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Wolfgang Faber · Adrian Paschke (Eds.)

# Reasoning Web

Web Logic Rules

11th International Summer School 2015  
Berlin, Germany, July 31 – August 4, 2015  
Tutorial Lectures

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# Preface

This volume contains tutorial papers prepared for the 11th Reasoning Web Summer School (RW 2015) held from July 31 to August 4, 2015, in Berlin, Germany. The Reasoning Web series of annual summer schools was initiated in 2005 by the European Network of Excellence REWERSE. Since 2005, the school has become the prime educational event in the field of reasoning techniques on the Web, attracting both young and established researchers.

The 2015 edition of the school was organized by the Institute for Computer Science, Freie Universität Berlin, Germany, and the School of Computing and Engineering, University of Huddersfield, UK. As with previous editions, this year's summer school was co-located with the 9th International Conference on Web Reasoning and Rule Systems (RR 2015); this year there was also a collocation with the 9th International Web Rule Symposium (RuleML, four of the lectures are joint with the RuleML programme) and the 25th International Conference on Automated Deduction.

In 2015, the theme of the school was "Web Logic Rules."

The research areas of the Semantic Web and Linked Data have received a lot of attention in academia and industry recently. Since its inception in 2001, the Semantic Web has aimed at enriching the existing Web with meta-data and processing methods, so as to provide Web-based systems with intelligent capabilities such as context-awareness and decision support. Over the years, the Semantic Web vision has been driving many community efforts, which have invested substantial resources in developing vocabularies and ontologies for annotating their resources semantically. Besides ontologies, rules have long been a central part of the Semantic Web framework and are available as one of its fundamental representation tools, with logic serving as a unifying foundation. Linked Data is a related research area that studies how one can make RDF data available on the Web, and interconnect it with other data with the aim of increasing its value for everybody. Many advanced capabilities required by Semantic Web and Linked Data application scenarios call for reasoning. Thus, a perspective centered on the reasoning techniques complementing other research efforts in this area is desirable. The Summer School was devoted to this perspective, and provided insight into the Semantic Web, Linked Data, ontologies, rules, and logic.

The tutorial papers cover the research topics addressed in the lectures by the distinguished invited speakers of the school. They are either in-depth surveys or shorter papers containing references to existing work. These papers have been written as accompanying material for the students of the summer school, to deepen their understanding and to serve as a reference for further detailed study.

We would like to thank everybody who made this event possible. First and foremost, the presenters of the lectures and their co-authors. Secondly, the members of our scientific advisory board (Grigoris Antoniou, Nick Bassiliades, Diego Calvanese, Thomas Eiter, Tim Furche, Pascal Hitzler, and Sebastian Rudolph) and the additional reviewer (Lukas Schweizer). We are thankful for their advice, feedback, and their

timely reviews of the papers. Furthermore, we would like to thank the local organization team at Freie Universität Berlin, in particular Ralph Schäfermeier. We would also like to thank our sponsors: the *Artificial Intelligence* journal, the Association for Logic Programming, and Siemens. Last but not least, we would like to thank the team of RR 2015, Balder ten Cate, Marco Maratea, Alessandra Mileo, Luca Pulina, and Marco Montali, and the chairs of RuleML 2015, Nick Bassiliades, Georg Gottlob, and Fariba Sadri, for the great collaboration in putting together all the details of the two events.

June 2015

Wolfgang Faber  
Adrian Paschke

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