

REVIEW

**by Dr. Stanka Ivanova Hadzhikoleva,
Professor at the University of Plovdiv Paisii Hilendarski**

regarding the materials submitted for participation in a competition for the academic position of
**Associate Professor at the Institute of Mathematics and Informatics at the
Bulgarian Academy of Sciences,**
in the field of higher education 4. Natural Sciences, Mathematics and Informatics,
professional field 4.6 Informatics and Computer Science, scientific specialty “Informatics”
(Systems for Management of Digital Cultural Content and E-learning)

In the competition for the academic position of Associate Professor, announced in the State Gazette, Issue No. 103 of 2 December 2025, and on the official website of the **Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences (IMI-BAS)**, for the needs of the “Mathematical Linguistics” Section, the sole applicant is Maxim Krasimirov Goynov.

1. General Overview of the Submitted Materials

By Order No. 9/30.01.2026 of the Director of IMI-BAS, I was appointed as a member of the scientific jury in a competition for the academic position of Associate Professor at IMI-BAS, in the field of higher education 4. Natural Sciences, Mathematics and Informatics, professional field 4.6 Informatics and Computer Science, scientific specialty “Informatics” (Systems for Management of Digital Cultural Content and E-learning).

The competition has been announced for the needs of the “Mathematical Linguistics” Section.

For participation in the announced competition, a **single candidate** has submitted documents – Assist. Prof. Dr. Maxim Krasimirov Goynov from IMI-BAS.

The present review has been prepared in accordance with the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (LDASRB), the Regulations for the Implementation of the LDASRB (RILDASRB), as well as the Rules for the Conditions and Procedures for Acquiring Academic Degrees and Holding Academic Positions at IMI-BAS (IMI-BAS Rules).

The set of materials submitted by Assist. Prof. M. Goynov complies with the IMI-BAS Rules and includes the following documents:

1. Application addressed to the Director of IMI-BAS for admission to participation in the competition.
2. Curriculum Vitae (European format).
3. Diploma for completed higher education – Master’s degree.
4. Diploma certifying the acquisition of the educational and scientific degree “Doctor”.
5. General list of publications.
6. List of publications submitted for participation in the competition.
7. A personally signed statement of the original scientific contributions in the works submitted for the competition.
8. Abstracts of the publications submitted for the competition – in Bulgarian and English.
9. Copies of the works listed under item 6.
10. General list of citations.
11. List of citations submitted for participation in the competition.
12. Issue of the State Gazette containing the announcement of the competition.

13. Certificate of professional experience in the specialty in accordance with the requirements of Art. 24, para. 1, point (2) of the LDASRB.
14. Report on other research and applied scientific activities.
15. Report on compliance with the minimum national requirements under Art. 26, paras. 2 and 3, and the requirements under Art. 2b, para. 5 of the LDASRB, as well as with the minimum requirements of IMI–BAS, including the necessary supporting evidence.
16. Declaration in the prescribed format (Appendix 3.2).
17. Declaration of consent for the storage and processing of personal data.

The candidate, Assist. Prof. Goynov, has submitted a total of 22 scientific publications, of which 7 are published in scientific journals, 13 in proceedings of scientific conferences, and 2 are book chapters. None of the submitted scientific works have been used for the acquisition of the educational and scientific degree “Doctor”, the scientific degree “Doctor of Sciences”, or for the acquisition of the academic position “Assistant Professor”, and they are therefore accepted for participation in the competition.

2. Brief Biographical Data of the Candidate

Assist. Prof. Goynov obtained a Bachelor’s degree in Informatics from the Sofia University St. Kliment Ohridski in 2009. In 2011, he completed a Master’s degree programme in Informatics with a specialization in E-business and E-government at the same university. During the period 2011–2016, he was a PhD student in Informatics at IMI–BAS, where, following the successful defense of a doctoral dissertation devoted to interoperability between digital libraries for cultural heritage, he was awarded the educational and scientific degree “Doctor” in professional field 4.6 “Informatics and Computer Science”. His professional career at IMI–BAS began in 2006 as a programmer. In 2020, he was appointed to the position of “Assistant”, and since 2021, following a competition, he has held the position of “Assistant Professor”.

