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To the:

Prof. RNDr. Ján Urban, Vice-Dean

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Košice, 27.7.2018

Review on the habilitation thesis

Semantic Heterogeneity in Knowledge Representation

written by RNDr. Martin Homola, PhD.

RNDr. Martin Homola, PhD. has submitted a habilitation thesis entitled “Semantic Heterogeneity in Knowledge Representation”. There have been attached the following documents to the thesis:

- Scientific contribution assessment
- Professional Curriculum Vitae
- List of scientific and professional publications along with citations (the most important publications and citations are colour coded)
- List of other evincible reactions on scientific activities
- List of projects (author was a responsible leader or an investigator of)
- Overview of didactic activities
- Originality check report (1,62%).

The work presented in this thesis is situated in the area of knowledge representation. It is focused on semantic heterogeneity connected with utilization and processing of knowledge of various characters, from various sources and with various contexts what is up-to-date and important problem for solving also within the field of semantic and social web. Thus, I have found the topic of the thesis to be actual, perspective and internationally competitive. The thesis is characterized by many important contributions to the field. The most significant results from the thesis are:

1. Formalism CKR (Contextualized Knowledge Repository) which was developed during author's postdoctoral stay on Fondazione Bruno Kessler in Trento in cooperation with professor Serafini. The formalism was frequently cited and developed in works of

other researchers. In addition to theoretical work, the formalism was implemented and practically evaluated.

2. PURO – Ontology Background Modelling Language was developed in the frame of bilateral APVV project with VŠE in Prague in cooperation with professor Svátek and his team.
3. Development of description logics of a higher order namely a family of description logics TH, HIR and HIRS. Very interesting discovery is the possibility to reconstruct many components of higher order logics in the ontological language OWL.

The thesis contains 369 pages of text written in English including a list of 59 relevant scientific publications of other authors and 21 own scientific publications of the author. The work is divided into 3 chapters and 15 appendices. The Introduction is followed by the second chapter containing main concepts definitions forming basis of the mentioned field of knowledge representation. The last third section summarizes all relevant results of the author's research and refers to the relevant papers published by the author. These results are presented in details in appendices with full texts of 15 most important research papers of the author published in two current content journals and another scientific journal, in three publications of monographic character and also in many proceedings of major international conferences.

The rich research activities of the author are also documented by 13 projects, in which he participated as a researcher and in four cases as responsible investigator and in four others as the representative of the responsible investigator. Overall he has 80 publications and 144 citations. Also his pedagogical and educational activities are at a high level.

Question for discussion

Would it be possible to use the results of your research to fulfill the vision of a semantic software agent who could collect information from the web from a variety of sources, evaluate and process them, including the necessary inconsistencies?

Conclusion

For the reasons mentioned above and the very high quality of the habilitation thesis, author's educational, professional and scientific impact and originality of the presented results, I want to herewith express my explicit recommendation for promotion of the title

“docent – associate professor”

in the branch of informatics (9.2.1) to RNDr. Martin Homola, PhD.

Sincerely,

Signed:

assoc. prof. Ing. Kristína Machová, PhD.

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