

STATEMENT

on the competition for the academic position

“Associate Professor”

in professional field 4.6 Informatics and Computer Science,

at Sofia University “St. Kliment Ohridski” (SU),

Faculty of Mathematics and Informatics (FMI),

announced in State Gazette No. 61/02.08.2022 r. and the internet sites of FMI and SU

This statement is written and submitted by Assoc. Prof. Kalin Georgiev — FMI, professional field Informatics and Computer Science, appointed to the academic jury for this competition by the Rector of SU in accordance with Order ПД 38-561/28.09.2022 r.

A **single candidate** has submitted an application for this competition:

- assist. prof. Dafina Petkova, FMI

I. General Description of the Submitted Documents:

1. Application Details

The documents submitted by the candidate are in full compliance with the requirements of the Academic Staff Development Act (ZRASRB), the Regulations Act for the Implementation of ZRASRB (PPZRASRB), and the Regulations Act about the Terms and Conditions for Acquisition of Academic Degrees and Occupation of Academic Positions at SU (PURPNSZADSU).

For the purposes of the competition assist. prof. Dafina Petkova has presented a total of 9 titles, including 9 publications in domestic and international scientific issues and conferences.

The candidate has not submitted any further documents in addition to the documents required by way of procedure.

2. Short Biographical Data

assist. prof. Dafina Petkova graduated her bachelor studies in Informatics from Sofia University’s FMI in 2004. She received her master degree in Bio- and medical informatics in 2010, again from FMI. The candidate was awarded a PhD in Informatics by the IBPhBME at the Bulgarian Academy of Sciences in 2020.

Ms. Petkova’s professional experience as a Software Engineer started more than 18 years ago and includes several technologies (such as .NET, Java, and others) and industries, such as VoIP, lab software, and e-publishing.

Ms. Petkova’s teaching experience dates from 2006 when she was appointed Assistant Professor at FMI. Since then she has contributed to several courses, including Introduction to Programming, Object-oriented Programming, Data Structures, Functional Programming and Data Bases.

As of 2019 Ms. Petkova is a member of IBPhBME at the BAS.

The documentation submitted for this procedure does not include information about Ms. Petkova’s research projects.

3. General Evaluation of Scientific Work and Professional Achievements

All of the publications submitted for this procedure are refereed by WoS or Scopus. 3 are in periodicals, 5 in proceedings, and 1 is in a book. 2 textbooks are also included.

After a detailed review of the submitted scientific publications I confirm that:

- a) the submitted publications are in full compliance with the minimal national requirements under Art. 2B (2) and (3) of ZRASRB, as well as with the additional requirements of SU for the academic position “Associate Professor” in the professional field of this competition;
- b) none of the submitted publications have been submitted in a preceding procedure for acquiring a scientific title or an academic position;
- c) there is no lawful evidence for plagiarism in the submitted publications.

4. Description and Evaluation of Teaching Activities

Ms. Petkova’s teaching career began more than 16 years ago at the FMI. During the last 6 years, she reported between 448,20 and 775,80 hours of teaching activities yearly, with the exception of 2018/2019 due to a sabbatical. During 2021/2022 729,30 hours were reported.

My personal impressions of Ms. Petkova’s work as a professor are strongly positive. She is a committed, dedicated lecturer working with exceptional precision and care for the students in the best traditions of FMI.

Ms. Petkova’s experience in the Software Industry is strongly beneficial for her work as a Professor of Informatics.

5. Analysis of the Content of the Theoretical and Applied Contributions Described in the Submitted Publications

assist. prof. Dafina Petkova’s publications submitted for this procedure are in the general area of modelling, more specifically:

- i. Meta-heuristic algorithms

This group includes 4 publications related to the application of algorithms such as the Artificial Bee Colony (ABC) algorithm, Water Cycle Algorithm, Genetic Algorithms and other heuristic algorithms inspired by natural phenomena. The research contributions of Ms. Petkova are related to innovative combinations of the aforementioned algorithms, and studying their applicability for new types of problems. A procedure is proposed for the choice of meta-parameters and how this affects the algorithm’s performance.

- ii. Generalised Nets

This group includes 4 publications related to Generalised Nets. Some of the publications provide scientific overview of the subject, others propose GN models of meta-heuristic algorithms. Industrial processes, such as the production of gasoline, have been modelled with GNs.

- iii. Multicriteria Analysis

This group includes 2 publications related to decision making based on Intuitionistic Fuzzy Sets and Indexed Matrices. A model is proposed for decision making in hockey.

6. Critical Remarks and Recommendations

Ms. Petkova is actively contributing to programming courses at the FMI which are undoubtedly among the most resource-intensive courses at the Faculty. Despite this load, I recommend to Ms. Petkova that she becomes involved in special technology courses, where she can exercise her skills with specialised technologies.

7. Personal Impressions

I have known assist. prof. Dafina Petkova for 22 years and I have had the pleasure to collaborate with her during much of her tenure as a Software Engineer and Professor. I am confident that Ms. Petkova is an exceptional candidate for this position and

will work for the continuation of FMI's traditions in the teaching of Informatics and Computer Science. She is trustworthy, highly professional and passionate about her work with students.

8. Conclusion

Based on the review of the documents and scientific publications submitted for this competition, as well as on the analysis of their significance and the theoretical and applied contributions, I hereby confirm that the scientific achievements of the candidate meet and exceed the requirements of ZRASRB, PPZRASRB, and PURPNSZADSU for acquiring the academic position "Associate Professor" in the scientific and professional field of this competition. More specifically, the candidate satisfies the minimal national requirements of the professional field and no plagiarism has been detected in the submitted scientific publications submitted.

I hereby state my **positive** assessment of the application of assist. prof. Dafina Petkova.

II. GENERAL CONCLUSION

Based on the above, I hereby **recommend** to the scientific jury to propose to the competent authority of the Faculty of Mathematics and Informatics at Sofia University "St. Kliment Ohridski" to elect assist. prof. Dafina Petkova to the academic position "Associate Professor" in professional field 4.6 Informatics and Computer Science.

November 21, 2022

Prepared by: _____
Assoc. Prof. Kalin Georgiev — FMI