

REVIEW

by Prof. Dr. Radoslav Dimov Pavlov,

Institute of Mathematics and Informatics, Bulgarian Academy of Sciences

for the competition for the academic position of “Professor”

at the Institute of Mathematics and Informatics, 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” (Cognitive Models and Artificial Intelligence for Multimodal Data)

The competition for the academic position of “Professor” was announced in the State Gazette, No. 54 of 12 June 2026, and on the website of the Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences.

Documents for participation in the announced competition were submitted by a **sole candidate**: Assoc. Prof. Dr. Alexander Iliev Iliev from the Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences.

1. General presentation of the materials received

By Order No. 78 of 10 August 2026 of the Director of the Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences (IMI–BAS), I was appointed a member of the Scientific Jury for the competition for the academic position of “**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” (Cognitive Models and Artificial Intelligence for Multimodal Data), for the needs of the Mathematical Linguistics section at IMI–BAS. At the first meeting of the Scientific Jury on 14 August 2026 (Minutes No. 1), I was appointed reviewer for the procedure.

The set of materials submitted by Assoc. Prof. Dr. Alexander Iliev **complies** with Art. 9, para. 1 of the Regulations on the Terms and Conditions for Acquiring Scientific Degrees and Holding Academic Positions at IMI–BAS (the IMI Regulations), and all required documents are included, as follows:

- Application for admission to the competition;
- Curriculum vitae in the European format;
- Diplomas for higher education with the educational and qualification degree “Master”;
- Diplomas for the educational and scientific degree “Doctor”;
- General list of scientific works;
- List of publications submitted for the competition;
- Summary of the original scientific contributions in the works submitted for the competition;
- Abstracts of the publications submitted for the competition in Bulgarian and English;

- Copies of the scientific works submitted for the competition;
- General list of citations;
- List of citations submitted for the competition;
- State Gazette issue with the announcement of the competition;
- Certificate of professional experience in the specialty, as required under Art. 29, para. 1, item 2 of the Law on the Development of the Academic Staff in the Republic of Bulgaria (LDASRB), issued by IMI–BAS;
- Certificate of the academic position of “Associate Professor”;
- Documents and summaries of other activities;
- Standard-form summary of the fulfilment of the minimum national requirements under Art. 2b, paras. 2 and 3, and of the requirements under Art. 2b, para. 5 of the LDASRB, as well as of the minimum requirements of IMI–BAS (Annex 2.1);
- Standard-form declaration (Annex 3.1);
- Declaration of consent for the storage and processing of personal data (Annex 4.2).

2. Details of the application and compliance with the requirements

Candidate details

Assoc. Prof. Dr. Alexander Iliev completed his higher education at the University of Mining and Geology “St. Ivan Rilski” – Sofia in 1996, with a qualification of Master of Electrical Engineering. In 1996 he obtained a second specialty, “Multimedia Technologies”, from the Technical University – Sofia. Assoc. Prof. Dr. Alexander Iliev obtained a master’s degree in sound engineering from the University of Miami, Florida, in 1999. In 2009 he successfully defended a doctoral dissertation at the University of Miami, Florida, Department of Electrical and Computer Engineering, on the topic “Emotion Recognition Using Voice and Prosodic Parameters”, for which he submitted a *diploma for the educational and scientific degree “Doctor of Philosophy”, issued by the University of Miami, Florida, USA, on 17 December 2009, and diploma No. 000037 for recognition of the educational and scientific degree “Doctor”, issued by the Institute of Mathematics and Informatics at BAS on 22 June 2015. Assoc. Prof. Dr. Alexander Iliev meets the conditions of Art. 29, para. 1, item 1 of the LDASRB.*

Assoc. Prof. Dr. Alexander Iliev meets the conditions of Art. 29, para. 1, item 2 of the LDASRB, according to official letter No. 984 of 4 August 2026 from the Director, Corr. Member Prof. DSc P. Boyvalenkov: as of 1 August 2026, Assoc. Prof. Dr. Alexander Iliev has a total of 11 (eleven) years, 3 (three) months and 9 (nine) days of work experience, of which 8 (eight) years and 8 (eight) months as “Associate Professor” at IMI–BAS.

