

Statement

on the application of Todorka Gerasimova Alexandrova to participate in the competition for occupying the academic position of "Associate Professor" in scientific field 4. Natural sciences, mathematics and informatics. professional field 4.6. Informatics and computer science, specialty Informatics (Human-Computer Interaction), Institute of Mathematics and Informatics, BAS. Competition announced in State Gazette no. 52 (02.07.2019)

1. Competition information. The competition was announced in the State Gazette no. 52/02.07.2019 for the needs of the Institute of Mathematics and Informatics (IMI-BAS). The only candidate is Todorka Gerasimova Alexandrova, who is currently an assistant professor at IMI-BAS. The set of the documents submitted by the candidate is complete and have been submitted by the deadline. The Scientific Jury on the competition has been assigned by the Director of IMI with order 322/02.09.

2. Short CV of the applicant. Todorka Alexandrova received her master`s degree in 2003 from Sofia University, Faculty of Mathematics and Infomatics in the area of specialization Algebra. During 2001-2002 she has been an exchange student at the University of Electro-Communications, Tokyo, Japan. Alexandrova obtained her PhD degree in 2008 from the University of Electro-Communicatins, Tokyo, Japan. From 2009 to 2018 she woked at universities in Japan consequently as assistant professor (2009-2013) and associate professor (2013-2018). From November 2018 until now she has been working at IMI-BAS as an assistant professor. The obtained in Japan PhD degree has been officially recognized by the Scientific Council of IMI-BAS according to the order established in the Act for the Development of Academic Staff in the Republic of Bulgaria.

3. General description of the presented materials. A total of 22 publications have been presented for participation in the competition: 3 papers published in specialized international journals with impact factor (two in Q2 category and one in Q3 category), 5 papers published in scientific editions with SJR (without impact factor), 12 publications indexed in Scopus and 2 visible in ACM Digital Library. All 22 materials are published after obtaining the PhD degree of the candidate and I accept all of them for evaluation in the current competition.

The scientific results of Alexandrova have been presented at large number of international conferences and seminars at universities in Japan.

4. Scientific Contributions. Todorka Alexandrova's scientific interests are in the field of informatics, in particular in some of the most significant aspects of human-computer

interaction – a topic motivated and driven by the modern information technologies. The scientific materials presented for the competition concern the following three important research areas – (1) Navigating human behavior by enhancing the real world with information technologies; (2) Using crowdsourcing for knowledge search and exchange, and (3) Secret sharing schemes` applications. The main research contributions will be described in more details below and for citing Alexandrova`s publications the same numbering as the one in the presented list with publications by the candidate will be used.

Papers [1-4, 7-9, 11-15, 17] address various problems in the area of navigating human behavior by enhancing the real world with information technologies. In [1,7] two versions of a popular trading card game in which augmented reality has been offered, are analyzed. Publications [8,9,12] investigate the enhanced by adding virtual characters version of the trading card game. Papers [13,15,17] discuss examples that are important according to the authors for the design of the future cyber-physical systems. Those ideas have been further developed and summarized in [2]. Paper [11] proposes conceptual gamification framework for increasing intrinsic motivation in our daily life. In [3,4] a new method (called micro-crowdfunding) for encouraging people living in urban cities to support and contribute to the sustainability of small common resources has been proposed. Publication [14] proposes a novel approach to persuasive technologies that has been implemented in a smart pad application.

Publications [5,6,16,18-20] are devoted to the topic of crowdsourcing - a modern approach for knowledge search and exchange of information in real time among people (with the assumption that current machine algorithms are doing worse in these areas so far). A mobile crowdsourcing application, called Ubiask, that offers real time image-based translation and information exchange for foreigners in Japan has been presented and analyzed in [16,19,20]. The experiments with the application show the effectiveness of the proposed mobile crowdsourcing platform. Paper [18] which has become popular in gamification research, describes experiments with UbiAsk and one more application that aim to investigate the effectiveness of game incentives in gamifying intelligent systems. Publication [6] discusses the possibilities of using people as sensors for collecting temporal and geo-sensitive contextual information. Publication [5] explores a crowd-based system for facilitating natural information flow among different types of people.

Papers [10,21,22] discuss several applications of secret sharing schemes as a continuation and application of Alexandrova`s doctoral dissertation research. Methods for realizing anonymity in P2P networks are investigated in [10] and [21] and more specifically

[21] proposes a method for realizing mutual anonymity in P2P networks. Paper [22] describes a method for realizing (t, n) secret images sharing scheme.

In conclusion to this section, I would like to note that Alexandrova's scientific contributions until 2014 have already been highly evaluated by the authorized institutions at Waseda University, and as a result she was appointed as associate professor with tenure position at the same university on April 1, 2014.

5. Recognition of the scientific contributions. The total impact factor of publications [1, 2, 16] is 3.457, and the total number of citations (without self citations) at the moment (October, 2019) is 169 (161 at the time of the documents' submission). All papers are co-authored and Alexandrova has 17 co-authors in total, mostly from Japan.

6. Teaching experience and participation in research projects. The documents presented by the applicant show that, since 2014, Alexandrova has taught various lectures at Waseda University under considerable workload (4 courses per semester). Alexandrova has been a scientific advisor of three master students at the University of Electro-communications, Tokyo in the period of 2010-2012 and two PhD students at Waseda University, Tokyo in the period of 2013-2015. In 2014-2015 Alexandrova has led a research project (Waseda University Research Grant) with title "Achieving Mutual Anonymity and Churn Resilience in Peer-to-Peer Networks Using Regenerating Codes". Since December 2018, Alexandrova has participated actively in the preparation of projects' proposals submitted to the NSF.

My personal impression of Todorca Alexandrova's work is excellent.

7. Conclusion. My opinion and conclusions, based on the presented by the candidate materials, that have been already stated in details above, as well as the fact that the presented materials satisfy the minimal national requirements and the specific ones of BAS and IMI for occupying the academic position of "Associate Professor" in scientific field 4. Natural sciences, mathematics and informatics, professional field 4.6. Informatics and computer science, specialty Informatics (Human-Computer Interaction), allow me to recommend to the honorable Scientific Jury of the competition to propose to the Scientific Council of IMI-BAS to appoint Todorca Gerasimova Alexandrova the academic position of "Associate Professor".

Sofia, 16.10.2019

Sign:

Prof. D. Sc. Peter Boyvalenkov