

## Opinion

of

Assoc. Prof. Elissaveta Vassileva Gourova,

Member of the scientific jury according to Ordinance № 3-PK-94/06.01.2022 г.  
of the Rector of NBU

### on competition for academic position

**„Associate Professor“ in professional field 4.6. „Informatics and computer sciences“  
announced for the needs of New Bulgarian University in State Journal 95/16.11.2021**

For participation in the competition only one candidate presented documents:

Chief Ass. Prof. Rossitza Ivanova GOLEVA

#### **1. General description of the presented materials**

For participation in the competition, the candidate Rossitza Goleva presented a list of a total 16 publications, incl. 4 articles in journals with impact factor (1 in Q1, 2 in Q2, 1 in Q3), 9 publications in renowned editions of Springer and Butterworth-Heinemann, 3 publications in the proceedings of major international scientific forums (IEEE and/or with SJR).

The submitted documents comply with the requirements of ZRASRB, PPZRASRB and can be attributed to the following groups of indicators:

**Group of indicators A:** Dissertation for the award of educational and scientific degree "Doctor": "Evaluation of models for shaping traffic in IP networks"

**Group of indicators B - habilitation work scientific works in referenced and indexed publications in well-known world databases with scientific information (Web of Science and Scopus):**

1. R. Goleva, R. Stainov, A. Savov, P. Draganov, *Reliable Platform for Enhanced Living Environment*, In: Aguero, R; Zinner, T; Goleva, R; Timm Giel, A; Tran Gia, P (Ed.), Book Series: Lecture Notes of the Institute for Computer Sciences Social Informatics and Telecommunications Engineering, Volume: 141 Pages: Springer International Publishing, 2015, pp. 315-328
2. R.Goleva, R. Stainov, A. Savov, P.Draganov, N.Nikolov, D. Dimitrova, I. Chorbev, *Automated Ambient Open Platform for Enhanced Living Environment*, In: S. Loshkovska and S. Koceski (eds.), ICT Innovations 2015, Advances in Intelligent Systems and Computing, Springer International Publishing, Switzerland, 2016, pp. 255-264
3. Dobre, C., Mavromoustakis, C., Garcia, N., Mastorakis, G. Goleva, R., *Introduction to the AAL and ELE Systems*, In: Dobre, C., Mavromoustakis, C.X., Garcia, N., Goleva, R., Mastorakis, G. (Eds), Ambient Assisted Living and Enhanced Living Environments: Principles, Technologies and Control, Elsevier, Butterworth-Heinemann, Biomedical engineering book series, Control of chemical and biotechnological processes, 2016, pp. 1-16
4. Goleva, R., Garcia, N., Mavromoustakis, C.X., Dobre, C., Mastorakis, G., Stainov, R., Chorbev, I., Trajkovik, V., *AAL and ELE Platform Architecture*, In: Dobre, C.,

- Mavromoustakis, C.X., Garcia, N., Goleva, R., Mastorakis, G. (Eds), *Ambient Assisted Living and Enhanced Living Environments: Principles, Technologies and Control*, Elsevier, Butterworth-Heinemann, Biomedical engineering book series, Control of chemical and biotechnological processes, 2016, pp. 171-210
5. Goleva, R., Garcia, N., Mavromoustakis, C.X., Dobre, C., Mastorakis, G., Stainov, R., *End-Users Testing of Enhanced Living Environment Platform and Services*, In: Dobre, C., Mavromoustakis, C.X., Garcia, N., Goleva, R., Mastorakis, G. (Eds), *Ambient Assisted Living and Enhanced Living Environments: Principles, Technologies and Control*, Elsevier, Butterworth-Heinemann, Biomedical engineering book series, Control of chemical and biotechnological processes, 2016, pp. 427-440
  6. I. Chorbev, V. Trajkovik, R. I. Goleva, N. M. Garcia, *Cloud Based Smart Living System Prototype*, In: Dobre, C; Mavromoustakis, CX; Garcia, NM; Goleva, RI; Mastorakis, G. (Eds), *Ambient Assisted Living and Enhanced Living Environments: Principles, Technologies and Control*, Elsevier, Butterworth-Heinemann, Biomedical engineering book series, Control of chemical and biotechnological processes, 2016, pp: 147-170
  7. Hadjioannou, V., Mavromoustakis, C., Mastorakis, G., Dobre, C., Goleva, R., Garcia, N., *Cloud-Oriented Domain for AAL*, In: Dobre, C., Mavromoustakis, C.X., Garcia, N., Goleva, R., Mastorakis, G. (Eds), *Ambient Assisted Living and Enhanced Living Environments: Principles, Technologies and Control*, Elsevier, Butterworth-Heinemann, Biomedical engineering book series, Control of chemical and biotechnological processes, 2016, pp. 271-286
  8. Hadjioannou, V., Mavromoustakis, C., Papanikolaou, K., Mastorakis, G., Goleva, R., Dobre, C., Batalla, J., *On the Comparison of Location Based Software Solutions Used for Tracking Purposes in Ambient Assisted Living Applications*, In: Potolea, R; Slavescu, RR (Eds), *Book Series: IEEE International Conference on Intelligent Computer Communication and Processing ICCP*, 2016, pp: 5-11.

