OPINION

on competition for academic position "Professor" in professional field 4.6 Informatics and computer science, scientific specialty "Informatics", announced in State Gazette No 41 of 21 June 2019

from Prof. PhD Kolyo Zlatanov Onkov,
"Mathematics and Informatics" department, Agricultural university, Plovdiv,
appointed a member of the Scientific Jury according to Order № 207 / 16.08.2019 г.
of the Director of Institute of Information and Communication Technologies,
Bulgarian Academy of Sciences

1. Brief presentation of the candidate

Only **Assoc. Prof. PhD Kiril Ivanov Simov** has submitted materials to participate in the competition. He has graduated National Secondary School of Mathematics „Acad. Chakalov", Sofia (1976 – 1979), and Faculty of Mathematics and Mechanics, University of Sofia (1981 – 1986). In 2006 he has defended thesis entitled "Logical means for processing of linguistic knowledge in Head-driven phrase structure grammar". From 1988 till now he has been working in the Institute of Information and Communication Technologies (IICT), Bulgarian Academy of Sciences (BAS). PhD Kiril Simov is Assoc. Professor at IICT since 2007.

2. General description of the presented materials

The submitted documents and scientific publications for participation in the competition for occupation of the academic position "Professor" are in accordance with the Low of Academic Staff in Republic of Bulgaria, Regulations for its implementation as well as Regulations of BAS and IICT. The scientific materials description is based on the groups of indicators:

❖ *group of indicators "А"* – thesis completed and defended in 2006;

❖ *group of indicators "Б"* – **8** scientific publications;

❖ *group of indicators "Г"* – **19** scientific publications;

❖ *group of indicators "Д"* – **8** publications of the candidate are cited totally **38** times;

❖ *group of indicators "Е"* – **2** PhD students successfully defended their thesis under the supervision of the candidate. He has managed Bulgarian team in **8** international scientific projects.

All submitted scientific publications and citations are in SCOPUS. In none of the publications Assoc. Prof. PhD K. Simov is a "single author". The candidate is first author of **6** from the submitted **27** papers.

Assoc. Prof. PhD K. Simov fulfils the minimum national requirements under the Low of Academic Staff in Republic of Bulgaria as well as the specific minimum requirements of BAS and IICT for the academic position "Professor".

3. Analysis of scientific and applied results. Evaluation of the contributions

Assoc. Prof. PhD K. Simov's work focuses on creating a language and semantic resources and technologies for Bulgarian and other languages. The major results and contributions of his scientific and research work can be presented as follows:

a) A model of the relation ontology-text is built. Through this relation a conceptual knowledge in the text is realized aiming to resolve problems such as semantic annotation and searching in the text, retrieving new knowledge etc. Except ontology and text, two other basic components are included in the model: terminological lexicon and annotation grammar. The problems regarding the relation between concepts in the ontology and terms (words, phrases) in the lexicon are resolved;

b) A methodology for building domain ontologies is developed. Syntactic analysis is used to support the retrieving semantic relations among identified terms (key words and phrases). Final aim is to build relation ontology-text;

c) The retrieving and accessing learning objects is improved through integrating semantic knowledge under the form of domain-specific ontologies;

d) An approach for general presentation of linguistic knowledge is developed that permits joint resolving of two or more problems for automatic text processing;

e) Algorithms for building the semantic presentation of sentence and for extending the graph with knowledge are developed;

f) The most significant language resources created by the candidate are: ontologically based lexicon of Bulgarian language and approach to the construction of Bulgarian valence lexicon with ontological restrictions over the inner participants of denoted event as well as linguistic processing modules including morphological and syntactic analysis of Bulgarian texts;

g) The relation ontology-text is applied in e-learning for semantic annotation and cross-lingual retrieval of learning material. A language-independent domain-ontology with lexicons of eight languages linked to it, is created. The system based on ontology allows semantic search which is more effective than the simple full text search for all eight languages;

h) The developed language technologies are used for the creation of bases with linked open data and linked data from documents.

There are scientific contributions in above analyzed results a), b), c), d) and e). The rest of the results have applied character. The participation in international projects and the citations of papers of Assoc. Prof. K. Simov prove that the scientific results of the candidate are well-known and appreciated by scientists and researchers.

Based on the above presented arguments, I assess the scientific and research work of the candidate as significant in subfield "Artificial intelligence" of the scientific field "Informatics and computer science".

4. Notes and recommendations

Some notes and recommendations to Assoc. Prof. PhD K. Simov:

❖ "Single author" scientific works are missing. I would like to recommend writing a monograph or survey in the future;

❖ The lecturing of the candidate is limited, mainly in the period 1995-2007. There is no doubt that the universities and students need his expert knowledge in the field of Artificial intelligence. He could propose teaching disciplines for example in Master degree programs of leading universities in Bulgaria.

5. Conclusion

The quality of scientific results and their contributions, citations, management of the projects and PhD students, are in the base of my **POSITIVE** opinion regarding all academic activities of Assoc. Prof. PhD K. Simov.

On the basis of above presented analysis, I consider that the candidate fulfils the requirements of the Low of Academic Staff in Republic of Bulgaria, Regulations for its implementation as well as Regulations of Bulgarian Academy of Sciences and Institute of Information Communication Technologies for the academic position "Professor".

I propose to the members of Scientific Jury to vote positively for Assoc. Prof. PhD K. Simov to receive academic position "Professor" in the professional field 4.6 Informatics and computer science, scientific specialty "Informatics"

October 02, 2019   Sign: ....

/ Prof. PhD Kolyo Onkov /