Dr. Goynov’s research interests focus on the fields of knowledge representation and processing technologies, the Semantic Web, data management and analysis, multimedia digital libraries and services, content management systems, as well as the development of tools for digital palaeography and serious educational games. His applied work is focused on the integration of modern technological approaches for the digitization, preservation, interoperability, and access to cultural, historical, and scientific content.

His professional experience includes participation in numerous research and applied projects related to the development of digital cultural heritage, intelligent information systems, and innovative educational technologies. He has made a significant contribution to the design and development of a number of open-access digital libraries and software platforms for leading scientific, educational, and cultural institutions in Bulgaria, including solutions for the management and presentation of large-scale data and knowledge. Dr. Goynov has completed specializations abroad in the fields of digital libraries, artificial intelligence, and digital palaeography.

In parallel with his academic activities, the candidate has substantial practical experience in the development and management of software systems in business environments, including in the banking sector, where he has been involved in the analysis, design, and implementation of complex information solutions.

3. General Characteristics of the Candidate’s Research Activity

The candidate in the competition has submitted a complete list of his scientific works, comprising 65 publications (including 2 book chapters), as well as a list of 179 citations to his work.

For participation in the competition, a total of 20 scientific publications and 2 book chapters have been submitted. Seven of the publications are in scientific journals, and 13 are in proceedings of international conferences. Of these publications, 17 are indexed in Scopus, 9 in Web of Science, and 2 in ACM. Fifteen of the publications appear in editions with an impact factor (IF – Web of Science) or an SCImago Journal Rank (SJR – Scopus). The list of citations submitted for the competition includes 22 citations to 13 of the candidate’s publications.

Assist. Prof. Goynov has provided a list of his participation in research and applied projects, in which, in my opinion, he has had a significant role and has achieved substantial results. The research projects are interdisciplinary in nature and are aimed at the development of innovative software platforms for the digitization and creative visualization of Bulgarian linguistic and cultural heritage, as well as serious educational games. Within the applied projects, he has participated in the development of digital libraries for the Supreme Court of Cassation, the Central Library of the Bulgarian Academy of Sciences, the National Library Ivan Vazov, as well as software platforms for the management of large-scale data and knowledge for the National Statistical Institute, Sofia University St. Kliment Ohridski, and others.

In the period 2020–2025, Assist. Prof. Goynov has participated, as an author or co-author, in 18 scientific forums.

Compliance with the Requirements for the Academic Position of Associate Professor

Pursuant to Art. 57a of the RILDASRB, candidates for the academic position of Associate Professor are assessed with regard to the fulfillment of the conditions under Art. 53 and in accordance with the information provided in the reports under Art. 54, para. 1. Furthermore, pursuant to Art. 1a, paras. 2 and 3 of the RILDASRB, research organizations may also define additional requirements for candidates for academic positions in their internal regulations. Such requirements are stipulated in the IMI–BAS Rules.

Upon examination of the submitted documents, it is established that Assist. Prof. Dr. M. Goynov meets the requirements of the above-mentioned regulatory acts. According to a certificate issued by IMI–BAS, as of 01.01.2026 Assist. Prof. Goynov has a total length of service within the BAS of 10 years, 7 months, and 9 days, of which 4 years, 10 months, and 9 days have been in the position of Assistant Professor, thereby confirming the fulfillment of the required professional experience.

