OPINION
for a competition for the academic position
"Associate Professor"

in the field of higher education:	4. Natural Sciences, Mathematics and Informatics
professional field:	4.6. Informatics and Computer Science
scientific speciality:	"Informatics" (Adaptive Educational Software Systems)
published in:	State Gazette no. 63 / 10.07.2026 and on the IMI website
for the needs of:	Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences (IMI-BAS)
prepared by:	Prof. Dr. Adelina Plamenova Aleksieva-Petrova
member of the scientific jury of the competition, according to:	Order No. 88 / 08.09.2026 of the Director of IMI-BAS

Only one candidate has submitted documents for participation in the announced competition:

Dr. Dessislava Dakova Vassileva

I. General Description of the Submitted Materials

1. Application Details

The candidate, Dr. Desislava Dakova Vasileva, has submitted for participation in the competition a set of documents that includes a list of scientific works, inventions and other scientific-applied results, a list of citations, a statement of original scientific contributions, and a statement of compliance with the minimum national requirements. The information presented outlines a consistent scientific development in the field of adaptive e-learning systems, serious games, and personalization of the learning process.

The competition includes 22 scientific publications and 2 registered utility models from the period 2009–2026. The publications comprise four articles in scientific journals and 18 papers and chapters in proceedings of international conferences. According to the submitted statement, 21 publications are indexed in Web of Science and/or Scopus, and one in MathSciNet. Two publications have an impact factor, and a total of 14 have an IF or SJR. Three of the submitted publications are single-authored, and the candidate is the first author of six. A total of 25 citations (excluding self-citations) of 9 of the publications are presented, all in editions refereed and indexed in Scopus and/or Web of Science.

According to the submitted statement, the candidate meets the minimum national requirements and the additional requirements of IMI-BAS for the academic position "Associate Professor" in indicator groups A, C, D and E.

2. Content Analysis of the Applicant's Scientific and Scientific-Applied Achievements Contained in the Materials for Participation in the Competition

The scientific output can be grouped into three interrelated areas: adaptive educational systems and e-learning; adaptation according to emotional state and behavioural patterns; and game-based learning and serious educational games. The two utility models complement these areas with tools for measuring physiological indicators related to emotional arousal.

I consider the main scientific contributions to be the formalization of an adaptive hypermedia system through predicate logic and three types of adaptive rules, the two-layer hierarchical model extending AHAM, and the algorithm for selecting an optimal learning path based on learning styles. A family of four playing styles is proposed, linked to experiential learning theory and accompanied by a questionnaire for measuring them. The systematic review of 246 publications following PRISMA summarizes and systematizes the adaptation mechanisms in educational video games.

The scientific-applied results include methods for adaptive assessment, construction of narrative graphs, semantic modelling of learning content, the architecture and formal model of the APOGEE platform, as well as mechanisms for adaptation according to emotional state and performance. Of particular significance is the experimental evaluation of the ADOPTA platform with 84 students, in which mean scores of 77.89% for ADOPTA versus 67.14% for Moodle were recorded. Approaches for real-time recognition of patterns in the learning curve, as well as virtual players with conversational agents and adaptive emotional behaviour, have also been developed.

The practical significance is evident in the ADOPTA and APOGEE platforms, in the educational games developed on topics of cultural heritage, entrepreneurship and social attitudes, and in the two utility models for measuring skin conductance. The achievements demonstrate a link between theoretical models, software implementation and empirical evaluation.

The habilitation work is presented through four publications in the field of adaptive educational video games, assessed in the statement at 130 points. They include publications in Computers in Human Behavior (Q1) and Applied Sciences (Q2). According to the submitted statement, the following points are reported by indicator group: A – 50 points (minimum 50); C – 130 (minimum 100); D – 346 (minimum 220); E – 150 (minimum 70); F – 170 (minimum 20), for a total of 846 points. The additional IMI requirements for publications with IF/SJR are also stated as fulfilled: 14 against a required minimum of 7, of which 11 after obtaining the educational and scientific degree “Doctor”.

3. Evaluation of Projects Work and Other Activities

The submitted publications result from participation in national and international research projects: MOTIVATE (KP-06-N85/2, Bulgarian National Science Fund (BNSF), 2024–2028), APOGEE (DN12/7, BNSF, 2017–2021), RAGE (H2020, No. 644187, European Commission, 2015–2018), E-Creha (Erasmus+, 2020–2023) and Heritage BG (OP “Science and Education for Smart Growth”, 2020–2022). Participation in the Horizon 2020 Framework Programme and in BNSF projects shows that the candidate is integrated into international research networks. The applicability of the results is confirmed by the developed ADOPTA and APOGEE platforms, by the educational games implemented in teaching, and by the two utility models.

The candidate also has teaching experience as a part-time assistant at the Faculty of Mathematics and Informatics of Sofia University, in the courses “Modern Markup Languages”, “Java Programming” and “XML Technologies and Semantic Web”. The research experience

described in the materials exceeds seven years at the Research Sector of Sofia University and the Centre of Excellence “Heritage BG”. The professional profile is complemented by many years of experience in the software industry, including as a senior software engineer, membership in programme committees of international conferences, and reviewing activity. Awards for a scientific publication and for an e-learning platform are also noted.

4. Recommendations

For future research, I recommend continuing the systematic experimental validation of the adaptive game mechanisms with larger and more diverse groups of learners, as well as extending the comparative analysis of the results against contemporary educational platforms. Further publication of consolidated results in leading international journals would also be beneficial. These recommendations do not diminish my positive assessment.

5. Application Conclusion

Dr. Desislava Vasileva is an established researcher in the field of adaptive educational software systems with a clearly defined and consistent scientific profile. The submitted materials show sustained scientific development, thematic consistency, recognizable scientific and scientific-applied contributions, and real software implementations.

The publication activity, citations, project participation, and teaching and professional experience provide grounds for a positive assessment of the application. The application meets the requirements of the Act on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for its Implementation, and the Regulations of IMI-BAS for occupying the academic position “Associate Professor”.

II. General Conclusion

After getting acquainted with the materials and scientific works presented in the competition, analyzing their significance and the scientific, scientific-applied, and applied contributions contained in them, I find it reasonable to give my positive assessment and recommend that the Scientific Jury propose to the Scientific Council of the Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences to elect **Dr. Desislava Dakova Vasileva** to take the academic position “Associate Professor” in the field of higher education 4. Natural Sciences, Mathematics and Informatics, professional field 4.6. Informatics and Computer Science, scientific specialty “Informatics” (Adaptive Educational Software Systems).

Sofia Sign: ……

02.11.2026 (Prof. Dr. Adelina Aleksieva-Petrova)