

REVIEW

by: PENCHO GENOV MARINOV, Prof. Dr., ИИСТ - BAS
(Institute of Information and Communication Technologies)
Section "Parallel Algorithms"

on: the competition for academic position "Associate Professor",
Area of Higher Education 4. "Natural Sciences, Mathematics and Informatics"
Professional Field 4.6 "Informatics and Computer Sciences",
Scientific Specialty "Quantitative Methods, Mathematical Modeling
and Intuitionist Fuzzy Statistics"

the competition is announced in the Newspaper of State, No.105/11 Dec 2020, p.137

for: needs of Computer and Information Technologies Department
at the Faculty of Natural Sciences
Burgas University "Prof. Asen Zlatarov"

with: the sole candidate Dr. VELICHKA NIKOLOVA TRANEVA

1. Reason and general description of the submitted materials.

By order No RD-35 from 9 Feb 2021 of the Rector of the Rector of the Burgas University "Prof. Asen Zlatarov", pursuant to Art. 57, para. 2 of the Rules for the Implementation of the ASDARB (Academic Staff Development Act of the Republic of Bulgaria), Art. 70, para 2 of the Regulations on the terms and the conditions for acquiring academic degrees and for occupying academic positions at Burgas University, and the decision of the dean of Faculty of Natural Sciences No 326 from 02 Feb. 2021, I have been appointed a member of the scientific jury in accordance with the procedure described above. As a member of the scientific jury of his first meeting (Protocol from 19 Feb. 2020) I was appointed a reviewer and received the materials of the procedure.

- 1 Application of the candidate to be admitted to the competition with Reg. No.374 of 09 Feb. 2021. It ends with an inventory of the submitted 16 groups of documents, according to the requirements of Art. 67(2) of Regulations.
- 2 Copy of the announcement in the State Gazette No.105 of 11 Dec. 2020 - page 137.
- 3 Creative CV - European model, three pages in Bulgarian.

Education and training: Sofia University "St. Kliment Ohridski", 1990 - 1995, "Master of Mathematics", "Teacher of Mathematics", "Teacher of Informatics", 1993 - 1995, "manager"; University of National and World Economic, Sofia, 1996 - March 2000, "Master of Finance"; BAS - Institute of Biophysics and Biomedical Engineering, Oct. 2016 - Feb. 2017, PhD degree, professional field 4.6;

Work experience: March 1996 - September 1996, database supervisor, ADM "AB Direct", Burgas; November 1996 - February 1997, teacher of mathematics and informatics, GRE "G.S Rakovski", Burgas; February 1997 - September 2000, teacher of mathematics, school "Naiden Gerov", Burgas; September 2000 - July 2001, teacher of informatics and IT, GPNE "Goethe", Burgas; Burgas University "Prof. Asen Zlatarov", October 2012 - October 2017, assistant at the Faculty of Natural Sciences; Chief assistant from 7 Oct. 2017.

Skills and competencies. Foreign languages: speaks English and Russian at level B1 for all elements - comprehension, conversation, writing; Computers: Windows, MS

Office, uses ICT for training and design of e-courses; from the section "Others" I will mention: system administrator, director's qualification, Driving license from 1997, category "B".

I do not dwell on the other sections of the CV: Publications, Citations, Participation in projects, Working with students, because below there are details about them.

