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Description	

Knowledge and Systems Engineering – KSE 2013: Editorial

This special issue of the Data & Knowledge Engineering journal is a follow-up to the Fifth International Conference on Knowledge and Systems Engineering (KSE 2013), which was held in Hanoi, Vietnam, during 17–19 October, 2013, and jointly organized by Hanoi National University of Education and the University of Engineering and Technology, Vietnam National University.

The KSE conference is an open international forum for presentation, discussion and exchange of the latest advances and challenges in research of Knowledge and Systems Engineering. KSE 2013 received 124 submissions in total. Each submission was peer-reviewed by at least two members of the Program Committee, and finally, 68 papers were accepted for presentation at KSE 2013 and publication in two volumes of Springer's series *Advances in Intelligent Systems and Computing* [1].

On the basis of the review results received from KSE 2013, the authors of 11 papers were invited to submit a revised and expanded version of their paper to this special issue. Then, all of these 11 received submissions went through the regular peer review process of the Data & Knowledge Engineering journal. Based on the peer-reviewing reports, the following six papers were eventually accepted for publication in this special issue.

The first paper entitled "*Multimodal medical imaging (CT and dynamic MRI) data and computer-graphics multi-physical model for the estimation of patient specific lumbar spine muscle forces*", written by Tien Tuan Dao, Philippe Pouletaut, Fabrice Charleux, Áron Lazáry, Peter Eltes, Peter Pal Varga, and Marie-Christine Ho Ba Tho, proposes a data-driven modeling workflow to create computer-graphics multi-physical model from multimodal medical imaging data to extract useful clinical simulation knowledge. Multi-modal imaging data coupled with physics-based model may help to provide objective indicators and evident facts/knowledge of the mechanical functions inside the human body. This is of great interest for a better clinical diagnosis and more appropriate treatment planning for musculoskeletal diseases, especially for lumbar spine disorders.

The second paper by Hoai-Anh Nguyen, Cong-Long Vu, Minh-Phuong Tu, and Thu-Lam Bui entitled "*Discovery of pathways in protein-protein interaction networks using a genetic algorithm*" proposes the use of genetic algorithms for tackling the problem of orienting protein-protein interaction networks (PPIs)

and discovering pathways. The focus of this paper is the design of genetic algorithm taking into account characteristics of the PPIs orienting problem. In an empirical study using a real dataset, the proposed algorithm outperforms a state of the art PPI orientation algorithm in terms of real pathways discovered. This also demonstrates an application of genetic algorithms to handle a practical problem.

The third paper by Ngoc-Quang Luong, Laurent Besacier, Benjamin Lecouteux entitled "*Towards accurate predictors of word quality for machine translation: Lessons learned on French – English and English – Spanish systems*" deals with quality estimation for machine translation. In particular, this paper proposes some ideas to build effective estimators, which predict the quality of words in a Machine Translation (MT) output. The authors propose a number of novel features of various types (system-based, lexical, syntactic and semantic) and then integrate them into the conventional (previously used) feature set, for our baseline classifier training over two different bilingual corpora: French – English and English – Spanish. The baseline predictor is then strengthened by deploying two techniques : "Feature Selection" to filter the best performing ones, and "Boosting" to build a stronger "composite" classifier by taking advantage of the complementarity of "weak" classifiers. Finally, they exploit word confidence scores for improving the quality estimation system at sentence level.

In the fourth paper entitled "*A user-centered approach for integrating social data into groups of interest,*" Xuan-Truong Vu, Marie-Hélène Abel, Pierre Morizet-Mahoudeaux develop a new user-centered approach for integrating social data into groups of interest. The approach makes it possible for a group to tap into its members' social data scattered over different social network sites, and to automatically extract from these data the information relevant to its interests collectively defined by all members. Each member is free to personalize his/her collaborative experience within the group. The paper also presents a working Web-based prototype implementing the proposed approach with the three very popular social networks, namely Facebook, Twitter, and LinkedIn.

The fifth paper entitled "*Towards richer rule languages with polynomial data complexity for the Semantic Web,*" by Linh Anh Nguyen, Thi-Bich-Loc Nguyen, Andrzej Szałas introduces a Horn description logic called Horn-DL, which is a rule language for the Semantic Web with polynomial data complexity. It is also strictly and essentially richer than the well-known rule languages Horn-SHIQ and Horn-SROIQ. The authors develope the first algorithm with polynomial data complexity for checking satisfiability of Horn-DL knowledge bases. Possible applications of Horn-DL are similar to applications of the profiles OWL 2 EL, OWL 2 QL and OWL 2 RL of OWL 2. An ontology in Horn-DL, possibly using an OWL-like syntax, can be used for the Semantic Web in the

usual way as a knowledge base. Having polynomial data complexity, Horn-DL is a query language whose processing is scalable w.r.t. the set of individual assertions (i.e. data).

In the last paper entitled "*Fast updated frequent-itemset lattice for transaction deletion,*" Bay Vo, Tuong Le, Tzung-Pei Hong, and Bac Le propose a method of maintaining frequent-itemset lattices for transaction deletion, which can be used to mine association rules efficiently. Tidset-based and diffset-based approaches which use the pre-large concept are also proposed. The proposed algorithms do not need to process original transactions when the number of deleted transactions is smaller than a safety threshold. The experiments show that the diffset-based approach outperforms the tidset-based and the batch-mode approaches.

Finally, we would like to take this opportunity to thank Hanoi National University of Education, VNU University of Engineering and Technology and the program committee for their support to make the KSE 2013 very successful. We would also like to thank all the authors of submitted papers for their efforts and contributions, and the referees for their careful reviews of the papers. Last but not the least, we are indebted to the Editor–in–Chief, Professor Peter P. Chen for not only his willingness to provide us the opportunity to edit this special issue, but also his valuable guidance and help in the editorial process of this issue.

We hope the readers will enjoy reading the papers in this special issue.

References

[1] V.-N. Huynh, T. Denœux, D.-H. Tran, A.-C. Le, S.B. Pham (Eds.), *Knowledge and Systems Engineering – Proceedings of The Fifth International Conference KSE 2013*, Advances in Intelligent Systems and Computing, vols. **244–245**, Springer-Verlag, 2013.

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