

STATEMENT

on the materials submitted for participation in the competition to occupy the academic position of Associate Professor

Scientific area:	4. Natural sciences, mathematics and Informatics
Professional field:	4.6. Informatics and computer sciences (Artificial intelligence)
For the needs of:	University of Plovdiv "Paisii Hilendarski", Faculty of Mathematics and Informatics, Department of Computer Systems
Announced in:	SG No. 96 / 17.11.2023
Author of the opinion:	Assoc. Prof. Emil Georgiev Delinov, PhD, Department of Informatics and Mathematics, Trakia University, Stara Zagora (Professional field 4.6. Informatics and Computer Science)

The statement was written and presented on the basis of order No. PD-21-70 dated 16.01.2024 of the Rector of University of Plovdiv "Paisii Hilendarski" (PU), as well as the decision of the scientific jury, taken at its first meeting on 23.01. 2024

1. General presentation of the received materials

The announcement of the procedure for the occupation of the academic position of Associate Professor in the area of higher education 4. Natural sciences, mathematics and informatics, professional field 4.6. Informatics and Computer Sciences (Artificial Intelligence), for the needs of the "Computer Systems" Department at the Faculty of Mathematics and Informatics (FMI) of PU "Paisii Hilendarski", was published in the State Gazette no. 96/ 17.11.2023

Documents for participation in the competition were submitted by Ch. Assistant Professor Veneta Veselinova Tabakova-Komsalova, PhD and Ch. Assistant Professor Asya Todorova Toskova, PhD from FMI.

The sets of materials presented by the candidates are in accordance with the Rules for the Development of the Academic Staff of the PU.

I do not detect any violations of the procedure.

2. Brief details of the applicants

Ch. Assistant Professor Veneta Tabakova-Komsalova, PhD completed a master's degree in mathematics with a specialization in informatics at the FMI of the PU, as well as a master's degree in macroeconomics at the FSIN of the PU. She has a successfully defended dissertation at the FMI of the PU, on the basis of which she acquired the PhD in Informatics. She worked as a teacher, senior expert and head of department in RUO, Plovdiv. From 2020 until now, he is the main assistant in the FMI of the PU.

Ch. Assistant Professor Asya Toskova, PhD has completed a master's degree in informatics at FMI of PU, as well as a master's degree - teacher of physics and solid state and optoelectronics engineer at FF of PU. She has a successfully defended dissertation at the FMI of the PU, on the basis of which she acquired the PhD in Informatics. She worked as a physicist and administrative secretary in the FF of the PU. From 2020 until now, he is the main assistant in the FMI of the PU.

3. General characteristics of the candidates' activities

3.1. Ch. Assistant Professor Veneta Tabakova-Komsalova, PhD is actively involved in the research and teaching activities of the Department of Computer Systems. Leads the mandatory courses on "Artificial Intelligence", "Intelligent Systems" and "Databases", as well as the optional course "Introduction to Artificial Intelligence and Prolog Logic Programming". He is working on updating the lectures and exercises in the aforementioned disciplines. He is also the co-author of the teaching aid on artificial intelligence. Ch. Assistant Professor Veneta Tabakova-Komsalova, PhD is one of the professors who lead the mandatory disciplines in the field of artificial intelligence. This is described in the report on its auditorium occupancy, which is above the stipulated norm. He works with students and graduates who successfully defend their theses. There is a contribution to the introduction of current technologies in education - AI, STEM, virtuality, etc. In the materials, books and study aids stand out, which are directly related to both the professional field (PF) of the competition and the academic activity in disciplines related to "Artificial Intelligence". Reports and publishes research results at international scientific conferences.

He also helps his colleagues from Trakia University, Stara Zagora, in the classes on disciplines related to "Artificial Intelligence" of the Software Engineering major. The reviews of students and colleagues about her work are very good.

Ch. Assistant Professor Veneta Tabakova-Komsalova, PhD also works on scientific developments related to the topic of the competition, as a participant and leader in 2 national scientific programs, 1 international and 2 national projects.

The works of the candidate submitted for participation in the competition are 48 - 1 monograph, 2 books, 2 book chapters, 1 teaching aid, 15 publications in magazines (3 of them are referenced and

indexed in world-famous databases with scientific information Web of Science and Scopus), 28 publications from conferences (15 of them are referenced in Web of Science and Scopus). There are publications in prestigious journals, including those with SJR, IF and classified in quartiles Q1, Q2 and Q3.