- 4 Copy of the diploma for "Educational and scientific degree DOCTOR (PhD)" in informatics, issued by Bulgarian Academy of Sciences, No.000849 / 27 Feb. 2017, for dissertation on the topic: "Three-dimensional indexed matrices and applications in the transport task and OLAP-cube", defended on 09 Feb. 2017. The requirement of Art. 67 (1), item 1 of the Regulations of the University has been fulfilled.
- 5 Certificate from the Burgas University "Prof. Asen Zlatarov", Reg. No.233 / 05 Jan. 2021, which shows that the work experience of Velichka Traneva is: 07.10.2013 - 24.10.2017 as an assistant, and from 25.10.2017 as Ch. assistant in the department "Computer and Information Technology", Faculty of Natural Sciences and the requirement of Art. 67 (1), item 2 is fulfilled - not less than two years to have held the academic position "assistant", "chief assistant".
- 6 Copy of the scientific works - total 16: 1 monograph, 145 pages, in English, w/o co-authors; 1 monograph, 160 pages, in Bulgarian, co-authored; 1 co-authored article, with IF; 7 co-authored articles in journals with SJR; 3 co-authored, indexed in Scopus, without SJR; 1 textbook, 69 pages, in English; 1 textbook on quantitative methods and optimization, 203 pages, in Bulgarian; 1 textbook with a focus on some applications of statistics in ecology, 80 pages, in Bulgarian. The requirement of Art. 67 (1), item 3 has been fulfilled - a monographic work on the profile of the announced competition has been published.
- 7 Documents related to the teaching activity (7 pieces): "Reference for the teaching activity", where they are described 6 study programs (1 master's, 5 bachelor's), 3 teaching aids (1 page); Information about the hours of lectures and exercises led by Velichka Traneva, for the last 4 years (this is how the table is written, but it is for the last 8 academic years) - the lectures are in 3 disciplines, the exercises in 11, the attached table includes the breakdown by lectures and exercises (masters and bachelors), exam hours - about 450 per school year /reference is certified by the head of the department and from the head of UMO/; The following are the curricula - 6 documents certified by the Dean, heads of the respective departments, scientific secretary of FC - each with tables of excerpts from the curriculum (general parameters of the discipline. learning forms, assessment and control), the hours of lectures and exercises, course project, exam questionnaire, preparation literature (Bibliography). The requirement of Art. 67 (1), item 7 has been fulfilled - to have developed a curriculum and a lecture course in the discipline.
- 8 Attached is a list of two sections: Guided graduates - two, for 2020, with the topics of theses; Guided students with reports in 28-th summer session of the XIV Student Conference, section "Business Management and Industrial Management" - two reports on two projects, with two students each.
- 9 Regarding participation in research projects, two certificates are presented: (1) with Ref. No.NI-01-13-07 from 11 Jan. 2021 by Director of the Research Institute for 3 national projects (as a participant in 2 with National Scientific Found, 1 from

National Sci. Programm " ICTimNES ") and 5 inter-institute (in 2 of them as a manager); (2) with Ex. No.NI-01-13-14 from 21 Jan 2021 by the Vice-Rector of Sci.Res.D in the assurance that it was ranked in a competition under the National Research Program "Young Scientists and Postdoctoral Students", funded by the Ministry of Education and Science and was appointed under the (9 months in 2019, 6 months in 2020). Thus, the requirement of Art. 67 (1), item 6 is fulfilled.

- 10 This is a list of scientific papers with which Velichka Traneva participates in the procedure, the document is entitled "Description of scientific papers" and, in addition to the list, provides further clarification on how the work relates to the three main groups: quantitative methods, mathematical modeling, intuitionist fuzzy statistics.
- 11 4 documents were presented: (1) List of scientific forums in the organization of which the candidate has felt - (i) co-organizer of the conference INFUS 2021; (ii) organization of two scientific seminars in 2017 and 2018 (2) Reviews for the magazine "Soft Computing" - five issues, for the period 2019-2020. (3) The evidence for participation in the Program Committee of the International Conference on Intelligent and Fuzzy Systems, August 24-26, 2021 Turkey. (4) List of participations with reports, posters, presentations in scientific conferences and events in 2019-2020: Istanbul - INFUS-2019, INFUS-2020, Varna - ICIS-2020, Sofia - FedCSIS-2020.
- 12 Author's reference for the scientific contributions of the works: in English, 12 pages; in Bulgarian, 13 sheets.
- 13 Reference for fulfillment of the minimum requirements specified in Annex 1 of the Regulations for the conditions and the order for acquiring scientific degrees and holding academic positions, for professional field 4.6. (6 pages in total)
- 14 Reference to the citations of scientific papers of 24 pages. Refer to the quotations in the previous reference, group "E" of Annex 1 to the Regulations, the points are indicated again, but new information is added - details of where the citing article is visible; an excerpt from the text where the candidate's work is cited; a list of references (or part) where the cited article is "bold face".
- 15 Under this item of the list of attached documents in the Applicant's Application there are 1 Separation Protocol for the monograph co-authored and 6 Declarations by the co-authors of Velichka Traneva, in which they declare an equivalent degree of participation in the joint articles. All 12 works in co-authorship.

