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# Reasoning Web

Semantic Technologies  
for Intelligent Data Access

9th International Summer School 2013  
Mannheim, Germany, July 30 – August 2, 2013  
Proceedings



Springer

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# Preface

This volume contains the lecture notes of the 9th Reasoning Web Summer School 2013, held from July 30 to August 2, 2013, in Mannheim, Germany.

Over the years, the Reasoning Web Summer School series has become the premier educational event for the active field of reasoning methods for the Web, attracting both young and well-established researchers. Previous editions of the school were held in Malta (2005), Lisbon (2006), Dresden (2007 and 2010), Venice (2008), Bressanone-Brixen (2009), Galway (2011), and Vienna (2012).

The 2013 edition was hosted by the Data and Web Science Research Group at the University of Mannheim (<http://dws.informatik.uni-mannheim.de>). The group, co-headed by Heiner Stuckenschmidt and Chris Bizer, currently consists of four professors, five post-doctoral researchers and 15 PhD students. Covering the whole life cycle of Web Data including information extraction and integration, data management, reasoning and mining as well as user interaction with data, the group is the perfect host for the summer school. It is well known for related community efforts such as DBpedia and the ontology alignment evaluation initiative and has a strong background in Web reasoning, working mainly on non-standard reasoning for information integration and information retrieval, scalable reasoning by parallelization and the combination of logical and probabilistic inference.

Following the tradition of the two previous years, the summer school has been co-located with the International Conference on Web Reasoning and Rule Systems (RR). Moreover, these two events were directly preceded by the Second OWL Reasoner Evaluation Workshop (ORE 2013) on July 22 and the 26th International Workshop on Description Logics (DL 2013) July 23–26, both held close by in Ulm, Germany.

The 2013 summer school program covered diverse aspects of Web reasoning, ranging from scalable lightweight formalisms such as RDF to more expressive ontology languages based on description logics. It also featured foundational reasoning techniques used in answer set programming and ontology-based data access as well as emerging topics like geo-spatial information handling and reasoning-driven information extraction and integration.

The tutorial articles were prepared as accompanying material for the students of the summer school, to deepen the understanding and to provide pointers to the relevant literature in the field. However, we expect these lecture notes to be of use beyond that for colleagues and interested readers with sufficient background in computer science.

The accompanying lecture slides and teaching material of all tutorials are made available on the summer school website at <http://reasoningweb.org/2013/>.

We would like to thank everybody who helped make this event possible. Above all, we would like to thank all the lecturers and their co-authors, whose

hard work and devoted commitment created the solid foundation for this event. We are grateful to all the reviewers: your timely feedback on the submitted articles helped the authors to further increase the quality of their excellent tutorials.

Furthermore, we express our gratitude to the local organization team led by Heiner Stuckenschmidt for putting great organizational and administrative effort into making the summer school both a pleasant and a insightful experience.

Last but not least, we thank all sponsors of this event, who provided support financially or in terms of resources: Fluid Operations, Semafora, Association for Logic Programming, NSF, LOD2, Artificial Intelligence Journal, IOS Press, SOFTPLANT, the University of Mannheim, Siemens AG Österreich, and Springer. We particularly thank Marco Maratea, who – once again – did an excellent job in acquiring sponsors, which allowed us to keep the registration fees on a moderate level and support students with travel grants.

July 2013

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