A number of publications have been cited in publications referenced and indexed in world-renowned databases of scientific information. 27 such were presented for the competition.

The candidate meets and exceeds the scientometric indicators necessary for holding the academic position of Associate Professor, according to the minimum national requirements under Art. 2b, para. 2 and 3 of ZRASRB and the additional requirements of FMI according to Art. 65. (3) from the PRAS of the PU.

I believe that the presented scientific works are from the field of the competition and show that the candidate has in-depth theoretical and practical knowledge, skills and teaching experience, as well as proven abilities for scientific research in PF 4.6. Informatics and Computer Science (Artificial Intelligence).

The contributions in the publications submitted for participation in the current competition are grouped into 3 scientific areas. A particularly good impression is made by the connection between the research and teaching work of Ch. Assistant Professor Veneta Tabakova-Komsalova, PhD and the direct implementation and application of scientific achievements in the work with students - students and in the middle course:

Systems with artificial intelligence. This group summarizes the results of research on the problems of formal representation and processing of knowledge. The monograph "KNOWLEDGE REPRESENTATION IN ARTIFICIAL INTELLIGENCE SYSTEMS" presents the main forms of knowledge representation such as rules, frames and semantic networks, as well as the corresponding inference machines. An architecture of a knowledge-based system is given and examples of building expert systems are discussed.

Introduction of artificial intelligence in secondary school. This group summarizes the results of Ch. Assistant Professor Veneta Tabakova-Komsalova, PhD related to research on the development of not only algorithmic thinking, but also declarative thinking, which is essential when introducing the study of artificial intelligence in secondary school. The possibilities for synergy of these two ways of thinking are emphasized. The results achieved by the team with which the candidate works have also impressed the creator of the Prolog language, Prof. Robert Kowalski. The team was invited to join the global initiative "Prolog Education and Thinking". Ch. Assistant Professor Veneta Tabakova-Komsalova, PhD is the head of a national project related to the global initiative.

Application of artificial intelligence in smart agriculture. In this group, contributions with a are mainly related to the presentation of specialized knowledge for the field. Ch. Assistant Professor Veneta

Tabakova-Komsalova, PhD participates in the National Scientific Programs "Intelligent Plant Breeding" and "Intelligent Animal Breeding", with the topics to which her main results, reflected in publications, are related.

I am not aware of any plagiarism found in the presented scientific works.

I accept the contributions described in the author reference.

3.2. Ch. Assistant Professor Asya Todorova Toskova, PhD actively participates in the research and teaching activities of the "Computer Systems" department. Leads the compulsory courses in the Department of Computer Systems, Software Technologies 1, Introduction to Software Engineering, Java Programming, and the software technology practicum, as well as the elective course Cognitive Robotics. In addition, she led elective courses "Machine Learning" and "Cognitive Robotics" in the Master's program "Software Technologies with specialization in Artificial Intelligence Systems". This is described in the report on its auditorium occupancy, which is above the stipulated norm. I have no direct impressions of teaching and work. It is clear from the reference of the educational activity that he works with students and graduates who successfully defend their theses. He also prepares reviews of diploma theses and participates in State examination commissions in Informatics and Software Engineering. Reports and publishes research results at international scientific conferences.

In the list of publications, I do not find a textbook or study aid, which is a requirement of FMI. It is mentioned in the learning activity reference. I found a reference to it (https://press.uni-plovdiv.net/index.php?route=product/product&product_id=285) which shows that it was issued, but I can't tell if it is by PN and the topic of the competition, announced in SG no. 96/ 17.11.2023. There are a number of discrepancies and omissions in the presented documents, which made my work on preparing the opinion very difficult.

The works of the candidate submitted for participation in the competition are - 1 monograph, 21 publications, of which 16 are referenced and indexed in world-famous databases with scientific information Web of Science and Scopus (1 in a journal and 15 conference publications). There are posts with SJR.

A number of the Candidate's publications have been cited in publications referenced and indexed in world-renowned databases with scientific information. 27 such were presented for the competition.

