# REVIEW

**for a competition for occupation of the academic position "Professor"**

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| in the field of higher education: | 4. Natural Sciences, Mathematics and Informatics |
| professional field: | 4.6. Informatics and Computer Science |
| scientific specialty: | Informatics (Open Science and Innovation in Digital Cultural Heritage) |
| published in: | State Gazette No. 63 / 10.07.2026<br>and on the institutional website |
| for the needs of: | Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences (IMI-BAS),<br>Software Technologies and Information Systems Department |
| prepared by: | Dr. Maria Nisheva-Pavlova,<br>Professor at IMI-BAS and FMI-SU |
| member of the scientific jury of the competition, according to: | Order № 87 / 08.09.2026 of the Director of IMI-BAS |

Only one candidate has submitted documents for participation in the announced competition:
**Assoc. Prof. Dr. Milena Dobreva, IMI-BAS**.

## I. General description of the submitted materials

### 1. Details of the application

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), the Rules for the conditions and the order for acquiring scientific degrees and for occupying academic positions in BAS and the specific regulations for the Institute of Mathematics and Informatics – BAS.

The applicant has submitted for the competition:

- European CV,
- Copy of diploma for higher education,
- Copy of diploma for educational and scientific degree "Doctor",
- Full list of publications,
- List of publications presented at the competition,
- Reference for original scientific and applied scientific contributions (in Bulgarian and in English),
- Abstracts of the publications of Dr. Milena Dobreva presented at the competition (in Bulgarian and in English),

- Copies of the publications presented at the competition,
- Full list of citations of publications of Assoc. Prof. Dr. Galina Bogdanova,
- List of citations presented at the competition,
- Copy of the publication for the competition in State Gazette,
- Certificate of internship in the speciality,
- Copy of certificate for occupation of the academic position "Associate Professor",
- Other information at the candidate's discretion: a list of research projects in which the candidate has served as a lead or participant, a list of published textbooks,
- Reference for the fulfillment of the minimum national requirements and the requirements of IMI – BAS for the professional field 4.6. Informatics and Computer Science,
- Declaration that the indicators for the competition have not been used in other procedures under the Act on the Development of the Academic Staff in the Republic of Bulgaria,
- Declaration of consent for the storage and processing of personal data.

## 2. Details of the applicant

The applicant Assoc. Prof. Dr. Milena Dobreva holds a degree in Informatics, obtained in 1991 from Sofia University St. Kliment Ohridski. In 1999, following the successful defense of her dissertation titled "Modeling Variability in Old Bulgarian Texts", she was awarded a PhD in the field of Informatics. From 1992 to 2008, she worked at the Institute of Mathematics and Informatics of the Bulgarian Academy of Sciences, serving successively as a Research Fellow and Senior Research Fellow; in 2004, she founded and became the head of the "Application of IT in the Humanities" section. From 2008 to 2012, she was a researcher at the University of Strathclyde, Scotland; from 2012 to 2017, she served as an Associate Professor at the University of Malta; and from 2017 to 2020, she was an Associate Professor at UCL Qatar. From 2020 to 2023, she held the position of Established Researcher (R3) at the Faculty of Mathematics and Informatics of Sofia University St. Kliment Ohridski. Since 2023, she has been an Associate Professor at the University of Strathclyde, Scotland, and concurrently, as of 2025, she serves as a Leading Researcher (R4) at the Institute of Mathematics and Informatics of the Bulgarian Academy of Sciences.

## 3. General characteristics of the scientific works and achievements of the candidate

The research activities of Assoc. Prof. Dr. Milena Dobreva and the subject matter of the research works she has presented fall within the scope of the competition. She is participating in the competition with 18 publications, none of which overlap with those used in previous procedures for the acquisition of the educational and scientific degree of "Doctor" or for her appointment to the academic position of Associate Professor. Fourteen of these publications appear in journals with a JIF and/or SJR.

In accordance with the requirements of the rules for the specific conditions for acquiring scientific degrees and for occupying academic positions at IMI – BAS, the candidates for an 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 "B", at least 220 points in group of indicators "Г", at least 140 points in group of indicators "Д", at least 150 points in group of indicators "E". Each of these conditions is stronger than the corresponding requirement under Art. 1a, para. 1 of the RIADAPRB.

According to the submitted documents the applicant covers:

- 50 points in group of indicators "A",
- 130 points in group of indicators "B",
- 248 points in group of indicators "Г",
- 282 points in group of indicators "Д" (accumulated on the basis of 44 citations indicated by the applicant),
- 550 points in group of indicators "E".

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. Milena Dobreva.

There is no proven plagiarism in the scientific publications of Assoc. Prof. Dr. Milena Dobreva.

## 4. Evaluation of work on projects and other activities

The competition documents contain information regarding the applicant's participation in numerous successful international and national research projects, for a large proportion of which she served as the project lead. The applicant is a co-author of a significant number of textbooks and teaching aids used within the school system. She has supervised over 50 postgraduate students and five doctoral candidates from various universities. Furthermore, she has chaired the program and organizing committees of numerous prestigious international scientific forums and has served as the academic director for a multitude of doctoral schools and summer schools for young scientists.

## 5. Analysis of the scientific and applied research of the candidate, contained in the materials for participation in the competition

The scientific papers, presented by Assoc. Prof. Milena Dobreva for participation in the competition, contain original research results, which can be grouped and summarized as follows.