**Group of indicators D (7), Scientific works in referenced and indexed publications in well-known world databases of scientific information (Web of Science and Scopus), outside the habilitation thesis<sup>\*</sup>:**

9. Mirtchev, S., Goleva, R., Atamian, D., Mirtchev, M., Ganchev, I., Stainov, R., *A Generalized Erlang-C Model for the Enhanced Living Environment as a Service (ELEaaS)*, CYBERNETICS AND INFORMATION TECHNOLOGIES, BULGARIAN ACADEMY OF SCIENCES, 2016, Vol. 16, No X, pp.104-121
10. R. Stainov, R. Goleva, S. Mirtchev, D. Atamian, M. Mirchev, A. Savov, P. Draganov, *AA-LaaS intelligent backhauls for P2P communication in 5G mobile networks*, "2016 IEEE International Black Sea Conference on Communications and Networking (BlackSeaCom), Varna, 2016, pp. 1-5
11. Pires, Ivan Miguel and Santos, Rui and Pombo, Nuno and Garcia, Nuno M. and Flórez-Revuelta, Francisco and Spinsante, Susanna and Goleva, Rossitza and Zdravevski, Eftim, *Recognition of Activities of Daily Living Based on Environmental Analyses Using Audio Fingerprinting Techniques: A Systematic Review*, *Sensors*, 2018, Vol. 18, No 1, 23 pages..
12. Zdravevski, E.; Lameski, P.; Trajkovik, V.; Kulakov, A.; Chorbev, I.; Goleva, R.; Pombo, N.; Garcia, N. *Improving activity recognition accuracy in ambient-assisted living systems by automated feature engineering*. *IEEE Access* 2017, 5, pp. 5262–5280.
13. R. Goleva, R. Stainov, N. Kletnikov, J. Achkoski, S. Mirtchev, I. Ganchev, A. Savov, *Performance Analysis of End-to-End Sensor-to-Cloud Personal Living Platform*, *Procedia Computer Science*, 2017, Vol. 113, pp. 615-620
14. Ivan Miguel Pires, Maria Canavarro Teixeira, Nuno Pombo, Nuno M. Garcia, Francisco Flórez-Revuelta, Susanna Spinsante, Rossitza Goleva, Eftim Zdravevski, *Android Library*

*for Recognition of Activities of Daily Living: Implementation Considerations, Challenges, and Solutions*, The Open Bioinformatics Journal, 2018, Vol. 11, pp.61-88