The candidate meets and exceeds the scientometric indicators necessary for holding the academic position of Associate professor, according to the minimum national requirements under Art. 2b, para. 2 and 3 of ZRASRB and the additional requirements of FMI according to Art. 65. (3) from PRAS of PU (with the note made above).

Ch. Assistant Professor Asya Todorova Toskova, PhD participated and participates in 3 national scientific programs and 1 international project.

I believe that some of the presented scientific works are from the field of the competition and show that the candidate has theoretical and practical knowledge, skills and teaching experience, as well as proven abilities for scientific research in PF 4.6. Informatics and Computer Science (Artificial Intelligence).

Contributions on Ch. Assistant Professor Asya Todorova Toskova, PhD in the presented, for participation in the current competition publications, can be grouped into 3 scientific areas:

Detection of weeds in wheat. The main results have been achieved as a result of the candidate's work under the National Science Program "Intelligent Plant Breeding", 2021/24, under which a module was developed for the recognition of weeds in wheat fields. He classifies characteristic weeds in winter wheat grown on the territory of Bulgaria. As a significant result, I would point to the self-collected set of 4647 images of weeds and wheat. In the monograph "Some Studies in Machine Learning - Computer Vision & Recommendation" is focused on the results in this area and an attempt is made to summarize the contributions in the other two groups as well.

Recognition of Bulgarian embroidery. The idea is to promote cultural preservation by automating the recognition of complex traditional art forms and offering follow-up information. A module has been developed for recognizing Bulgarian embroidery in real time (with a mobile device). A lot of additional work and selection of appropriate instrumentation is still to be done on this part.

Recommendation of serious games for children with special educational needs (SEN). As a result of the work on the Inclusive Classroom "Play and Know" project, 2019/20 a module was created to recognize user preferences and recommend personalized resources in a game-based learning platform designed for students with SEN. The topic is mainly covered in two publications.

I am not aware of any plagiarism found in the presented scientific works.

I accept the contributions described in the author reference.

4. Evaluation of the personal contribution of the candidates

From the documents submitted for participation in the competition and from the reports presented and published in the materials of international scientific conferences, the personal merit of the applicants is evident in the contributions presented in the publications.

5. Personal impressions

I have no personal impressions of the research work of the candidates in the competition.

I know Ch. Assistant Professor Veneta Tabakova-Komsalova, PhD from her participation in international scientific conferences, at which I attended and was a panel leader. From there I also have an idea of her deep knowledge in the field of Artificial Intelligence.

I have no reason to comment on personal impressions about Ch. Assistant Professor Asya Todorova Toskova, PhD.

6. Conclusion

Based on the documents presented in the procedure, I conclude that:

- the documents and materials presented by both candidates meet all the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (ZRASRB), the Regulations for the Implementation of the ZRASRB and the relevant Regulations of PU "Paisiy Hilendarski" and the additional faculty requirements of the Faculty of Mathematics and informatics for acquiring the academic position of Associate professor;

- both candidates have theoretical and practical knowledge, skills and teaching experience, as well as proven research abilities in PF 4.6. Informatics and computer science;

- the points accumulated according to the various scientometric indicators, to cover the minimum national requirements of Ch. Assistant Professor Asya Todorova Toskova, PhD is 777, and those of Ch. Assistant Professor Veneta Tabakova-Komsalova, PhD are 1040, i.e. with 263 more.

- the results of the scientific research and educational activities of Ch. Assistant Professor Veneta Tabakova-Komsalova, PhD fully respond to the announced theme of the competition 4.6. Informatics and Computer Sciences (Artificial Intelligence);

- the results of the scientific research and educational activities of Ch. Assistant Professor Asya Toskova, PhD are in different fields and partially cover the theme of the competition.

This gives me a reason and I give **a positive assessment**, suggesting that the respected scientific jury unanimously vote and prepare a report to the Faculty Council of the Faculty of Mathematics and Informatics for the selection of **Ch. Assistant Professor Veneta Tabakova-Komsalova, PhD** in the academic position of **Associate Professor** at PU "Paisiy Hilendarski" in the area of higher education 4. Natural sciences, mathematics and informatics. professional field 4.6. Informatics and Computer Science (Artificial Intelligence).

04.03.2024

Member of the Scientific Jury:

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/Assoc. Prof. Emil Delinov, PhD/