With regard to the fulfillment of the minimum national requirements and the additional requirements of IMI–BAS under the groups of indicators for holding the academic position of Associate Professor in professional field 4.6 “Informatics and Computer Science” (pursuant to Art. 2b, paras. 2 and 3 of the LDASRB), the following general conclusions can be drawn:

- For **Group A** of the minimum national requirements, the candidate has submitted Diploma No. 000823/14.12.2016, issued by IMI–BAS, certifying the successful defense of a doctoral dissertation entitled “Interoperability between Digital Libraries for Cultural Heritage” for the award of the educational and scientific degree “Doctor”.
- For **Group B** (Indicator B4: Habilitation thesis – scientific publications in journals that are refereed and indexed in internationally recognized databases of scientific information, such as Web of Science, Scopus, Zentralblatt, MathSciNet, ACM Digital Library, IEEE Xplore, and AIS eLibrary), 5 publications have been submitted, of which 4 are indexed in Scopus and have an SJR, and 1 is indexed in Web of Science with an IF, in quartile Q3.
- For **Group G**, under Indicator G7. Scientific publications in journals that are refereed and indexed in internationally recognized databases of scientific information (Web of Science and Scopus), outside the habilitation thesis, a total of 15 publications have been submitted. Of these, 8 are indexed in Web of Science (3 with an IF), and 12 are indexed in Scopus (9

with SJR). Among these publications, one is in quartile Q3 and one is in quartile Q4. Under Indicator G8. Published book chapter or chapter in an edited monograph, 2 book chapters have been submitted.

- For **Group D**, a list of 22 citations (excluding self-citations) in Web of Science and/or Scopus for the period 2019–2025 has been provided, referring to 13 publications of the candidate.
- For **Group E**, the requirements are fulfilled under Indicator E14, through participation in 5 national research and educational projects.

The conducted analysis demonstrates that the candidate fulfills the minimum national requirements, as well as the minimum requirements of IMI–BAS across the respective groups of indicators, as shown in the following table:

<i>Group of Indicators</i>	<i>Indicator</i>	<i>Compliance with IMI–BAS Minimum Requirements</i>		<i>Compliance with National Minimum Requirements</i>	
		<i>IMI–BAS Requirements</i>	<i>Assist. Prof. Dr. Maxim Goynov</i>	<i>National Requirements</i>	<i>Assist. Prof. Dr. Maxim Goynov</i>
A	Indicator 1	50	50	50	50
B	Indicator 4	100	110	100	165
Г	Indicators 7 and 8	220	296	200	429
Д	Indicator 11	70	132	50	176
E	Indicator 14	20	50	-	50

Pursuant to Art. 3, para. 1, point (3) of the IMI–BAS Rules, a candidate for the academic position of Associate Professor is required to have at least 7 publications in editions with an IF or SJR. From the list of publications submitted for participation in the competition, 15 publications meet this requirement – numbered [1–5, 10, 12–20]. Four of them have an IF, and 14 have an SJR.

Another specific requirement, stipulated in Art. 3, para. 3 of the IMI–BAS Rules, states that at least half of the submitted publications must have been published or accepted for publication after the date of the most recent procedure for acquiring the educational and scientific degree “Doctor”, the scientific degree “Doctor of Sciences”, or for holding an academic position. This condition is satisfied by 17 of the 22 publications submitted for participation in the competition – numbered [1–5, 10–20, 22].

Based on the presented evidence, it can be reasonably concluded that the candidate, Assis. Prof. Dr. Maxim Goynov, not only fully meets but also exceeds the minimum national requirements under the relevant indicators for holding the academic position of Associate Professor in professional field 4.6 “Informatics and Computer Science”, as well as the additional requirements of IMI–BAS.

In the major international scientific databases, Dr. Goynov is represented as follows:

- Scopus – 42 indexed documents, 120 citations, h-index: 6;
- Web of Science – 24 indexed documents, 45 citations, h-index: 4.

Identification of the Candidate's Research Contributions

The candidate's scientific works can be classified into three main areas:

- I. Architectures and technologies for digital libraries (13 publications).
- II. Technologies for the development of digital palaeography (4 publications).
- III. E-learning systems and serious educational games (5 publications).

