

## **REVIEW**

**from Dr. Alexander Iliev Iliev, Associate Professor at the Institute of Mathematics and Informatics, BAS**

on the competition for academic position of “Associate Professor”  
in the scientific field: 4. Natural Sciences, Mathematics and Informatics,  
professional field: 4.6. Informatics and Computer Sciences

Scientific specialty: Informatics (Systems, methods and tools for presentation and management of digital cultural and educational resources) for the needs of the Laboratory of Telematics, BAS

According to the Order №110/17.05.2022 r. of the Director of the Institute of Mathematics and Informatics at BAS (IMI-BAS) I was appointed to be a member of the scientific jury for the competition, announced in SG №22/18.03.2022 for the needs of the Laboratory of Telematics, BAS.

Only one candidate has applied for the competition:

**Assist. Prof. Lilia Radoslavova Pavlova, PhD from Laboratory of Telematics, BAS.**

### **1. General description of the candidate and the presented materials**

Dr. Lilia Radoslavova Pavlova has submitted the following materials for participation in the competition:

- An application for admission to the competition,
- Professional CV in European format,
- Diploma for higher education – Master’s degree,
- Diploma for educational and scientific degree “Doctor”,
- List of all publications,
- List of publications for participation in the competition and copies of the papers,
- Reference on the original scientific contributions in the publications for participation in the competition,
- Abstracts of the publications for participation in the competition in Bulgarian and English,
- List of all citations,
- List of citations for participation in the competition,
- Copy of SG with the announcement of the competition,
- Reference for other activities,
- Reference form for the fulfillment of minimum national requirements of the candidate in the competition for an academic position “Associate Professor” according to Art. 2b (2), (3) and (5) of Act on the Development of the Academic Staff in the Republic of Bulgaria (ADASRB) and the specific ones of IMI-BAS (Annex 2.2),

- Certificate of years of work experience in specialty, according to Act. 24 (2), point 2 of ADASRB, from Laboratory of Telematics-BAS,
- medical certificate,
- a certificate of conviction,
- a declaration on the form (Annex 3.2).

Dr. Lilia Radoslavova Pavlova has more than 10 years of professional experience as a senior assistant on Informatics at the Laboratory of Telematics-BAS. She also works as a senior lecturer on Informatics at New Bulgarian University.

She obtained her PhD degree in 2013 at the Institute of Mathematics and Informatics - BAS (Diploma №000359/26.11.2013).

For the participation in the competition Dr. Lilia Radoslavova Pavlova has applied 27 publications:

- 2 book chapters,
- 5 publications in scientific journals,
- 20 publications in proceedings of international conferences (10 of them with impact factor and/or impact rank, and the other 15 indexed in Web of Science, Scopus, ACM Digital Library).

I accept for consideration research publications, that:

- **have not been used** for the acquisition of the educational and scientific degree "Doctor",
- **are on the subject of the competition**, and
- **meet the minimum national requirements** of Art. 2b (2), (3) and (5) of ADASRB.

## 2. General characteristics of the candidate's scientific works

The scientific publications submitted for the competition are thematically in the following main areas:

### A. Digital cultural content management systems and applications

1. Methods and tools for creating, presenting and using content in digital libraries. Digital cultural ecosystems - articles with numbers 4, 6, 10, 16, 19, 22, 23 (from the "List of publications for the competition.pdf");

2. Methods and tools for analysis and extraction of knowledge from data - articles with numbers 1, 3 (from "List of publications for the competition.pdf");

3. Digital reconstruction of cultural and historical assets - articles with numbers 13, 14, 15, 17, 18 (from "List of publications for the competition.pdf").

### B. Advanced information technologies in education

1. Development and applications of serious games, digital theatre and storytelling in education - articles with numbers 2, 5, 7, 8, 9, 11, 12, 20, 21, 24, 25, 26, 27 (from the "List of publications for the competition.pdf").

The quantitative indicators of the criteria for occupying the academic position of "Associate Professor" - in general under the ADASRB and more specifically under the Regulations on the Conditions and Procedure for the Acquisition of Scientific Degrees and for the Occupation of Academic Positions at the Institute of Mathematics and Informatics - BAS, Art. 2, Table 1, Area 4. Natural Sciences, Mathematics and Informatics, are as follows:

- 6 publications have a total score of 124 (with a requirement of 100) in group "B";
- 21 publications with a total number of points 282 (220 required) in Group "T";
- 17 citations have a total number of points of 102 in group "Д" (with a requirement of 70);
- a total of 50 points in Group "E" (with a requirement of 20), evidenced by: participation in 3 national scientific or educational projects and participation in 1 international scientific or educational project.

The quantitative indicators of the criteria for occupying the academic position of Associate Professor are met.