Details of the submitted materials

For participation in the competition, the candidate Assoc. Prof. Dr. Alexander Iliev, *in accordance with Art. 29, para. 1, items 3 and 4 of the LDASRB*, has submitted:

- two single-author monographs;
- one book chapter;
- 23 publications in scientific journals and in proceedings of international conferences. Of these, *18 have an impact factor (IF) in Web of Science and/or an impact rank (SJR) in Scopus, and 5 are indexed in Web of Science, Scopus and/or the ACM Digital Library;*
- one utility model;
- four textbooks.

Accepted for consideration are 26 scientific works, one utility model and four textbooks, which fall within the topic of the competition and meet the minimum national requirements under Art. 2b, paras. 2, 3 and 5 of the LDASRB.

The submitted materials have been analysed as follows:

- **Compliance with the minimum national requirements and the additional requirements of BAS and IMI-BAS by groups of indicators, as defined in the IMI Regulations, for holding the academic position of “Professor” in professional field 4.6: *the minimum national requirements, as well as the additional requirements of IMI-BAS by groups of indicators set out in Annex 2.1, have been exceeded:* 16. Summary of the fulfilment of the minimum requirements by a candidate in a competition for the academic position of “Professor” at IMI-BAS. See the following table:**

□ Indicator group	Candidate's points per indicator	Minimum requirements of the IMI Regulations	Minimum national requirements
A	50 pts.	50 pts.	50 pts.
B, item 4	130 pts.	100 pts.	100 pts.
G, items 5, 7, 8 and 9	444 pts.	220 pts.	200 pts.
D, item 11	186 pts.	140 pts.	100 pts.
E, items 14, 15 and 19	280 pts.	150 pts.	100 pts.

- Fulfilment of the requirement that candidates “have submitted a published monographic work or equivalent publications in specialised scientific journals that do not repeat those submitted for the acquisition of the educational and scientific degree ‘Doctor’, the scientific degree ‘Doctor of Sciences’ and for holding the academic position ‘Associate Professor’”: *under the present procedure, two monographs, one book chapter and 23 publications (A total of 26 pieces) have been submitted, which have not been used in previous procedures.*

For the two monographs submitted for the competition, the requirements of § 1, item 10 of the Supplementary Provisions of the LDASRB for a “monograph” have been met, namely, for a “*published scientific edition containing a complete or comprehensive study of a particular subject, problem or person, written by one or several authors adhering to the same view*”. In addition, the submitted monographs *do not repeat or summarise existing knowledge, and each has two scientific editors and two scientific reviewers* (hand-signed reviews from each reviewer are attached), *have an ISBN and a length of no less than 100 standard pages of 1,800 characters per page* (292 pages and 164 pages,

respectively); *they contain a detailed table of contents and a comprehensive bibliography, and the text includes references to other scientific works.*

I have not found any requirement for a special academic status of the publisher of monographs submitted in a procedure for the academic position of “Professor” in the LDASRB, the Regulations for the Implementation of the LDASRB (RILDASRB), the BAS Regulations and the IMI Regulations, and in this sense the publishing house LAP Lambert Academic

Publishing fully meets the requirements.

- Fulfilment of Art. 29, para. 1, item 6 of the LDASRB: *no plagiarism or falsification of scientific data in the candidate’s scientific works has been proven in the manner prescribed by law.*
- **Fulfilment of the additional specific requirements of IMI–BAS for candidates for the academic position of “Professor”, pursuant to Art. 3 of the IMI Regulations: *fully meets these requirements (see the following table).***

Requirements for the publications submitted for the competition	Submitted by the candidate	Minimum required
- to be in journals indexed in Web of Science or Scopus; to be in journals with IF or SJR (PF 4.6)	18 pcs.	12 pcs.
- at least half of the submitted scientific publications must have been published or accepted for publication after the date of the last of the procedures for acquiring the educational and scientific degree “Doctor” (PhD), the scientific degree “Doctor of Sciences”, or for holding an academic position.	25 pcs.	13 pcs.

