

GUEST EDITORIAL PREFACE

Special Issue on Ontology and Innovation: Part 2

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Ontology organises the things that was used to consist of corpus for the real world. Ontology constructs the model of information systems in term of taxonomy in a wide range of subject areas from social science and natural science. Ontology defines a large number of objects for a wide range of applications, such as education, healthcare, medicine, engineering and manufacturing. Ontology is underpinned by the theories of formal language, classification and automata languages, and can be implemented by the natural language process, particularly involving the tools and technologies in artificial intelligence. Ontology made significant contribution to the computational science, especially in information retrieval/extraction and visualisation from the theory to practice. The challenge ahead for ontology is to prove even more useful and effective in an even broader range of application domains. It follows that ontology made this issue special.

Lee and Wu developed a model and method for extracting key entities from the online social messages regarding emergent events for enhanc-

ing ontology engineering, enabling a sensible solution for prevention of similar disasters. The preliminary experimental results demonstrate that the developed system is workable, allowing for prediction of possible evolution and early warning of critical incidents with a support of dynamic entity extraction.

Herrero-Zazo et al applied the drug-drug interactions ontology (DINTO) to named entity recognition and relation extraction from pharmacological texts. We use the DDI corpus, a gold-standard for the development and evaluation of IE systems in this domain, and evaluate our results in the framework of the last SemEval-2013 DDIE extraction task.

Ruben Costa¹, Celson Lima introduces a novel conceptual framework to support the creation of knowledge representations based on enriched Semantic Vectors, using the classical vector space model approach extended with ontological support. One of the primary research challenges addressed here relates to the process of formalization and representation of document contents, where most existing approaches are

limited and only take into account the explicit, word-based information in the document. This research explores how traditional knowledge representations can be enriched through incorporation of implicit information derived from the complex relationships (semantic associations) modelled by domain ontologies with the addition of information presented in documents. The relevant achievements pursued by this work are the following: (i) conceptualization of a model that enables the semantic enrichment of knowledge sources supported by domain experts; and (ii) implementation of a proof-of-concept, named SENSE (Semantic Enrichment knowledge Sources).

Xu et al proposed an *ontological random forest* algorithm where the splitting of decision trees are determined by semantic relations among categories. Then hierarchical features are automatically learned by multiple-instance learning to capture visual dissimilarities at different concept levels. Experimental results demonstrate that this approach not only outperforms state-of-the-art results but also identifies semantic visual features.

Nganji and Brayshaw focused on the design of VLEs to incorporate ontologies that facilitate information retrieval by students with

disabilities in their learning, thus serving as a semantic web-based assistive technology in education. Preliminary results of the evaluation of ONTODAPS, by 30 students with disabilities, indicate that 70% of the participants found ONTODAPS to offer a better personalisation, better access to learning materials (68%) and is easier to use (63%) in retrieving learning materials than Sakai. Thus ONTODAPS serves as an assistive tool in their education through retrieval of relevant learning materials in a suitable format which is compatible with their disability.

It is our great pleasure to introduce these papers to you. After a rigorous peer review process, we deeply thank the members of Editorial Review Board of the International Journal of Information Retrieval Research for accepting these four papers to be published as a special issue in this journal. Also, the thanks will extend to the journal publishing team, particularly to Mr. Sam Hoffmeister for his hard work and great effort to enable the papers published.

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