A substantial part of these developments has been validated within 5 research projects and is related to the implementation of systems deployed in Bulgaria for the management of digital cultural content and digital educational products.

The scientific works presented in the ***first area, "Architectures and technologies for digital libraries"***, outline a clearly defined and consistently developed line of research in the field of digital libraries, digital cultural ecosystems, and the intelligent management and presentation of cultural content. The main contributions can be systematized as follows:

Scientific Contributions

- A flexible and extensible semantic metadata model has been developed, enabling the description of complex, heterogeneous cultural objects through nested structures and multi-layered relationships [3, 14].
- Conceptual models have been formulated for the construction and development of digital cultural ecosystems in alignment with European initiatives (e.g., DARIAH), including priorities related to interoperability and open access [7].
- A methodological framework has been proposed for the automated synthesis, integration, and adaptive presentation of digital content, based on the analysis of user behavior and context [9, 21].
- Concepts have been developed for personalized learning in virtual museums and for transforming digital archives into adaptive, intelligent educational environments [8, 9].

Scientific and Applied Contributions

- Architectures of digital libraries and platforms have been developed, featuring advanced functionalities for intelligent search, curation, and management of multimedia content [3, 11, 14].
- Analytical modules have been developed for studying user behavior and usability, based on modern data processing and visualization technologies [19].
- Models and approaches for interoperability among digital libraries have been proposed, including mechanisms for unified authentication and integration of distributed resources [6].
- Innovative approaches have been proposed for generating 3D models from 2D images using accessible software tools and algorithms from the fields of computer vision and artificial intelligence [4].
- Technologies such as augmented reality (AR), geospatial services, and mobile applications have been integrated for context-aware presentation of cultural content [17, 20, 5].

Applied Contributions

- The CultIS platform has been developed and implemented as a scalable web-based system for the management, storage, and presentation of digital cultural heritage [3, 14].
- Digital libraries have been implemented with full-text search capabilities and efficient management of multilingual scientific collections, including the digitization of significant archives (e.g., collections of the BAS) [11].
- Mobile applications have been developed to support interactive learning and access to cultural content on-site and in real time [5, 17, 20].
- Tools for personalized learning and intelligent knowledge discovery have been developed and are used by students, educators, and researchers [5, 8, 9].

The works in the *second area*, “**Technologies for the development of digital palaeography**”, establish a research line focused on the formalization, digitization, and intelligent analysis of medieval South Slavic manuscripts. The contributions can be summarized as follows:

Scientific Contributions

- A formal descriptive model has been developed for the palaeographic analysis of manuscripts, structuring information into categories such as identification, physical description, and palaeography [2, 10].
- Models have been developed for representing the relationships between manuscripts, scribes, and scriptoria, supporting the reconstruction of historical dependencies and cultural processes [10, 13].

Scientific and Applied Contributions

- Flexible, normalized data models have been developed for the construction of digital palaeographic knowledge bases, enabling extensibility and integration [10, 13].
- Technological frameworks and software environments have been developed for the structuring, processing, management, and visualization of palaeographic data [12, 13].
- Methods have been proposed for intelligent search, context-based information retrieval, and curation of manuscript data [12].

Applied Contributions

- An open-access online database of 14th-century South Slavic manuscripts has been developed, providing centralized, searchable information for researchers [10].
- A web-based digital repertorium has been implemented as a specialized research environment for palaeography, including functionalities for advanced search, intelligent curation, and data analysis [12, 13].

The *third area*, “**E-learning systems and serious educational games**”, encompasses a research approach that integrates pedagogical models, digital technologies, and innovative software solutions aimed at enhancing the effectiveness of e-learning. The contributions can be summarized as follows:

Scientific Contributions

- An integrated model has been proposed, combining serious educational games and digital storytelling for learning in the field of cultural heritage [22, 1].
- Methodological frameworks have been formulated for the design of game-based learning experiences, including in the context of environmental education [16].
- Concepts have been developed for learning through interactive environments (VR/3D), supporting the understanding of complex historical and environmental processes [1, 16].