2. Evaluation of publications and citations.

Publications: Ch. Assistant Velichka Traneva participates in the procedure with a total of 14 scientific papers, and together with two other textbooks are the 16 given in the materials of the competition (see item 6 of the list of materials above). No.1 is a monograph published in the Academic Publishing House of BAS and gives 100 points for the indicators from group "B" of the requirements. The indicators from group "D" add $344 = (20 + 60 + 7 * 30 + 3 * 18)$, 1 is in Indicator 6, the remaining 11 - in Indicator 7: No.2 is a monograph co-authored in Bulgarian (20) and is in Index 6, the following are in Index 7 - No.3 - article with IF (Q2) (60), 7 publications in Scopus with SJR ($7 * 30$) ,, 3 publications in Scopus w / o SJR ($3 * 18$). Regarding the co-authors: 4 are independent, 6 with 1 co-author, 2 with 2, 4 with 3.

Citations: The citations are 15, and the cited works of the candidate are 7. 14 citations are in articles with IF or SJR visible in WoS / Scopus, 1 citation is in an edition without IF / SJR, but referenced in the world system of referencing and indexing (Zentralblatt). 116 points ($14 * 8 + 4$) are scored for the group of indicators "D", which also exceeds the required 100.

A folder with information from the previous procedures for ONS "Doctor" (PhD) and for Chief Assistant has been added to the materials of the procedure: The abstract of the dissertation, Publications and Citation, Author's references for the contributions. This helps to conclude that the publications presented in this competition and citations do not repeat those of previous procedures.

3. Teaching and project participation.

These activities are elements of the "E" indicator group. Indicator 14 presents data on 2 projects financed by the NSF, 2 funded by the Ministry of Education and Science - as a participant the points are 40 ($4 * 10$) The evidence is described above in the attached documents from group 9.

Indicator 19 is a university textbook (40 points) - under No.15, in the Attached scientific papers (documents from group 6). In Indicator 20 there are two university textbooks ($2 * 20$ points) - respectively No.No.16 and 14 again there.

Thus collected 120 points for Group of indicators "E" exceeds the required 100.

4. Evaluation of contributions.

The contributions in the works of the candidate Velichka Traneva can be divided into scientific and scientific-applied, which can be conditionally be divided into groups: quantitative methods, mathematical modeling, intuitionist blurred statistics and a group related to teaching.

Scientific contributions are systematized:

- (1.1) Intercriteria analysis (ICrA) extensions have been made for data stored in three-dimensional, interval and multidimensional intuitionist fuzzy index matrices (IRIM).
- (1.2) A new internal Index operation is defined for extended indexed matrices.
- (1.3) 10 hierarchical operations have been introduced, generating a scale for ranking the matrix data.
- (1.4) An extended form of intuitionistic fuzzy ICrA has been developed.
- (1.5) A model is presented and the analysis of the data in OLAP-cube is extended by applying some of the three-dimensional IM operations and three-dimensional multilayer IM.
- (1.6) A transport task is defined in which transport costs, supply and demand are IFPs dependent on other factors.
- (1.7) A one-factor IR analysis of variance based on IR logic and indexed matrices has been developed.
- (1.8) An intuitionally fuzzy two-factor ANOVA based on IFS is proposed.

