acquiring Scientific Degrees and for Holding Academic Positions at the Institute of Information and Communication Technologies.

Dr. Trichkova-Kashamova is an accomplished researcher, and this is confirmed by the presented scientific achievements and contributions, as well as her results in scientific and applied activity.

All this gives me the reason to express my positive conclusion about the selection of the candidate for the competition and to confidently recommend that the Scientific Jury unanimously vote a proposal to the Scientific Council of IICT-BAS, to choose Ch. Assistant Dr. Elisaveta Dimitrova Trichkova-Kashamova for the academic position of "Associate Professor" in professional filed 5.3. Communication and Computer Technology.

21.01.2023
Sofia

На основание
ЗЗЛД