- Group 1: *Computer-based methods for processing, searching, and accessing digital cultural and scientific heritage* (publications [1], [9], [16], according to the numbering in the list of scientific works submitted for the competition)
  - ✓ An original approach for the automatic categorization of content in a digital library has been proposed and explored.
  - ✓ An information retrieval system for Bulgarian historical documents has been developed and tested; it successfully addresses issues related to the variability of historical orthography and errors arising from OCR.
  - ✓ An approach for correcting the results of OCR on Bulgarian historical documents has been developed and experimentally validated.
- Group 2: *User models and requirements, and the evaluation of digital information systems* (publications [4–8], [12], [15])
  - ✓ A practical study was conducted on the applicability of the eye-tracking method as a supplementary technique for the usability and functional evaluation of the Europeana interface. The experiment demonstrated that eye-tracking helps identify issues within the interface and the search engine – problems that remain hidden when relying solely on verbal feedback from users.

- ✓ User scenarios have been formalized as a structuring element for research on digital library users. An original methodology for developing usage scenarios within the domain of digital cultural heritage is created. Furthermore, a formalization of the transition from user scenarios to a structured description of interactions between users, data, services, and infrastructures is proposed.
- ✓ An approach for prioritizing the digitization of specialized collections has been developed, based on an analysis of the requirements of the anticipated typical end-users. A framework for evaluating specialized parliamentary archival digital resources has been established, focused on analyzing the value and significance of the respective resources.

- Group 3: *Data spaces and open infrastructures for cultural heritage* (publications [2], [4], [15], [17])
  - ✓ An approach for operationalizing the concept of data quality in the context of GLAM data has been proposed, and a unified framework – applicable to small and medium-sized GLAM institutions – has been developed and tested.
  - ✓ A systematic methodology has been developed for constructing use scenarios within the domain of digital cultural heritage. Based on this, the use scenario has been established as a tool for describing system behavior, requirements, and the alignment between user requirements and technological components.
- Group 4: *Open science and cooperative creation of knowledge* (publications [1], [2], [4], [13–15], [17])
  - ✓ The factors and mechanisms for engaging citizens with digital cultural heritage have been systematized, and a model-oriented approach has been developed for activities based on the participation of diverse user groups.
- Group 5: *Education and competencies for data analysis in digital cultural heritage* (publications [3], [10], [11], [18])
  - ✓ A conceptual framework has been developed for the closer integration of digital libraries and e-learning.
  - ✓ Some of the new competencies that the paradigm of using collections as data requires of library and information science professionals have been identified.

Two of the publications submitted for the competition are single-authored, while the others are co-authored. I have no doubt whatsoever regarding the candidate's substantial personal contribution to them.

In my opinion, the indicated results characterize the candidate, Assoc. Prof. Dr. Milena Dobreva, as an accomplished scholar with significant achievements – providing every basis to assert that she fully embodies the profile of a leading researcher and visionary in the field relevant to this competition.

The significance of the applicant's research results is evidenced by their reflection in the works of other authors. Dr. Milena Dobreva submitted data for a total of 339 citations of her publications in papers of other authors, 47 of which are included in the tender participation documents.

## 6. Critical remarks and recommendations

I have no significant critical remarks regarding the content of the competition materials, and in particular the scientific works submitted by Assoc. Prof. Dr. Milena Dobreva.

I acknowledge the fact that serious research in the scientific field in which Assoc. Prof. Dr. Milena Dobreva works is, as a rule, a collective endeavor; however, I would recommend that, in her future work, she strive more towards publishing results independently – specifically those to which she has made a decisive contribution. I also recommend that she includes in her plans for the near future the preparation and publication of a monograph on a topic of her own choosing.

## 7. Personal impressions of the candidate

I have known Dr. Milena Dobreva since the time I was her lecturer at the Faculty of Mathematics and Informatics of Sofia University St. Kliment Ohridski. Later, I worked in the "Application of IT in the Humanities" section at the Institute of Mathematics and Informatics – which she headed – on tasks related to the project "Knowledge transfer for digitisation of cultural and scientific heritage in Bulgaria" and their subsequent developments. My personal interactions with her have left an excellent impression, particularly regarding the depth and creativity she brings to her work, her unique interdisciplinary expertise, and her ability to assemble research teams and collaborate effectively within them. I highly value her capacity to handle high-pressure work environments and her ability to see projects through to successful completion.

## 8. Conclusion for this application

The scientific achievements of the candidate meet the requirements of ADAPRB and RIADAPRB, as well as the Rules for the conditions and the order for acquiring scientific degrees and for occupying academic positions in BAS and the specific regulations for the IMI-BAS.

In particular, the candidate satisfies the minimum national requirements in the professional field and no plagiarism has been established in the scientific papers submitted at the competition.

I give a **positive assessment** of the application of Assoc. Prof. Dr. Milena Dobreva.

## II. Overall conclusion

After getting acquainted with the scientific papers and materials presented in the competition, analyzing their significance and the scientific and applied contributions contained in them, I find it reasonable to give my positive assessment and to **recommend the scientific jury to vote on a proposal to the Scientific Council of IMI-BAS to select Assoc. Prof. Dr. Milena Dobreva to take the academic position of "Professor"** in the field of higher education 4. Natural sciences, Mathematics and Informatics, professional field 4.6. Informatics and Computer Science, scientific specialty Informatics (Open Science and Innovation in Digital Cultural Heritage).

October 31, 2026

Reviewer:

(Prof. Maria Nisheva-Pavlova)