Attitude of Reviewer

by: PENCHO GENOV MARINOV, Assoc. Prof., IICT - BAS
(Institute of Information and Communication Technologies)
Section "Parallel Algorithms and Machine Learning with Neurotechnology Laboratory:'

in: the competition for academic appointment "Professor",
Field of Higher Education 4. "Natural Sciences, Mathematics and Informatics"
Professional field 4.5 "Mathematics", Scientific Specialty Mathematical Modeling and Applications of Mathematics in 3D Digitization and Microstructural Analysis

for: needs of the section "Department of Scientific Computations with Laboratory on 3D Digitization and Microstructure Analysis", IICT - BAS

the competition was announced in the
Newspaper of State, No.103/12.12.2023, page 121,#840.

with the sole candidate associate professor, Dr. IVAN GEORGIEV GEORGIEV,
"Department of Scientific Computations with Laboratory on 3D Digitization and Microstructure Analysis", IICT - BAS

1. Grounds and general description of the presented materials.

By order No.40 / 09.02.2024 of the Director of the "Institute of Information and Communication Technologies" at the Bulgarian Academy of Sciences (IICT-BAS), Corresp.-member Svetozar Margenov on the basis of Art. 4, Paragraph 2 of the "Law on the Development of Academic Staff in the Republic of Bulgaria" (LDASRB) and Decision of the Scientific Council of IICT-BAS (Protocol No.1 / 24.01.2024) I have been appointed a member of the Scientific Jury under procedure described above. As a member of the scientific jury, on 14.02.2024 I received on electronic media (flash memory) all the documents, described at the end of the applicant's request to the Director of IICT-BAS. The following is an inventory of the documents received, where the aforementioned request is included. In this inventory are also all the dates and other accompanying information:

(0) Request to the Director of IIKT-BAS for admission to participate in the competition. Date 02/09/2024;

(1) Curriculum Vitae in Europena format. The following is some information about Ivan Georgiev, and this information has not been mentioned below in the statement. He was born in 1976. Education: 1999 – Master, SU "St. Kliment Ohridski", specialty in Mathematics; 2007 – Ph.D., HACCM (Higher Administrative Court at the Coinscil of Ministers), scientific specialty Computational Mathematics; Work experience: 2000-2002 PhD student, IPP (now IICT) - BAS; 2003-2006 mathematician, IMI (Institute of Mathematics and Informatics)-BAS; 2007-2014 chief assistant, IMI-BAN; from 2015 - Associate Professor at IICT-BAS, and from 2021 - Scientific Secretary of BAS; Specializations and work abroad: 38 months in the year 2008 – 2013, Austria, Johann Radon Institute for Computational and Applied Mathematics, Austrian Academy of Sciences; Teaching activity: Sofia Univ-FMI, Numerical methods 1st part, exercises, 2003, 2004, 2007, Supervisor of two graduates at SU-FMI(Faculty of Mathematics and Informatics); 5 (five) international and 6 (six) national scientific projects are described. Since 2016, he is the Chairman of the Biomathematics and Scientific Calculations (BMSC) section at the UMB (Union of Mathematicians in Bulgaria); 2015-2018 he was secretary, and 2019-2022 chairman of the Bulgarian section of SIAM; Awards: 2006, BAS "Ivan Evstratiev Geshov"Award;

(2) Copy of diploma for the educational and scientific degree "doctor"(PhD). By scientific specialty 01.01.09 Computational mathematics, with Number 31417 and Date 23.05.2007. Issued by HACCM on the basis of a protected dissertation on the topic "Iterative methods for non-conforming finite elements Commission No.01, Protocol No.2 of 09.03.2007;

(3) Certificate of internship in the specialty. From the Official Note from IICT, with Ex.No.144/07.02.2024, it can be seen, that the total work experience is 20 years 06 months, of which 8 years 10 months as associate professor;

(4) List of scientific publications for the competition, which do not repeat those for the acquisition of the educational one and scientific degree "Doctor"and for occupying the academic position "Associate Professor". A list of 21 works is presented, numbered 2 to 22. Two (2) are Conference Papers and the remaining (19) are Journal Articles and Series. ;

