# REVIEW

for Assoc. Prof. **Olga Ilieva Georgieva**, PhD

Competition for the academic position of **"Professor"** in professional direction 4.6 "Informatics and Computer Science" (Software Technologies - Data Mining).

**Reviewer: Acad. Ivan Petkov Popchev – BAS**

Pursuant to Art. 4 and Art. 29a of the Act of the Development of the Academic Personnel of the Republic of Bulgaria (ADAPRB), Art. 60 of the Rules for the Implementation of the ADAPRB, Art. 118 (1) and (3) of the Rules on the Terms and Requirements for Acquisition of Academic Degrees and Occupation of Academic Positions at Sofia University "St. Kliment Ohridski "and Decision of the Faculty Board of the FMI (Minutes No. 08 of 08.07.2019) with Order No. RD 38-523 / 28.08.2019 of Rector Prof. Anastas Gerdjikov, PhD, I have been appointed as a member of the Scientific Jury in competition for "professor" in the professional direction 4.6. Informatics and Computer Science (Software Technologies - Data Mining), announced in State Gazette no. 52 / 02.07.2019.

As a reviewer, I received all the documents submitted for the competition.

According to ADAPRB, RIADAPRB (Decree No. 26 of February 13, 2019) and the Regulations on the Terms and Requirements for Acquisition of Academic Degrees and Occupation of Academic Positions at Sofia University "St. Kliment Ohridski" the candidates for the professor shall meet certain requirements.

Art. 29. (1) Applicants for the occupation of the academic position of "professor" shall meet the following requirements:

1. Have acquired the educational and scientific degree "PhD";
2. Have held the academic position of Assistant Professor at the same or another higher education institution or scientific organization for at least two academic years ...;
3. Have submitted published monographs or equivalent publications in specialized scientific journals... that do not repeat those submitted for the degree of PhD, the Doctor of Science and the academic post of Associate Professor;
4. Have presented other original research works, publications, inventions and other scientific and applied developments or artistic achievements that are evaluated in aggregate.
5. Meet the minimum national requirements under Art. 26, par. 2 and 3, respectively, of the requirements of art. 26, par. 5;
6. Not to have plagiarism in scientific works proven by law.

(3) Applicants shall submit a report on the implementation of the minimum national requirements under Art. 26, par. 2 and 3, respectively, of the requirements of art. 26, par. 5, and a reference to the original scientific contributions to which the relevant proofs set out in this Act are attached, in the regulations for its implementation and the regulations of higher schools and scientific organizations.

According to the Rules and Procedure for Acquisition of Academic Degrees and Occupation of Academic Positions at Sofia University "St. Kliment Ohridski "in Section V are"

Terms and Requirements for Occupation of the Academic Position "Professor" of Art. 115 to Art. 124.

Assoc. Prof. O. Georgieva meets the requirements of Art. 29 (1) .1 as having submitted the Higher Attestation Commission for Candidate of Science in Engineering. 23752, Sofia, October 2, 1995.

Assoc. Prof. O. Georgieva meets the requirements of Art. 29 (1) .2 according to the presented servise note 170 / 08.07.2019, Head of Human Resources Department Maria Slavcheva in the assurance that she has a total length of service of 29 years 5 m. 7 days, which are in the specialty.

Assoc. Prof. O. Georgieva meets the requirements of Art. 29 (1) .3 as it has submitted 21 publications in specialized scientific journals which do not repeat publications submitted for the PhD and for the academic post of "associate professor".

According to the **List of Scientific Publications**, assoc. prof. O. Georgieva, PhD has 80 publications, of which 21 are participating in the competition.

The analysis of these competition publications shows the following:

- 4 publications are in **IF journals** (No. B3, B5, B6 and B8);
- 5 publications are in **journals or series with SJR** (No. B4, B9, B10, B12 and B15);
- 1 publication is in a journal (No. B7);
- 9 publications are in conference proceedings (NNo. B11, B13, B14, B16, B17, B18, B19, B20 and B21);
- 2 publications are **book chapters** (NNo. B1 and B2);
- **5 publications are standalone** (NNo. B2, B7, B18, B20 and B21).

**All publications are in English.**

The Scopus Citation List provided includes a total of 236 citations. Of the publications in the competition, 75 citations were submitted.

