

## REVIEW

by Dr. Vladimir Vassilev Monov, Professor  
at the Institute of Information and Communication Technologies - BAS  
of the materials submitted for participation in a competition  
for the academic position of "**Associate Professor**"  
**at the Plovdiv University "Paisii Hilendarski"**

in the field of higher education: 4. "*Natural Sciences, Mathematics and Informatics*",  
professional direction: 4.6. "*Informatics and Computer Sciences*"  
scientific specialty: "*Informatics - Databases*"

In the competition for "Associate Professor", announced in the State Gazette, issue 98 of 19.11.2024 and on the website of Plovdiv University "Paisii Hilendarski" for the needs of the Department of "Computer Systems" at the Faculty of Mathematics and Informatics, the candidate is Assistant Professor Dr. Georgi Nikolov Cholakov from the Department of "Computer Systems", Faculty of Mathematics and Informatics.

### 1. General presentation of the materials received

By order No. ПД-22-77 of 17.01.2025 of the Rector of Plovdiv University "Paisii Hilendarski" (PU) I have been appointed as a member of the scientific jury in a competition for the academic position of '**associate professor**' at PU in the field of higher education 4. "Natural Sciences, Mathematics and Informatics", professional direction 4.6. "Informatics and Computer Sciences", scientific specialty "Informatics - Databases", **announced for the needs of the Department of "Computer Systems"** at the Faculty of Mathematics and Informatics (FMI). By decision of the scientific jury at a meeting held on 23-24.01.2025, my participation in the work of the jury was determined with the preparation of a review of the submitted materials.

Only one candidate has submitted documents for participation in the announced competition: Assistant Professor Dr. Georgi Nikolov Cholakov from the Department of "Computer Systems", Faculty of Mathematics and Informatics of Plovdiv University "Paisii Hilendarski".

The set of materials presented by Assistant Professor Georgi Cholakov is in accordance with the Regulations for the development of the academic staff of the PU, and includes the following documents:

- application to the Rector for admission to participate in the competition;

- curriculum vitae in European format;
- diploma of higher education with an acquired educational and qualification degree "Master"
- diploma of an educational and scientific degree "Doctor"
- list of scientific works for participation in the competition;
- list of all scientific works;
- copies of scientific works for participation in the competition;
- list of citations;
- certificate of compliance with the minimum national and additional faculty requirements;
- annotations of scientific works in Bulgarian and English;
- self-assessment of contributions in Bulgarian and English;
- declaration of originality and authenticity of the attached documents;
- certificate of work experience;
- documents for academic work;
- documents for scientific research work.

To participate in the competition, the candidate Assist. Prof. Georgi Cholakov, has applied a total of 11 scientific papers, 1 monograph, 1 book on dissertation work and 1 educational textbook on databases. A list of the noted citations is presented, as well as a list of all the candidate's scientific papers. 11 scientific publications and 1 monograph are accepted for review, which are outside the dissertation and 1 educational textbook, participation in research projects and the candidate's pedagogical activity are taken into account in the final assessment. The published book on the dissertation is not reviewed, which is also not included in the author's self-assessment of contributions. The distribution of scientific papers is as follows: 5 publications are in journals, of which 3 in English and 2 in Bulgarian and 6 publications in English are in the materials of international scientific conferences. Documents (references) for participation in research projects, classroom and extracurricular activities and work with students and graduates are also presented.

The submitted documents and scientific works of the candidate fully meet the requirements for admission to participate in the competition for the academic position of "associate professor", set out in the ZRASRB and the Additional Requirements of the FMI according to Art. 65. (3) of the PRAS of the PU.

## **2. Brief biographical data of the candidate**

Assistant Professor Dr. Georgi Cholakov obtained a master's degree in mathematics with a professional qualification as a mathematician and computer scientist at the FMI of the Paisii Hilendarski University in 1999. In 2013, the candidate defended his dissertation and received the educational and scientific degree "doctor" in the field of higher education 4. "Natural Sciences, Mathematics and Informatics", professional direction 4.6. "Informatics and Computer Science" at the FMI of the Paisii Hilendarski University. In the period 1999-2023, the candidate gained professional experience as a developer of software applications and technical project manager in Bulgarian high-tech companies. From 2005 to the present, he has successively held the positions of "assis-

tant" and "assistant professor " at the Paisii Hilendarski University, where he leads modern courses in the field of databases and Java programming with a theoretical and applied focus. According to the attached certificate of work experience, Assist. Prof. Georgi Cholakov has a total work experience of 19 years and 7 months, which is also teaching experience.