(5) List of citations. 57 citations of 8 publications of the candidate are presented;

(6) Summaries of the scientific publications for participation in the competition - in Bulgarian and in English for the 21 publications participating in the competition, in the order listed in (4);

(7) Copies of scientific publications for participation in the competition. Twenty-one (21) PDF files of the publications listed in (4);

(8) Reference for fulfillment of the minimum requirements of IICT – BAS. ;

(9) Reference to the original scientific and scientific-applied contributions;

(10) Declaration of the participant in the competition for the absence of proven plagiarism in scientific works in accordance with the law;

(11) Eight electronic carriers with information according to the requirement of IICT - BAS.

By complying with the normative documents: Law on the Development of the Academic Staff in the Republic of Bulgaria (ZRASRB), Regulations for the implementation of the ZRASRB, Regulations on the terms and conditions for the acquisition of scientific degrees and for employment of academic positions at BAS, also Regulations on the specific conditions for the acquisition of scientific degrees and for employment of academic positions at IIKT-BAS, candidates for the academic position of "professor"and when compared with the materials provided to us by Associate Professor Iv. Georgiev, we establish the following:

- Has a defended dissertation for the educational and scientific degree "doctor"/ detailed above in (2) subject, committee, Protocols, date, number /
- Holds the academic position of associate professor / described in (3) above / A document is no longer required for the award of this academic degree.
- Participated in the competition with 21 publications (list, their summaries in Bulgarian and in English languages, the publications themselves in a separate directory). A list of 57 citations is presented on 8 publications.
- Participates and/or is a leader in numerous national and international projects such as submit a list of projects in the format required by NACID / see Reference (8) above /

2. Evaluation of works and other activities taking into account the fulfillment of the minimum requirements of IIKT – BAS.

We limit ourselves to the requirements of IIKT (according to art. 2-b, para. 5 of the ŽRASRB), because the national requirements (from the previous paragraphs 2 and 3) and those of the BAS are not stronger, they are even weaker.

Group indicators	Content of the group indicators	Requirements of IICT-BAS for'professor'	Metrics of assoc.prof. I.Georgiev
A	Indicator 1 (dissertation)	50	50
C	Indicators 3 or 4	100	120
D	Indicators from 5 to 10	260	302
E	Indicator 11	140	342
F	Indicators from 12..end	150	200
Total	**by all groups**	**700**	**1014**

2.1 Indicators (3-4 and 5-10) for publications (respectively groups B and D)

For monograph-equivalent publications the requirement is 100. Of the 7 publications submitted 120 points are collected: 1 is from a conference left without points, but it is for here, 6 are with SJR (x 20t), i.e. 6*20= 120.

For publications beyond the equivalent of a monographic work the requirement is 260. Of the 14 publications presented 302 points are recruited according to the candidate. The calculation is: 1*50[Q1] + 1*40[Q2] + 10*20[SJR] + 1*12 + 1*0 = 302. The publication with 0 points is from a conference.

2.2 For indicator (11) for citations (group D) the requirement is for at least 140 points. Of the 57 citations presented 342 points (57 * 6) are scored on 8 publications of the candidate visible in Scopus. The author of this opinion looked at what it gives the reference in Scopus for author Iv. Georgiev and for the citations of 63 articles (excluding self-citations) the h-index came out 7, citations a total of 150, and for the last 10 years – 140. These numbers differ from those given for the competition by the candidate, only show that Prof. Ivan Georgiev significantly exceeds the minimum requirements, including what is submitted for the competition.

2.3 For indicators (12-20) for the activities (group E) the requirement is at least 150 points. The candidate has submitted for the competition information and evidence of the activities under indicators 14-17, where the points are 200. The account for these indicators is: 5*10 (p.14) + 3*20 (p.15) + 2*20 (p.16) + 1*50 (p.17) = 200 points.

3. Contribution analysis.

I fully agree with the achievements stated by the candidate. I will briefly mention some of them.