Scientific contributions include:

- (2.1) Application of ICrA extensions in an oil refinery, in a mobile company and in a fast food chain.
- (2.2) Application of the Index operation in solving the assignment task - Hungarian method.
- (2.3) Applications of the new scaling aggregation operations in the OLAP cube are shown.
- (2.4) Application of the three-dimensional intuitionistic fuzzy ICrA to a refinery human resource evaluation system for optimization purposes.
- (2.5) Index-matrix operations are applied to two OLAP-cubes of bookstores.
- (2.6) The intuitionally fuzzy Zero-Point algorithm for the transport task is demonstrated with a concrete example and the optimal solution was compared with that obtained by IRZSM (Zero-Suffix method).
- (2.7) A software application for the application of one-factor IR analysis of variance has been developed and has been applied for the study of dependencies of "ticket sales ..." by the "day of the week" factor.
- (2.8) The IT two-factor ANOVA (2-D IFANOVA) was applied to a data set (until 24 June 2020) for everyday cases of COVID-19.

5. Fulfillment of scientific and metric requirements.

Group of indicators	Content of the group	Minimal National Requirements	Requirements of the University	Score of Velichka Traneva
A	Indicator 1 (thesis)	50	50	50
B	Indicators 3 or 4	100	100	100
G	Indicators 5 ... 10	200	300	344
D	Indicator 11	50	100	116
E	Indicators 12 ... 20	–	100	120
Total	for all indicators	400	650	730

In the previous sections of the review we focused on the points on the indicators of NACID, so here we just summarized the numbers in a table by indicators. This shows that he is completely satisfied the requirement of Art. 67 (1), item 4.

6. Critical remarks, compliments and recommendations.

It is commendable for the candidate, the materials on the procedure are well prepared. The reviewer, however, noticed an inaccuracy: c the CV is indicated in 2012 for the beginning of the internship as an assistant, and in the reference from the Rectorate the year is 2013. This does not prevent the requirement under Article 67 (1), item 2 of the Regulations from being met.

I have no critical remarks, which would call into question the candidate's contributions and which would influence my positive assessment at the end of my review.

7. Personal impressions about the candidate and other data not mentioned in the previous points.

Due to the requirement of art. 67 (1), item 5 that there is no legally proven plagiarism in the scientific works of the candidate: I confirm the lack of plagiarism, as in the works passed through the reviewers of magazines and conference proceedings, as well as in textbooks. The relevant sources in the relevant sections are correctly indicated.

Here is the place to pay attention to the requirements in Article 67 (2) item 16 - "Declaration in accordance with paragraph 18". There really is such a paragraph in "additional provisions" of the Regulations, but the text refers to the members of the scientific jury, not to the candidate.

I have known Velichka Traneva for almost 5 years. I was one of the scientific supervisors for the dissertation (together with Corresponding Member Kr. Atanasov). We also have a joint article published in "Reports BAS". My impressions of her skills and attitude to work are excellent. I will also mention that she achieved one of the shortest terms of defense (since enrollment as a "doctoral student" to public defense of dissertation).

We have no conflict of interest in the sense of the rules and on the occasion of my participation in this Scientific Jury.

8. Conclusion.

Considering that: the candidate has sufficient scientific and scientific-applied contributions, the achievements have been announced among the scientific community in sufficient and high-quality publications, scientific symposia, participation in research projects – and made sure that all requirements, conditions and criteria were met: *Academic Staff Development Act of the Republic of Bulgaria*, *Rules for the Implementation of the ASDARB*, as well as *Regulations on the Specific Conditions for Acquisition of Academic Degrees and Occupation of Academic Position at the Burgas University*

I have reason for the following conclusion:

I give a positive assessment of the materials with which the candidate participates in the competition for Associate Professor.

I recommend to the members of this Scientific Jury, and then to Faculty Council at the Faculty of Natural Sciences of the Burgas University "Prof. Asen Zlatarov" to choose CH. ASSISTANT PROFESSOR DR. VELICHKA NIKOLOVA TRANEVA 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", specialty "Informatics (Quantitative Methods, Mathematical Modeling and Intuitionist Fuzzy Statistics)" for the needs of the department "Computer and information technologies" at Faculty of Natural Science.

29 March 2021
Sofia

Reviewer:
/ Prof. Pencho Genov Marinov /