The criterion under Art. 3 (1), point 2 of the Regulations on the Conditions and Procedure for the Acquisition of Scientific Degrees and for Holding Academic Positions at the Institute of Mathematics and Informatics - BAS is met (namely "the candidate must have at least 5 publications in publications with IF or SJR"). For participation in the competition the candidate Dr. Lilia Pavlova has submitted 10 publications in IF or SJR journals.

No plagiarism was found in the scientific works submitted for the competition.

### **3. Analysis of the applicant's scientific and applied achievements presented in the competition materials**

The scientific works are related to research on systems, methods and tools for the presentation and management of digital cultural and educational resources and present significant scientific and applied contributions.

Selected contributions can be presented as follows:

1. A knowledge graph model for iconographic objects was created and used to synchronize the digital library "Virtual Encyclopedia of Bulgarian Iconography" with Wikidata standards, with references to iconographers, saints, locations, etc. (№10);
2. An innovative approach to improve user experience in a digital library by implementing data and knowledge analysis and synthesis services is presented (№6);
3. A method for intelligent data curation implemented in a digital library is proposed. An algorithm to prevent duplicate records for digital objects is designed (No. 4);
4. Models for the effective use, ongoing development, exploration and delivery of digital cultural resources in digital cultural ecosystems have been created. These models are used for the learning purposes, following the vision, best practices and achievements of the European Research e-Infrastructure for Culture and Humanities DARIAH (№23);

5. Methods and approaches for digital reconstruction of cultural and historical assets are proposed - 1) digital reconstruction of the Cathedral of St. Maria Assunta in Torcello, Venice, Italy; 2) digital reconstruction of the hidden images of the icon of Our Lady of Nicopea, supporting the dating and origin of the icon; 3) digital reconstruction of the carving of the iconostasis of the Church of the Assumption of the Virgin Mary in the town of Bansko in its original form, etc. (№№13, 14, 15);

6. It is presented a method of technology-supported learning that combines learning analysis, group work, mobile learning (m-learning), discussions and learning by creating in order to achieve more active participation of learners during the acquisition of knowledge and the stimulation of creative thinking (№20);

7. Designed a model and implementation of a mini-game editor and portal to facilitate the development of mini-games for embedding and reuse in other serious games (№№21, 24);

8. An educational approach to the study of ancient history and civilizations is proposed. It combines the teaching methods of storytelling and serious educational games. An experimentally developed game application is presented - the serious game "Thracians", a virtual 360-degree panoramic environment including elements of the life, beliefs and traditions of ancient tribes. Of interest is the model of semantic-based linking of digital multimedia resources from the field of Thracian history and culture in the game (№№2, 5, 7). In this regard, the development of the serious game *Aquae Calidae* is also of scientific and applied interest (№№7, 9);

9. A model of creative STEAM exploration with a focus on algorithmic representation of recipes in the form of flowcharts has been developed (№27).

10. №12 discusses conceptual research that can be used to analyze, evaluate, and rethink specific systems relevant to creativity and heritage education (e.g., teaching and learning history).

All submitted scientific papers are on the topics of the competition. They are in reputable scientific conferences or scientific journals.

Assist. Prof. Lilia Pavlova, PhD has participated in numerous international research projects. This shows that she is a recognizable scientist in her subject area. This is confirmed by the number of citations of her publications.

#### **4. Works as a lecturer, project works and other activities**

In the teaching and pedagogical activity prevail lecturing activities of the candidate in universities in Bulgaria - New Bulgarian University, Burgas Free University, National Academy of Arts, Center for Education - BAS. She has reported at a number of international and national scientific forums.

The candidate has participated in more than 15 national or international research projects funded by the National Research Fund, the Ministry of Education and Science, Scientific programmes of the European Union, etc.

## 5. Critical comments and recommendations

The candidate's scientific interests and works on the subject of the competition cover a wide range of research and interdisciplinary applications. Some of the methods and tools developed could be summarized in a stand-alone monographic work.

## 6. Conclusions

After the analysis of the submitted materials and scientific works, **I confirm that the scientific achievements of Assist. Prof. Lilia Radoslavova Pavlova, PhD meet the requirements of ADASRB, RIADASRB, and the Regulations on the Conditions and Procedure for the Acquisition of Scientific Degrees and for Holding Academic Positions in BAS and IMI-BAS.**

No plagiarism was found in the scientific papers submitted to the competition.

**I give my positive assessment of the application.**

**I recommend to the Scientific jury to propose to the Scientific Council of IMI-BAS to select Assist. Prof. Lilia Radoslavova Pavlova, PhD for the academic position “Associate Professor” in scientific fields 4. Natural Sciences, Mathematics and Informatics, professional field: 4.6. Informatics and Computer Sciences, Scientific specialty: Informatics (Systems, methods and tools for presentation and management of digital cultural and educational resources).**

11.07.2022

**Reviewer:**

Assoc.Prof. Alexander Iliev, PhD