REPORT
on a competition for occupation of the academic position "Professor"
in professional field 4.6 Informatics and Computer Science
(Software Technologies – Network Programming, Cloud Technologies
and Web Technologies),
announced in State Gazette No. 48 of June 28, 2022
by Sofia University St. Kliment Ohridski (SU),
Faculty of Mathematics and Informatics (FMI)

This report is prepared by Prof. Dr. Maria Nisheva-Pavlova from Sofia University St. Kliment Ohridski, FMI, as a member of the scientific jury for the competition according to Order No. РД 38-519/25.08.2022 of the Rector of SU.

One applicant has submitted documents for participation in the announced competition: Dr. Milen Petrov, Associate Professor at FMI, SU.

1. General description of the materials presented

The documents of the applicant comply with the requirements of the Act of the Development of the Academic Personnel of the Republic of Bulgaria (ADAPRB), the Rules for the Implementation of the Act of the Development of the Academic Personnel of the Republic of Bulgaria (RIADAPRB) and the Rules on the Terms and Conditions for Acquisition of Academic Degrees and Occupation of Academic Positions at SU (RTCAADOAPSU).

The applicant has submitted for the competition:

- Professional autobiography,
- Copy of diploma for higher education,
- Copy of diploma for educational and scientific degree "Doctor",
- Copy of certificate for occupation of the academic position "Associate Professor",
- Certificate of internship in the speciality,
- Documents proving the fulfillment of the requirements of Art. 115, para. 1, item 2 of RTCAADOAPSU,
- Lists of publications (list of all publications and list of publications presented at the competition),
- List of publications, presentations, projects and supervision activities, generated by the information system of SU,
- Reference for the fulfillment of the minimum national requirements and the requirements of SU for the professional field 4.6 Informatics and Computer Science,
- Lists of citations of publications of the applicant,
- Reference for original scientific contributions,
- Reference for the degree of fulfillment of the indicators under Art. 122, para. 2 of RTCAADOAPSU,
- Copies of publications presented at the competition,
- Abstracts of the publications presented at the competition (in Bulgarian and in English),
- Copy of the competition announcement in the State Gazette.

The documents of the applicant have been prepared carefully and in full compliance with the requirements of RTCAADOAPSU.

2. Details of the applicant

The applicant Assoc. Prof. Dr. Milen Petrov has a technical degree, completed in 1999 at the Technical University – Sofia. In 2010 he received a doctoral degree. In 2001 – 2006 he worked as a software engineer at the SRS of SU. From 2006 to 2012, he was an assistant professor in the Department of Software Technologies of FMI, and since 2012 he has been an associate professor in the same department. Since 2017, he has been a deputy dean of FMI.

3. General characteristics of the applicant's scientific work and achievements

The research activities of Assoc. Prof. Dr. Milen Petrov and the topics of his scientific works are entirely in the field of competition. He participates in the competition with 14 publications (including one monograph and 13 scientific papers) which do not repeat those of the previous procedures for the acquisition of his doctoral degree and for the occupation of the academic position of associate professor.

The monograph and one of the scientific papers submitted for participation in the competition are single-authored, and the remaining 12 papers in the competition are co-authored. I have no doubt about the applicant's essential personal contribution in each of them.

There is no proven plagiarism in the scientific works of Assoc. Prof. Dr. Milen Petrov.

In accordance with the requirements under Art. 1a, para. 1 of the RIADAPRB, the candidates for an the academic position of professor in professional field 4.6 Informatics and Computer Science must have: 50 points in group of indicators "A", at least 100 points in group of indicators "Б", at least 200 points in group of indicators "Г", at least 100 points in group of indicators "Д", at least 150 points in group of indicators "Е".

RTCAADOAPSU does not define higher additional requirements than those specified in the RIADAPRB.

According to the submitted documents the applicant covers:
- 50 points in group of indicators "A",
- 100 points in group of indicators "Б",
- 294 points in group of indicators "Г",
- 112 points in group of indicators "Д",
- 250 points in group of indicators "Е".

Therefore, the minimum national requirements and the additional requirements under Art. 1a, para. 2 and para. 3 of the RIADAPRB for occupation of the academic position of "Professor" in the professional field 4.6 Informatics and Computer Science have been completely covered and exceeded by Assoc. Prof. Dr. Milen Petrov.