3. General characterisation of the candidate’s activities and achievements presented in the competition materials

Assessment of the candidate’s scientific and applied-scientific activity

The analysis of the scientific works submitted by Assoc. Prof. Dr. Alexander Iliev for participation in the competition shows that they can be classified as follows:

- by type (monographs – 2, book chapters – 1, articles in refereed periodicals – 18; papers in proceedings of international conferences – 5, university textbooks – 4),
- by significance (*3 articles are in journals with an impact factor (IF) and an impact rank (SJR), and 15 are in journals with an impact rank (SJR) only*),
- by language in which they are written (English) – 30,
- by number of co-authors: single-authored – 9; with one co-author – 15; with two co-authors – 3; with four or more co-authors – 3.
- *one scientific publication is in quartile Q1, one in quartile Q2 and one in quartile Q4 in Web of Science.*
- In 14 of the scientific publications submitted for the competition, Assoc. Prof. Dr. Alexander Iliev is the first author.

A large part of the submitted scientific publications are co-authored, but I have no doubt about the candidate’s personal participation and contribution to the submitted works.

Seven participations of the candidate in research and educational projects are presented – 5 *international and 2 national projects* (for the projects external to IMI–BAS, a reference letter from Prof. Dr. Rumen Nikolov is attached regarding the participation of Assoc. Prof. Dr. Alexander Iliev in international research projects under his leadership) – and participation in the *development of utility model No. 5104 U1 / 29 August 2025 “Computer-implemented system for big data processing”, registered with the Patent Office of the Republic of Bulgaria.*

Assoc. Prof. Dr. Alexander Iliev also demonstrates broad academic involvement in the scientific community through participation in the editorial boards of international scientific journals; membership of programme committees and organisation of scientific forums related to artificial intelligence, machine learning and digital ecosystems, as well as participation in the Attestation Committee of IMI–BAS.

Contributions (scientific, applied-scientific, applied) and citations

According to 7. Summary of the original scientific contributions in the works of Assoc. Prof. Dr. Alexander Iliev in connection with participation in the competition, the contributions can be classified into *three thematic areas*:

- 1) Research and development of methodologies and algorithms related to the automation of the processes for identifying the emotional charge in speech;
- 2) Scientific developments in the field of intelligent (smart) ecosystems through the use of artificial intelligence (AI) and large language models (LLM);
- 3) Research and creation of new models in the field of financial and pricing factors with direct practical applications.

The main scientific contributions of the candidate are the following:

- New methods have been developed for recognition, selection and recommendation of content based on emotions in speech and text. They include a system for selecting media content by emotional signals, a hybrid recommender system overcoming the “cold start” problem, a regression model for predicting numerical intervals from text, and classification of acoustic events [1, 7, 10, 11].
- A systematisation and comparative analysis of approaches to emotion recognition from speech have been carried out [G].
- A cross-cultural study of emotions in speech (with CNN and MFCC) for three and four languages has been conducted, and a context-independent mood detection system has been proposed [3, 4, 8].
- A unified conceptual framework and a multi-criteria model for the evaluation of generative AI systems have been created, together with an experimental methodology for comparing AI platforms on identical machine-learning tasks [A, B].
- Conceptual models for multimedia automation (DSP + ML) in intelligent ecosystems and smart cities have been proposed [5, 6], as well as a model for the secure use of RAG systems with personal data protection [23].

- Methods and analyses for DeepFake detection have been developed (CNN, transfer learning with ResNet50, Explainable AI), and the technologies for creating DeepFakes and the methods for their recognition have been systematised [17, 18, 19, 21].
- A framework for detecting and limiting bias in code generated by large language models (LLM) has been proposed [14].

The main applied-scientific contributions of the candidate are the following:

- A hybrid Big Data architecture model combining the Lambda and Kappa approaches [16].
- A service-oriented architecture providing personalised access to digital cultural resources [2].
- An AI framework for the perception of autonomous vehicles, covering object detection, semantic segmentation, pedestrian recognition and traffic sign classification [15].
- Models for predicting the risk of diabetes and stroke [22].
- Models for predicting real-estate and cryptocurrency prices [9, 20].
- An approach for anticipating and reducing product returns by customers on online platforms [13].

The significant applied contributions of the candidate include:

- A system for detecting fake customer reviews on Amazon, increasing the reliability of ratings for products and sellers [12].
- A computer-implemented system for big data processing, protected by a registered utility model [H].
- Teaching frameworks in artificial intelligence and machine learning that connect theory, mathematical models and experimental evaluation [C, D, E, F].

It should be noted that the candidate's key scientific, applied-scientific and applied contributions lie in an extremely dynamically developing and interdisciplinary scientific field with significant social impact. These studies are fully in line with the priorities of contemporary international scientific research in the field of artificial intelligence and its applications.

