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Web Reasoning and Rule Systems

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Preface

The promise of the Semantic Web, at its most expansive, is to allow knowledge to be freely accessed and exchanged by software. It is now recognized that if the Semantic Web is to contain deep knowledge, the need for new representation and reasoning techniques is going to be critical. These techniques need to find the right trade-off between expressiveness, scalability and robustness to deal with the inherently incomplete, contradictory and uncertain nature of knowledge on the Web. The International Conference on Web Reasoning and Rule Systems (RR) was founded to address these needs and has grown into a major international forum in this area. The third RR conference was held during October 25–26, 2009 in Chantilly, Virginia, co-located with the International Semantic Web Conference (ISWC 2009).

This year 41 papers were submitted from authors in 21 countries. The Program Committee performed outstandingly to ensure that each paper submitted to RR 2009 was thoroughly reviewed by at least three referees in a short period of time. The resulting conference presented papers of high quality on many of the key issues for reasoning on the Semantic Web. RR 2009 was fortunate to have two distinguished invited speakers. Robert Kowalski, in his talk “Integrating Logic Programming and Production Systems with Abductive Logic Programming Agents” addressed some of the fundamental considerations behind reasoning about evolving systems. Benjamin Groszof’s talk “SILK: Higher Level Rules with Defaults and Semantic Scalability” described the design of a major next-generation rule system. The invited tutorial “Uncertainty Reasoning for the Semantic Web” by Thomas Lukasiewicz provided perspectives on a central issue in this area.

Regular papers addressed fundamental issues of reasoning with topics including deduction procedures for ontologies with defaults and for conceptual logic programs, evaluation procedures for path query languages, analysis of production systems using fixed-point logic, and general perspectives on control in rule engines. The importance of scalability was reflected by papers on distributed resolution for ontologies, parallel logic programming techniques for Abox querying, and the separation of terminological from assertional data. The topic of knowledge amalgamation was studied by papers on alignment, modularity and paraconsistency for ontologies. Uncertainty was explored by papers on semantics and inference procedures for fuzzy reasoning, and a paper on inference procedures for a logic of belief.

The results of Web Reasoning and Rule Systems are not confined only to foundational issues, but are being applied to Web standards and real-world applications. Papers considered paraconsistent and fuzzy extensions to the RDF standard, which just celebrated its 10th anniversary and is becoming widely used. Another paper explored scalability of the OWL-2 standard, which is soon to be

published by W3C. Finally, one paper described how Semantic Web techniques were applied in a risk-assessment system for elective surgery.

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We are particularly thankful also to the authors, the invited speakers, and attendees for contributing and discussing the latest results in relevant areas to this conference, as well as to all members of the Program Committee, and the external reviewers for their critical reviews of submissions.

October 2009

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