The professional biography of the candidate shows that he possesses the necessary qualifications and competence in the field of information and software technologies, teaching experience and scientific research activity, which meet the requirements for participation in the competition for the academic position of "associate professor".

## **2. General characteristics of the candidate's activities**

### **Teaching and pedagogical activities**

Teaching activities. In the Department of Computer Systems of the FMI, Assist. Prof. Dr. Georgi Cholakov teaches courses in the mandatory discipline "Databases" with an annual workload of 180 hours of lectures and 500 hours of exercises. The discipline is taught in the specialties "Software Engineering", "Software Technologies and Design", "Informatics" and "Business Information Technologies" to students in full-time and part-time study. In the master's programs, he teaches courses on databases (15 hours), a practicum in Java (30 hours) and programming for Oracle with PL/SQL (30 hours). In the process of teaching work, the candidate contributes to the work out and modern development of these courses. The extracurricular work of Assist. Prof. Georgi Cholakov includes setting of courseworks and homeworks for students, working with graduates, participating in scientific seminars, participating in state exam committees and thesis defenses, as well as two terms of participation in the faculty accreditation committee. The attached report on classroom and extracurricular employment shows the regular fulfillment and exceeding of regulatory requirements.

Teaching aids. For participation in the competition, an educational textbook "Databases" was submitted authored by Assist. Prof. Dr. Georgi Cholakov and Assist. Prof. Dr. Magdalena Veselinova, Publishing House of PU "Paisii Hilendarski", 2019, 133 pages. The textbook covers the basic principles and tools for working with relational databases using the SQL relational language standard. The teaching material is accompanied by numerous examples, tasks and illustrations for visualizing and perceiving the content. The textbook has been developed in accordance with the requirements and curriculum of the Faculty of Mathematics and Informatics, it contains valuable and useful material for students and fully corresponds to the topic of the competition.

Preparation of graduates. The attached reference on work with students and graduates shows that Assist. Prof. Dr. Georgi Cholakov has over 30 successfully defended graduates and more than

20 prepared reviews of theses. These data testify to the systematic and successful pedagogical activity of the candidate in the education of students and the preparation of graduates.

### **Scientific and scientific-applied activities**

Assist. Prof. Dr. Georgi Cholakov has submitted 11 scientific papers for participation in the competition, which were published in the period 2020-2024 and do not repeat the papers for acquiring the ONS "doctor" and the academic position "assistant professor". Two of the papers are self-authored, the remaining 9 are co-authored. 10 of the publications are in editions that are referenced and indexed in the WoS and/or Scopus databases, with 3 of them having IF of WoS and 1 with SJR rank of Scopus. A self-authored monograph, in Bulgarian, published by Plovdiv University Publishing House in 2024 in a volume of 113 pages, has been presented.

Contributions. The contributions in the works of Assist. Prof. Dr. Georgi Cholakov are of a scientific and scientifically applied nature and relate to three main areas.

- *Databases.* The presented works in this area contain contributions related to the development and use of relational and document databases, as well as knowledge bases in the form of ontologies with applications in the field of software engineering, smart agriculture and cultural and historical heritage. In publications [4,5] a system for extracting and storing metadata for language models used in the field of artificial intelligence has been developed. The author's contributions are contained in the construction of the database, the collection, processing and storage of data. Works [8,9] and the textbook [13] present analytical results, conclusions and approaches related to the training of students in the discipline of databases in the Distributed e-Learning Center DeLC (Distributed e-Learning Center). The candidate's contributions to the development of knowledge bases in the form of ontologies are contained in publications [2,6,7].

- *Agent-oriented architectures.* The monograph [12] presents the author's developments related to the creation of intelligent software components (agents) and the use of artificial intelligence in the DeLC portal. Agents have their own knowledge bases, which they use for decision-making, and this data is stored in relational databases. The expansion and improvement of knowledge bases, using large language models and integration with ChatGPT is presented in publications [1,3]. A specific contribution of the author is the improvement of software agents Evaluator and FraudDetector, as well as the creation of comparative analyses of their effectiveness before and after changes in them.