**Group of indicators D (8) - Published chapter of a book or collective monograph:**

15. O. Mladenovski, J. Achkoski, R. Goleva, *System Development for Monitoring Physiological Parameters in Living Environment*, In: Ganchev, Ivan, Garcia, Nuno M., Dobre, Ciprian, Mavromoustakis, Constandinos X., Goleva, Rossitza (Eds.), *Enhanced Living Environments. Algorithms, Architectures, Platforms, and Systems*, Springer International Publishing, Cham, Lecture Notes in Computer Science, 2019, Vol. 11369, pp. 210-225
16. E. Zdravevski, P. Lameski, V. Trajkovik, I. Chorbev, R. Goleva, N. Pombo, N. M. Garcia, *Automation in Systematic, Scoping and Rapid Reviews by an NLP Toolkit: A Case Study in Enhanced Living Environments*, In: Ganchev, Ivan, Garcia, Nuno M., Dobre, Ciprian, Mavromoustakis, Constandinos X., Goleva, Rossitza (Eds.), *Enhanced Living Environments. Algorithms, Architectures, Platforms, and Systems*, Springer International Publishing, Cham, 2019, pp. 1-18

**Group of indicators D: Citations in scientific journals, monographs, collective volumes and patents, referenced in world-known databases of scientific information (Web of Science and Scopus)**

- 20 citations are presented in publications, referenced and indexed in world-known databases of scientific information (Web of Science and Scopus).

**Group of indicators E:**

- 4 national and 3 international research projects are included, as well as the management of the Bulgarian team in 1 international research project. The total number of points on this indicator is 150.

**Group of indicators F:**

- Chief Ass. Prof. Goleva presented 135 points as an active member of the IEEE, applied aspects of her research (implementation of research results in the field of IoT platforms), public lectures abroad, translation of scientific papers and others.

**Group of indicators From:**

- The total number of points is 70 based on author's study materials, 5 defended thesis, 10 evaluations of diploma thesis, 5 participations in diploma thesis defense commissions, foreign language teaching and participation in the national practice program of the Ministry of Education and Science.

**Group of indicators I:**

- The total number of points is 65, including regular participation in the work of the departmental council, the program council of the Department of Telecommunications and the Department of Informatics, coordinator of Moodle training for the department and participation in trainings at the library and others.

A reference in NACID shows that Rossitza Goleva acquired an educational-scientific degree Doctor in the field 5.3. Communication and computer equipment, diploma No: TUS-FTK78-HC1-037 / 20.07.2016 from the Technical University - Sofia (TU-Sofia). The topic of the dissertation is: "Evaluation of models for shaping traffic in IP networks".

The candidate has held the academic position of "Chief Assistant" at the Faculty of Telecommunications of the Technical University - Sofia after a competition in the field 5.3. Communication and computer equipment.

Currently, R. Goleva holds the position of "Chief Assistant" at the New Bulgarian University in the field of 4.6. Informatics and computer science.

### **General characteristics of the candidate's scientific works and achievements**

Impressive is the multidisciplinary nature of the publications presented by R. Goleva, covering Big Data analysis, smart systems and smart cities, home and business automation, green communications, telecommunications software, communications networks and protocols, tel-etraffic, cloud and IoT technologies, IP and wireless networks, etc. The in-depth knowledge of the candidate in the field of modern information and communication technologies (ICT) can be judged from the presented scientific publications: co-author of 4 books in Bulgarian and editor of 7 editions in English, 1 patent and 105 articles in magazines or conferences.

The expertise of R. Goleva is also evidenced by the many certificates she has acquired, e.g. Mesh Channel Switched Technologies, Star Packet Switched DVB-S Technologies, Intelligent Networks, IPv6, HP-Unix System Administration, Storage Area Networks Administration, Intel Entrepreneurship Program, Multicore Platforms and others.

It is necessary to note the consultancy activity of R. Goleva in leading companies such as: BTC EAD, MobilTel, Teletronix (ISDN equipment sales company, Austria), Transat, (first VSAT operator in Bulgaria), Comicon (Control Systems, Bulgaria), Trans Telecom Inc. (Bulgaria), Hewlett-Packard (Bulgaria), Alcatel (Romania), Thales (Austria), InterConsult (Bulgaria).

High assessment of the scientific qualities of the candidate provides her participation as an evaluator of projects in the scientific programs of the European Commission, as well as in 35 projects. For the international and national recognition of the scientific and professional qualities of R. Goleva can be judged from her work as Deputy Chairman, Chairman and Secretary of the Bulgarian section of the IEEE (since 2004), more than 10 years member of the Editorial Board of the International Journal of Computing & Information Technology (IJCIT) and a member of the Technical Program Committee of the ACM SAC, Annual ACM Symposium on Applied Computing (since 2009).

