

## Attitude of Reviewer

for associate professor Petia Koprinkova  
in the competition for academic position "Professor"  
in the professional field 4.6 "Informatics and and computer science"  
scientific specialty "Informatics"

Reviewer: Prof. Stefka Fidanova

By Order No. 208 dated 16.08.2019 of the Director of Institute of Information and Communication Technologies at Bulgarian Academy of Sciences, Prof. Galia Angelova, pursuant to Art. 4, para. 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 (Minutes No. 7 of 10.07.2019) I have been appointed a member of the scientific jury under the procedure for the academic position of "Professor" in the professional field 4.6 "Informatics and and computer science" scientific specialty " Informatics", announced for the "Mathematical methods for sensors data processing" department, of State Gazette issue 41 of 21.05.2019. As a member of the jury on 28.08.2019 I have received all the documents, attached to the application to the Director of IICT-BAS of the only candidate for the competition Assoc. Prof. Petia Koprinkova.

1. Have acquired a doctorate degree in education and science;
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 editions which do not repeat the ones submitted for the degree of PhD, the Doctor of Sciences and the academic position of Associate Professor;
4. Have submitted other original research papers, publications, inventions and other scientific and applied research works which are evaluated in aggregate;
5. Meet the national minimum requirements;
6. Not to have the lawful plagiarism proven in scientific works.

Associate Professor Petia Koprinkova holds a dissertation for educational and scientific degree "Doctor" (HAC to the Council of Ministers, diploma № 27201/ 07.05.2001, commission 5, protocol

№ 5 of 05.03.2001).

Associate Petia Koprinkova has 30 years of total work experience, of which 16 years as associate professor.

For Group B requirements, Petia Koprinkova submitted 15 publications, 2 of them with Impact Factor 7 of them with Impact Ranks, and 6 are in the World Indexing and Referencing System, without Impact Factor or Impact Rank. The total score was 302 at the required 100.

For Group Г indicators, a total of 31 publications are presented, 3 of them are Impact Factor, 16 are Impact Ranks, 11 are in the World Indexing and Referencing System, without Impact Factor or Impact Rank. The total number of points is 606 for the required 260.

Associate Professor Petia Koprinkova submitted 132 citations after acquiring the academic position of Associate Professor, visible in SCOPUS. The total number of points is 792 for the required 140 under indicator Д.

Associate Professor Petia Koprinkova has published one text book and was the leader of the Bulgarian team of 3 international projects. She was a member of the scientific team of 1 international project, leader of 2 national projects, participant in 18. The total number of points is 422,44 for the required 150 under indicator E.

Associate Professor Petia Koprinkova fulfills the requirements and by some indicators significantly exceeds the national requirements, as well as the specific requirements of BAS and IICT for the academic position of "professor".

The main contributions to his research can be summarized as follows:

#### Scientific contributions

1. An SNN model of the human visual system has been developed, incorporating the main stages of processing visual information and making decisions based on perception. The model is applied in the middle of a NEST simulator.
2. An approach is developed to solve optimization problems by the method of back propagation of the objective function over time, which is applied to determine the optimal parameters of the membership functions and the union operation, defined as a parameterized T-norm, of a fuzzy controller of a nonlinear object, simulated by a neural model.
3. A theoretical study of the influence of the parameters defining the form of the membership functions of the fuzzy values of the linguistic variables of the fuzzy controller, as well as of the parameters defining the fuzzy unification operation in the form of a parameterized T-norm, on the properties of the closed system to control a linear object - a fuzzy regulator.

#### Scientific and applied contributions

1. Studies have been carried out in order to select the appropriate form of storage of the experimental results from the model of the human visual system, the work on the project and

a database has been developed containing the records of eye movements from the eye tracker in the tests carried out within the project from different age groups performing visual decision-making tasks.

2. Models have been developed using neural networks with a variety of applications.
3. A comparative study of the application of genetic algorithms and fuzzy control systems for nonlinear biotechnological processes has been performed. The possibility of applying genetic algorithms for the purpose of identifying the parameters of models of technological objects in the oil-processing industry was investigated.
4. Identification of models of various biotechnological processes.

I have known the candidate for the competition for almost 10 years. I am fully convinced of her qualities as a researcher and a good organizer, which are the basis for further development in science.

## CONCLUSION

According to the presented documents, the candidate Assoc. Prof. Petia Koprinkova fulfills all the requirements of the LDASRB, of its Rules of Procedure and of the Rules on the Specific Requirements for Acquisition of Academic Degrees and Occupation of Academic Positions of BAS and IICT-BAS. I give a positive conclusion for the selection of Associate Professor Petia Koprinkova in the competition for the academic position of "Professor" in the professional field 4.6 "Informatics and and computer science" scientific specialty " Informatics ".

I propose that the Scientific Jury unanimously vote on a proposal to the Scientific Council of the Institute of Information and Communication Technologies of the Bulgarian Academy of Sciences to select Assoc. Prof. Petia Koprinkova for the academic position of "Professor" in the professional field 4.6 "Informatics and and computer science" scientific specialty " Informatics".

28.08.2019