4. General characteristics of the applicant's teaching activities

The teaching activities of Assoc. Prof. Milen Petrov are considerable in scope and diverse in content. He teaches the compulsory course in Web Programming for BSc students in Computer Science and Software Engineering at FMI. He taught the compulsory course in XML Technologies for the Semantic Web for BSc students in Software Engineering at FMI. Assoc. Prof. Petrov teaches a set

of elective courses at Master's and Bachelor's level at FMI. He regularly teaches courses in English for Erasmus students at SU.

Since 2014 Assoc. Prof. Petrov has been the supervisor of the Master's program in Protection of Information in Computer Systems and Networks at FMI. He supervised 144 successfully defended MSc theses. He was the research supervisor of one successfully defended PhD student and currently supervises three PhD students.

5. Substantive analysis of the scientific and applied scientific achievements of the applicant, presented in the materials for participation in the competition

The scientific papers, presented by Assoc. Prof. Dr. Milen Petrov for participation in the competition, contain original research results in the fields of cloud technologies, network technologies, technologies and their applications. The main contributions of the applicant relate to three main thematic areas: technology-assisted learning, security of personal data and applications, analysis of city traffic data. The most significant results presented in the competition materials can be grouped and summarized as follows:

- Group 1: *Technology-assisted learning.* An automated process of creating and maintaining cloud resources necessary for the functioning of a cloud application for an e-learning course has been developed. An extensible software platform architecture integrating the use of network, cloud and web technologies is proposed, which supports the recommendation and adaptation of learning content and activities based on the analysis of large sets of learning and game data. A software architecture is proposed for analysis and generation of personal recommendations to students and semantic search for suitable learning resources.
- Group 2: *Security of personal data and applications.* An approach is developed for storing and processing personal data of students in a learning management system (LMS) for the purposes of anonymizing the data and sharing the data with external systems. A universal method for collecting, storing and maintaining personal data in LMS has been created.
- Group 3: *Analysis of city traffic data*. A model has been created for calculating the traffic flow index for a whole city as well as for a road segment, based on public transportation vehicle data. A mechanism has been developed for map visualization of the state of the city traffic in real time.

In my opinion, the aforementioned results characterize the candidate Assoc. Prof. Dr. Milen Petrov as a well-established scientist with significant achievements, which give reason to claim that he completely covers the concept of a leading researcher in the field of software technologies.

The significance of the applicant's research results is evidenced by their reflection in the works of other authors. Dr. Milen Petrov submitted data for a total of 85 citations of his publications in articles of other authors, 21 of which were referenced and indexed in WoS and/or Scopus.

6. Critical notes and recommendations

I have no significant critical comments on the materials in the competition and in particular on the scientific works of Assoc. Prof. Dr. Milen Petrov. I am aware of the fact that significant research in the scientific field in which he works is generally a collective matter, but I recommend him to aspire in his future work to more single-authored publications, presenting results to which he has a

key contribution. I also recommend him to pay more attention to the professional terminology he uses in Bulgarian.

7. Personal impressions of the applicant

I have excellent personal impressions of the professionalism, thoroughness and efficiency in the work of Assoc. Prof. Milen Petrov. I highly appreciate his cooperativeness and his ability to team-work.

8. Conclusion on the application

Having become acquainted with the materials and scientific works presented in the competition and on the basis of the analysis of their significance and the scientific and applied scientific contributions contained therein, I confirm that the academic achievements of the candidate Assoc. Prof. Dr. Milen Petrov meet the requirements of the ADAPRB, the Regulations for its implementation and the corresponding Regulations of SU for the occupation of the academic position of "Professor" in the professional field "Informatics and Computer Science". In particular, the applicant meets the minimum national requirements in the professional field and no plagiarism has been detected in his scientific papers submitted at the competition.

I give a **positive assessment** of the application of Assoc. Prof. Dr. Milen Petrov.

GENERAL CONCLUSION

Based on the above, **I recommend the scientific jury to vote on a proposal to the Council of the Faculty of Mathematics and Informatics of Sofia University St. Kliment Ohridski to select Assoc. Prof. Dr. Milen Petrov for the academic position of "Professor" in the professional field 4.6 Informatics and Computer Science**.

October 15, 2022   Assessor:

                 (Prof. Dr. Maria Nisheva-Pavlova)