**Assoc. Prof. O. Georgieva, PhD meets the requirements of:**

- **Art. 29 (1) .4** having submitted other original research papers, publications, ... and other scientific and applied research - participations in 16 projects, of which 5 is a leader;
- **Art. 29 (1) .5** as it meets the minimum national requirements of art. 2 b, par. 2 and 3, respectively, of the requirements of art. 2 b, par. 5. It is presented under Art. 29 (3) reference (13 pages) on meeting the national minimum requirements. It is correct that the score points for indicator D be 600.
- **Art. 29 (1). 6** as there is no proven plagiarism in the scientific works according to the law.

According to Art. 29 (3) candidates submit a "**reference to the original scientific contributions**". Assoc. Prof. O. Georgieva has presented a "**Reference**" in a volume of 10 pages.

In brief, **contributions** can be presented as follows:

1. There are proposed Real-time data structure identification tools:
   - an online Gustafson-Kessel-Like algorithm for clustering data stream that has been verified for electroencephalogram (EEG) signals (B9);
   - evolving GK-Like clustering algorithm with Statistical Process Control [B1];

- software reliability growth dynamics model with fuzzy Takagi-Sugeno rules [B2];
- dynamic clustering algorithm with adaptive distance measure [B10].

2. There was developed a non-iterative clustering of data heuristic method for detecting of good (significant) clusters with the noise data separated into a noise cluster and was created a Dynamic Data Assigning Assessment (DDAA) algorithm adapted for real-time Evolving DDAA analysis [B3].
3. The recognition of human emotions was investigated by analyzing electroencephalogram (EEG) data when looking at emotionally charged pictures using standard clustering algorithms [B4, B13]. A framework for selection is proposed for a small number of event-related potential characteristics and six standard clustering algorithms have been compared to differentiate emotional valence [B5]. The possibility of distinguishing between age and individual differences in the processing of visual information has been explored [B11].
4. For Quality of Service (QoS) software selection:
   - subtractive clustering algorithm [B18] is adapted, and two additional indexes are offered for more accurate comparison of services [B20];
   - a method based on certain linear quality characteristics is proposed, considering the quality of service information [B7, B14, B16]. The method was implemented to select a case with web services [B16]. RecSS software tool [B15] was created;
   - a method and algorithm for integrated QoS assessment of web services with consideration of several quality features of the service is proposed [B17].

5. There are proposed specific models for:
   - evaluation of software reliability [B12];
   - recognition of the play style in educational games [B8];
   - determination of electricity consumption depending on the chemical composition [B6];
   - recognition of attention lapses [B19].

As a summary "**scientometric image**" of Assoc. Prof. Olga Georgieva, PhD the world's scientific bases show the following:
   - **Scopus**: 42 documents, 237 citations, h-index 8;
   - **Web of Science**: 29 total publications, 184 without self-citations, h-index 7;
   - **Scholar.google**: 491 citations, h-index 11, i10 - index 12.

The publication: Vernieuwe, H., O. Georgieva, B. De Baets, V.R.N. Pauwels, F.P.De Troch, N.E.C. Verhoest. Comparison of data-driven Takagi-Sugeno models of rainfall-discharge dynamics. - Journal of Hydrology, 302 (1 - 4), 173 - 186, Q1 (IF 2.69), 2005, has 144 citations in Scholar. Google, 99 in Scopus, and 90 in Web of Science.

The reviewer believes that elements of the "**scientometric image**" can be subject to self-examination and research guidelines.

Assoc. Prof. O. Georgieva, PhD has fulfilled all the requirements for occupying the academic position of "Professor" according to Section V, including Art. 122 (2).

# CONCLUSION

All requirements of ADAPRB, RIADAPRB and the Rules for the requirements and procedure for acquiring academic degrees and occupying academic positions at Sofia University "St. Kliment Ohridski" have been fulfilled and I give a definitive **positive** conclusion for the selection of Assoc. Prof. Olga Georgieva, PhD in the competition for the academic position of "Professor" in the professional direction 4.6 "Informatics and Computer Science" (Software Technologies - Data Mining)".

**I propose that the Scientific Jury unanimously vote on a proposal to the Faculty Board of FMI - Sofia to select Assoc. Prof. Olga Georgieva, PhD for the academic position of "Professor" in professional directions 4.6 " Informatics and Computer Science" (Software Technologies - Data Mining).**

4.10.2019 г.

Reviewer: ...................................

Akad. Ivan Popchev