- Effective technology is applied for interdisciplinary research using state-of-the-art 3D tools digitization, visualization and prototyping.
- The created digital models are received using cutting-edge methods, algorithms and software tools for processing voxel and polygonal data.
- Various types of segmentation methods have been investigated, which are applied to real data obtained by industrial X-ray CT.
- Various image segmentation methods have been investigated obtained by industrial X-ray computed tomography of porous materials.
- A three-dimensional reconstruction method is proposed with reduced artifacts when scanning objects with high density inclusions.
- The morphology of the residual porosity was investigated and conclusions were drawn for the relationship between the structure and properties of silicate materials obtained using a large percentage of metallurgical waste.
- Applications of three-dimensional digitization methods and tools are presented (3D laser scanning and industrial X-ray computed tomography) in the study and characterization of bone samples.
- Numerical simulations of the fluid flow process in a porous medium in research in the field of design, research and use of artificial wetlands, the means of mathematical and computer modeling.
- A computer model was created based on solving inverses tasks by which corresponding linear and non-linear absorption models are obtained for the simulation of the removal of total phosphorus in currents flowing in the horizontal underground wetlands.
- It is for conducting computer simulations and experiments installed and verified the Visual MODFLOW computer code. Experimental data from horizontal underground wetlands that were actively monitored for two years in Xanthi, Greece were used in the corresponding mathematical and computer models and to compare the results of computer simulations and field experiments.
- A detailed analysis of the possibilities for creating lightweight broadband polymer antenna prototypes by 3D printing and metallization has been made.

Thus, the presented contributions are quite loose, and dividing them into "scientific"and "scientific-applied"would be rather unnatural for their interdisciplinary focus.

4. Critical notes, praise and recommendations.

Not all cited publications from which the citations for the competition are in the list of publications for this procedure. For the introduction into NACID - RAS (Register of academic staff) must be added.

Above mentioned some small inaccuracies in the submitted documents, but this is more recent for proof that the reviewer has read the materials thoroughly. I have no critical remarks, which would cast doubt on the applicant's contributions and which would affect my positive assessment at the end of my review.

And something about recommendations. An easy way to arrange files in the order in which they are played is to put leading numbers in front. Applies to both attached publications, as well as for the competition materials.

Given the excellent scientometrics seen in SCOPUS / WoS, beyond those presented for this procedure, comes the recommendation to the candidate to spend time and effort to do a doctoral dissertation as well.

5. Personal impressions about the candidate and other data not specified in the previous points.

I have known the candidate Ivan Georgiev since his student days. I was a reviewer for his master's thesis. I have witnessed his growth as a scientist. I have excellent impressions of his competence and his ability to work in a team and to pass on the accumulated experience and knowledge to others.

6. Conclusion.

Considering that: the candidate has sufficient scientific and scientific-applied contributions; the achievements are publicized among the scientific community in sufficient and high-quality publications, there are sufficient citations, including in journals with an impact factor and specialized international publications; impressive participation and leadership in national and international research projects – and all requirements are met, conditions and criteria of: *Law on the Development of the Academic Staff in the Republic of Bulgaria, Regulations for the implementation of ZRASRB, Regulations for the terms and conditions for acquiring scientific degrees and for holding academic positions at the BAS*, also *Regulation on the specific conditions for acquiring scientific degrees and for employment of academic positions in IICT–BAS.*

This leads me to the following conclusion:

I give a positive assessment of the materials with which the candidate participates in the competition for professor. I recommend to the members of the Scientific Jury, and then to the Scientific Council at IIKT-BAS to elect associate professor Dr. IVAN GEORGIEV GEORGIEV *to occupy the academic position of PROFESSOR, in the field of higher education 4."Natural sciences, mathematics and informatics", professional direction 4.5. "Mathematics", major major Mathematical modeling and application of mathematics in 3D digitization and microstructural analysis for the needs of the "Department of Scientific Computations with Laboratory on 3D Digitization and Microstructure Analysis" , IICT–BAS.*

На основание
ЗЗЛД

08.04.2024

Sofia