The significance of the candidate's research results is also evidenced by their reception in the international scientific community. Assoc. Prof. Dr. Alexander Iliev has presented a list of 38 noted citations of 10 of his scientific works, all in the world scientific databases (Scopus and/or Web of Science). The citations are predominantly by foreign authors and authors unrelated to the candidate. After checking the current registration of the academic position of "Associate Professor" of Assoc. Prof. Dr. Alexander Iliev in the National Centre for Information and Documentation (NACID), it is noted that seven citations – Zeng W. (2012), Nishimura R. (2012), Li C., Hu R., Zeng W. (2011), Wang L., Emmanuel S., Kankanhalli M.S. (2010), Nishimura R. (2009), Liu Y.-W. (2007) and Feng T., Han J.-Q. (2006) – of the publication He, X., Iliev, A.I., Scordilis, M.S. (2004) from the list of noted citations for the present competition are also present in the list of noted citations of the candidate's scientific works in the previous competition for "Associate Professor" in 2017. They cannot be counted in the present competition according to the Notes in the Annex to Art. 1a,

para. 1 of the RILDASRB, i.e. *31 citations are recognised for the present procedure* or **186 pts.** under Group D. *Nevertheless, even without these seven citations, the candidate significantly exceeds the minimum national requirements (100 points) and the additional requirements of IMI–BAS (140 points) for the number of points under indicator D.*

The analysis of the contributions and of the scientific and applied-scientific activity of the candidate Assoc. Prof. Dr. Alexander Iliev shows that he is an established scientist with significant scientific achievements and a serious presence in the international scientific community. This allows the conclusion that the candidate fully meets the requirements for a leading researcher in professional field 4.6 Informatics and Computer Science and, in particular, in the topical and dynamic scientific area of cognitive modelling and the application of artificial intelligence to multimodal data.

Assessment of the teaching activity

The teaching experience of Assoc. Prof. Dr. Alexander Iliev spans more than twenty years in the USA, Germany and Spain. He currently holds the position of “Professor” and “Academic Director” of the master’s programme “Big Data and Artificial Intelligence” at SRH University of Applied Sciences (Germany), where he is responsible for the academic development of the programme and the curricula and teaches the following courses in the field of artificial intelligence: Machine Learning, AI Use Cases, Python Programming for AI and Scientific Work. Since 2012 he has been a lead mentor at University of California, Berkeley Extension, where he develops and teaches the following courses in the field of artificial intelligence: Machine Learning, Deep Learning, Data Science, Python for Scientific Computing, TensorFlow and Applied Machine Learning. He has also taught at the University of Wisconsin, the University of Miami and others. For the needs of the students at SRH University of Applied Sciences, Assoc. Prof. Dr. Alexander Iliev *has published four university textbooks. For these textbooks, two hand-signed letters from Prof. Dr. Michael Hartmann, Academic Director and Dean of the School of Technology and Architecture at SRH University of Applied Sciences, are attached, certifying their use in the master’s programme “Big Data and Artificial Intelligence” in the course “Machine Learning”.* Assoc. Prof. Dr. Alexander Iliev also actively participates in the academic development of students and the improvement of the quality of their education; he has supervised a large number of master’s students. I give a high assessment of the teaching activity of Assoc. Prof. Dr. Alexander Iliev from an international perspective.

4. Critical remarks and recommendations

I have no critical remarks on the materials submitted by the candidate. I recommend that Assoc. Prof. Dr. Alexander Iliev, with his significant research and teaching experience, become more actively involved in the national research network on artificial intelligence, which is a priority for Bulgaria in the coming years.

CONCLUSION

The documents and materials submitted by Assoc. Prof. Dr. Alexander Iliev Iliev **fully meet all the requirements** of the Law on the Development of the Academic Staff in the Republic of Bulgaria, the RILDASRB and the relevant Regulations of BAS and IMI–BAS for the announced procedure. **I categorically give my positive** assessment and **recommend** that the Scientific Jury prepare a report-proposal to the Scientific Council of the Institute of Mathematics and Informatics at BAS for the election of Assoc. Prof. Dr. Alexander Iliev Iliev to the academic position of “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” (Cognitive Models and Artificial Intelligence for Multimodal Data).

15.10.2026

Reviewer:

(Prof. Dr. Radoslav Pavlov)