The analysis of the candidate's scientific works shows that:

a) the scientific works meet the minimum national requirements and the requirements of the NBU for holding the academic position "Associate Professor";

Two profiles in Web of Science testify to the high scientific achievements of R. Goleva, one with h factor 7 (32 publications and 172 citations), and the other - with h factor 4 (15 publications and 34 citations), as well as h factor 9 in Scopus based on 38 publications and 226 citations. Most of the publications are co-authored with foreign researchers.

The research and publications of Chief Ass. Prof. Goleva are mainly in the field of analysis of networks' operability and quality of service, IoT platforms, traffic analysis and definition of new services and functions in such systems, analysis of architectural solutions, compatibility of protocols.

## **2. Characteristics and evaluation of the teaching activity of the candidate**

The professional biography of Chief Ass. Prof. Dr. Rositsa Goleva includes a wide range of activities in the field of ICT. The candidate has experience as a research fellow at the Scientific Institute of Communications (1982-1987), and research fellow at the Technical University of Sofia (1987-1993).

Chief Ass. Prof. Dr. Goleva has serious scientific and teaching experience at the Technical University of Sofia (1993-2017) and at the NBU (since 2017). She has gained experience in a number of national and international research projects, some of which are under the ERASMUS program. At TU-Sofia her research and teaching activities are in the field of communication networks, protocols and quality of service, while at NBU she teaches in English: Operating systems, UNIX / Linux operating systems, Laboratory classes on Linux and others.

### **3. Content analysis of the scientific and applied research achievements of the candidate contained in the materials for participation in the competition**

The scientific and applied research contributions of the candidate are as follows:

- Classification and specification of the end users of the systems for enhanced living environment were made and different scenarios of using the platforms as services for enhanced living environment were considered.

- An analysis of the basic requirements for enhanced living environment systems was made and the requirements for services and applications, as well as the architecture of the platform were defined, clearly distinguishing its functionality at the levels of information processing.

- A project of the architecture of the platform for enhanced living environment was presented, with an emphasis on the open concept of architecture in order to facilitate integration, collaboration and data sharing, as well as work in the cloud environment. Attention is paid to data, structures, data processing and data flows in the distributed architecture, the definition of reliable applications and services.

- An in-depth analysis is made of use cases from different user groups, usage scenarios and use of tests in the platform design, its functions and properties, as well as analysis of different design approaches and selected approach according to platform usage scenarios.

- It is investigated the application of machine learning for recognizing the daily activities of users with the help of audio signals, which is important for the use of the platform by older people, has been studied.

- Fixed and mobile services were created for the platform for enhanced living environment. The results of testing the operation of the platform with mobile portable devices are presented, which provides user convenience.

- Mathematical models of traffic in platforms were developed for enhanced living environment, which is applicable when designing the platform at different scales.

### **4. Critical remarks and recommendations**

I recommend the candidate to prepare a textbook or monograph in Bulgarian based on her scientific publications related to the enhanced living environment.

### **5. Conclusion on the application**

After getting acquainted with the materials and scientific papers presented in the competition and based on the analysis of their significance and the scientific and applied research contributions contained in them, **I confirm** that the achievements meet the requirements of ZRASRB, its Implementing Regulations and relevant Regulations of the NBU for holding the academic position of "Associate Professor".

In particular, the candidate satisfies the minimum national requirements in the professional field. R. Goleva's achievements also meet the requirements of European

documents for researchers (European Charter for Researchers and OTM-R) in terms of quality of scientific results, acquired interdisciplinary, international and intersectoral experience, as well as demonstrated managerial and teaching experience.

I give my **positive assessment** of the candidacy.

Based on the above, I recommend the scientific jury to propose to the competent body of the NBU to choose Rositsa Goleva to take the academic position of "Associate Professor" in the professional field **4.6. "Informatics and Computer Science"**.

31.03.2022 г.

Prepared opinion:

Assoc. Prof. Elissaveta Gourova