- *E-learning.* The author's contributions in this area are software developments, which are mainly intended for integration into the DeLC e-learning center. They are aimed at solving specific problems, such as supporting the learning process, assessing the acquired knowledge, updating the learning materials, as well as creating an individual profile of each student with the possibility of

offering educational materials and tests based on individual results. These developments are presented in the monograph [12], publications [1,3,4,5,10] and are well illustrated with examples and tasks in the textbook [13].

In summary, the candidate's contributions can be assessed as enriching existing knowledge, developing of new and improving known methods and approaches in the indicated areas.

Citations. Assist. Prof. Georgi Cholakov has presented a list with a total of 18 citations of his works, of which 11 are in prestigious publications, indexed and referenced in the databases of scientific information WoS, Scopus, Mathematical Reviews, etc. 13 are the citations of the works for participation in the competition. The noted citations are in publications by our and foreign authors and in content refer to significant results presented in the author's works. Thus, the main results in the candidate's scientific research activities have become known and have aroused interest in the scientific community in our country and abroad.

Other indicators of scientific and applied scientific activity. The references for scientific research activity and fulfillment of the additional requirements of the FMI show that the candidate has participated in 5 scientific research projects, of which 2 are international and 3 at the Ministry of Education and Science, and has presented 5 reports at scientific forums with international participation.

As a whole, the scientific and research activities of the candidate testify to a constant interest, in-depth knowledge and useful results obtained by the author in the field of databases and knowledge bases, the development of intelligent software components using artificial intelligence, as well as the application of these results in e-learning, work with students and training of graduates. In terms of quantitative indicators, the attached references for fulfilling the minimum national requirements and additional faculty requirements of the FMI show that the candidate has fulfilled and exceeded the regulatory requirements for occupying the academic position of "associate professor"

#### **4. Assessment of the candidate's personal contribution**

I do not personally know the candidate Assistant Professor Dr. Georgi Cholakov, and I have no direct impressions of his research and teaching activities. My acquaintance with the materials for the competition and the candidate's scientific works give me reason to assume that the declared scientific and applied scientific contributions are his personal work. I am not aware of any evidence of plagiarism in the submitted works.

#### **5. Critical remarks and recommendations**

I have no substantive remarks on the candidate's works and the results presented in them. I have the following remark on the preparation of the competition documentation. The reference for

the fulfillment of the minimum national requirements is not prepared in sufficient detail, as the specific number of points for each of the publications in indicator D7, as well as the specific number of points for each of the citations in indicator D11, are not shown. However, the verification made shows that the candidate exceeds the minimum required number of points for both indicators, in which case I accept that this remark is of a technical nature and does not affect the essence of the presented results.

### **CONCLUSION**

The documents and materials presented by Assist. Prof. Dr. Georgi Cholakov meet all the requirements of the Law for the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for its implementation and the corresponding Regulations of the PU "Paisii Hilendarski".

The candidate in the competition has presented a sufficient number of scientific works containing original scientific and applied contributions, which have received recognition both in our country and in the scientific community abroad. The theoretical developments made have practical applicability, as some of them are directly oriented towards educational work. The submitted competition materials undoubtedly demonstrate the high scientific and teaching qualifications of the candidate.

The results achieved by Assist. Prof. Dr. Georgi Cholakov in the educational and scientific research activities fully comply with the minimum national requirements and the additional requirements of FMI, adopted in connection with the Regulations of the University for the implementation of the Law for the Development of the Academic Staff in the Republic of Bulgaria.

After reviewing the materials and scientific papers submitted in the competition, analyzing their significance and the scientific and scientifically applied contributions contained therein, I give my positive assessment and recommend that the Scientific Jury prepare a report-proposal to the Faculty Council of the Faculty of Mathematics and Informatics for the election of Assistant Professor Dr. Georgi Cholakov to the academic position of "Associate Professor" at the "Paisii Hilendarski" University in the field of higher education 4. "Natural Sciences, Mathematics and Informatics", professional direction 4.6. "Informatics and Computer Science" ("Informatics - Databases").

02/17/2025

Reviewer: .....  
/Prof. Dr. Vladimir Monov/