
Editorial

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Biographical notes: Zoé Lacroix received her PhD in Computer Science in 1996 from the University of Paris XI – Orsay (France). She worked at the French Institut National de la Recherche en Informatique et Automatique (INRIA), at the Institute for Research in Cognitive Science (IRCS), University of Pennsylvania (USA), two biotech companies Gene Logic and SurroMed, and was an Associate Investigator at the Translational Genomics Research Institute (TGen) from 2008 to 2011. Since 2005 as an Associate Professor, Research, at Arizona State University, she is directing various projects on scientific data management, database integration, optimisation, workflows, and semantic web.

1 Introduction

The fourth International Workshop on Resource Discovery (RED) took place on 29 May 2011 in Heraklion, Greece organised together with the eighth Extended Semantic Web Conference (ESWC 2011). After this exciting meeting, we invited the authors of five presentations to extend their paper for publication in a special issue of the *International Journal of Metadata, Semantics and Ontologies*. Submitted papers went through a rigorous and lengthy reviewing process and I am delighted to present in this issue three papers that present solutions to various problems related to this new and exciting area of resource discovery.

2 New challenges of resource discovery

The workshop brought together researchers, developers, and practitioners to discuss research issues and experience in developing and deploying concepts, applications, and solutions addressing various issues related to resource discovery. Eleven papers were presented in three sessions at the workshop. The first session was devoted to *Ontology-based Resource Discovery*. Three papers were presented: *Ontology-based User-defined Rules and Context-aware Service Composition System* by Victoria Beltran, Knarig Arabshian, and Henning Schulzrinne, *LDM: Link Discovery for new Resource Integration*, by Nathalie Pernelle and Fatiha Saïs; and *C-Set: a Commutative Replicated Data Type for Semantic Stores*, by Khaled Aslan, Pascal Molli, Hala Skaf-Molli and Stéphane Weis. The focus on the second session was *Applications in Life Sciences with Towards Automatic Generation of Semantic Web Services for Relational Biological Databases* by Julien Wollbrett, Pierre Larmande and Manuel Ruiz, *A Framework for Resource Annotation and Classification in Bioinformatics* by Nadia Yacoubi Ayadi, Malika Charrad, Soumaya Amdouni and Mohamed Ben Ahmed, *An organizational environment for “in silico” experiments in molecular biology*, by Yuan Lin, Marie-Angélique Laporte, Lucile Soler, Isabelle Mougénot and

Thérèse Libourel, and *Repairing Provenance Policy Violations by Inventing Non-Functional Nodes*, by Saumen Dey, Daniel Zinn, and Bertram Ludäscher. The papers *Efficient Multi-Criteria Resource Matchmaking in Semantic Grid* by Ling Chen and Kemafor Anyanwu, *Scalable Discovery of Linked Services*, by Barry Norton and Steffen Stadtmüller, *Random Indexing for Finding Similar Nodes within Large RDF graphs*, by Danica Damjanovic, Johann Petrak, Mihai Lupu, Hamish Cunningham, Mats Carlsson, Gunnar Engstrom, and Bo Andersso, and *A Directory of Heterogeneous Services*, by Zijie Cong, Alberto Fernández, Carlos A. Soto were presented in the session *Scalable architectures for Resource Discovery*. In addition to these presentations, we invited Andreas Harth to give a talk on *Basic Algorithms for Query Evaluation on Linked Data and Linked Data Services*, joint work with Sebastian Speiser. The papers presented at the workshop were compiled into digital proceedings and published by CEUR Workshop Proceedings (CEUR-WS.org), a free open-access publication service of Sun SITE Central Europe operated under the umbrella of RWTH Aachen University with the support of Tilburg University (Vidal et al., 2011). The best three papers were selected to be included in a volume of Lecture Notes in Computer Science (Beltran et al., 2012; Damjanovic et al., 2012; Dey et al., 2012) and eight papers were invited to be revised and extended for this special issue.

The first of the three papers included in this special issue is *Scalable discovery of Linked APIs*, by Steffen Stadtmüller and Barry Norton. It presents an original approach based on the containment of graph patterns for discovering services. The second paper, *Enabling web service discovery in heterogeneous environments*, by Zijie Cong and Alberto Fernández Gil, presents a Web service registration and discovery framework for heterogeneous environments where different Web service description languages may be used. The method allows the alignment of services description in heterogeneous description languages (OWLS, SAWSDL, WSDL and plain text) and maps them into a unified model. The third paper *Live linked data: synchronising semantic stores with commutative replicated*

data types by Luis Daniel Ibáñez, Hala Skaf-Molli, Pascal Molli and Olivier Corby, addresses the problem of update management in a network of RDF datasets where the links represent shared RDF triples. The approach supports the maintenance of data consistency by autonomous participants in a collaborative way.

3 Conclusion

Since its first occurrence in 2008, the International Workshop on Resource Discovery has been organised jointly with the International Conference on Information Integration and Web-based Applications & Services (IIWAS) in 2008 and 2010, the International Conference on Very Large Data Bases (VLDB) in 2009, and for the last two years with the Extended Semantic Web Conference (ESWC). It follows a post-workshop publications process that led to the publication of a special issue on Resource Discovery in the *International Journal of Metadata, Semantics and Ontologies* (Volume 5, Issue 3, July 2010), and two volumes of *Lecture Notes in Computer Science* (volumes 6162 and 6799) published by Springer (Lacroix, 2010a; Lacroix, 2010b; Lacroix and Vidal, 2012). The present issue of the *International Journal of Metadata, Semantics and Ontologies* is a compilation of three extended, revised, and peer-reviewed papers.

Acknowledgements

RED 2011 organisers, Maria-Esther Vidal, Edna Ruckhaus, and I would like first to thank the workshop attendees who contributed enthusiastically to the workshop. Warm thanks to the members of the programme committee for their time and valuable contribution to the workshop. The multiple phases of the review process contributed greatly to the quality of the papers presented. We would also like to thank the National Science Foundation for supporting the workshop with travel grants for US students to attend the workshop.

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