Scientific and Applied Contributions

- Architectures and software platforms have been developed for the creation of serious educational games with a modular and adaptive design [18, 15].
- Models have been developed for defining and managing game scenarios, objects, and learning content, enabling reusability and flexible configuration [15, 18].
- Approaches have been developed for the integration of 3D visualization, virtual reality, and interactive elements into educational games [1, 16].

Applied Contributions

- The serious educational game “Aquae Calidae” has been developed, implementing interactive learning through 3D reconstruction and game-based scenarios [1].
- The ProNature platform has been developed for the creation of educational games focused on environmental education and sustainable development [18, 15].
- Editors and web portals have been implemented for the creation and management of educational games with minimal programming requirements [22, 15].
- Demonstration and training scenarios have been developed to support knowledge acquisition in the fields of history and ecology [18, 16].

Based on the overall assessment of Dr. Goynov’s scientific and applied contributions, it can be concluded that these contributions are original and significant for both science and practice. Their impact is further evidenced by the numerous and authoritative citations. The contributions are either the result of the candidate’s independent work or of collaborative research with his participation, and they possess substantial academic value for the development of the scientific specialty of the competition – Systems for Management of Digital Cultural Content and E-learning.

No plagiarism has been established, in accordance with the legally prescribed procedures, in the scientific works and contributions submitted by Assist. Prof. Dr. M. Goynov for participation in the competition.

4. Critical Remarks and Recommendations

The candidate’s scientific output is of indisputable quality and demonstrates consistent research activity. At the same time, several recommendations may be made with a view to the further development of his research work.

It would be beneficial for the candidate to direct part of his future publications toward editions with higher international prestige and impact factor, which would contribute to increasing the visibility and impact of his research results.

Furthermore, strengthening participation in international research collaborations and projects would create additional opportunities for expanding scientific networks and for wider dissemination of Dr. Goynov's research outcomes.

The above remarks are of a recommendatory nature and do not diminish the overall positive evaluation of the candidate's scientific activity.

5. Personal Impressions

I do not have personal acquaintance with the candidate and have no direct observations of his professional and research activity beyond the materials submitted for the competition. My assessment is based entirely on the provided documentation.

Based on this documentation, it can be concluded that Assist. Prof. Dr. Goynov demonstrates a high level of professional qualification, consistency, and sustainability in his research activity, as well as clearly defined scientific interests in the respective field.

In my opinion, he is an established and well-developed researcher, well oriented in the current state of research in his field. This impression is further supported by the citation record of his scientific publications.

CONCLUSION

The documents and materials submitted by Assist. Prof. Dr. M. Goynov comply with all requirements of the LDASRB, the RILDASRB, and the IMI-BAS Rules. He has presented a sufficient number of scientific works beyond those used for the acquisition of the educational and scientific degree "Doctor" and for holding the academic position of "Assistant Professor".

The results achieved by Dr. M. Goynov in his research activity fully meet the minimum national requirements as well as the additional requirements of IMI-BAS, adopted in accordance with the IMI-BAS Rules for the implementation of the LDASRB. His theoretical developments have practical applicability. The scientific qualification of Dr. M. Goynov is beyond doubt.

Having familiarized myself with the materials and scientific works submitted in the competition, and in view of the analysis of their significance and the scientific and applied contributions contained therein, I find it justified to give my **positive evaluation** and to recommend that the Scientific Jury prepare a report-proposal to the Scientific Council of IMI-BAS for the election of Dr. Maxim Krasimirov Goynov to the academic position of Associate Professor at IMI-BAS in: field of higher education 4. Natural Sciences, Mathematics and Informatics, professional field 4.6 Informatics and Computer Science, scientific specialty "Informatics" (Systems for Management of Digital Cultural Content and E-learning).

24 March 2026

Reviewer:

Prof. Dr. Stanka Hadzhikoleva