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# Theory, Practice, and Applications of Rules on the Web

7th International Symposium, RuleML 2013  
Seattle, WA, USA, July 11-13, 2013  
Proceedings

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# Preface

RuleML 2013, the 7th International Web Rule Symposium: Theory, Practice, and Applications of Rules on the Web, served, as have all preceding RuleML meetings, as the premier place for theoreticians and practitioners from a wide range of areas of rule technologies to meet and exchange ideas. The aim of RuleML 2013 was to build bridges between academia and industry in the field of rules and semantic technology. By bringing together rule-system providers, participants in rule standardization efforts, open source communities, practitioners, and researchers, the RuleML symposium series stimulates cooperation and interoperability between business and research. This annual symposium is the flagship event of the Rule Markup and Modeling (RuleML) Initiative. RuleML 2013 (July 11–13, 2013) was collocated with AAAI 2013, the 27th Conference on Artificial Intelligence, in Seattle, Washington.

The RuleML Initiative (<http://ruleml.org>) is a non-profit umbrella organization of several technical groups organized by representatives from academia, industry, and national governments who are working on rule technology and its applications. Its aim is to advance the study, research, and application of rules in heterogeneous distributed environments such as the Web. RuleML maintains effective links with other major international societies and acts as intermediary between various specialized rule vendors, applications, industrial, and academic research groups; it also maintains effective links with other major international societies and standardization efforts, including W3C, OMG, OASIS, and ISO.

The RuleML Symposium series began as an annual series of workshops in 2002, and has been run as an annual international symposium since 2007.

The core technical program for Rule ML 2013 consisted of a main technical conference Track, a special Human Language Technology Track focusing on business and legal regulations, a Rule Challenge Track, and a Doctoral Consortium.

The main technical track included 12 papers on a variety of aspects of research on rules, including rule-based approaches for spatial reasoning, answer-set programming methods for solving the stable marriage problem, using rules for complex event processing for gamification applications, and using defeasible rules to formalize theories of belief, desire, intention, and obligation in order to choose optimal goals. It also featured several keynote and invited talks from leaders in our community: a keynote talk by Michael Grüninger on integrating ontologies within repositories, a keynote talk by Lise Getoor on a framework for integrating probabilistic and relational reasoning, and an invited talk by Benjamin Grosz, describing his work on rapid text-based authoring of higher-order defeasible rules. In addition, this track included two tutorials, one on LegalRuleML, a rule interchange language for legal domains standardized by OASIS, and one on Brahms, a set of software tools, based on a theory of work practice and situ-

ated cognition, for developing and simulating multi-agent models of human and machine behavior.

The Human Language Technology Track focused on methods for addressing the knowledge acquisition bottleneck that arises when trying to convert the vast amount of regulatory text on the Web, nearly all of which is written in natural language, to the formal expression of such rules. Topics represented in this track included the use of controlled languages, semi-formal languages that aim to facilitate the expression of regulations by human experts in languages that are both close to natural language and have relatively straightforward mappings to formal representations; techniques for extracting semantic information from legislative text; and mapping English onto fuzzy logic. This track included seven talks and one tutorial on SBVR structured English.

The 7th International Rule Challenge Track highlighted the practical application of rule-based systems. It served as a forum for presenting new ways of using rule-based systems and reporting practical experiences about implementing these systems. The focus was on benchmarks/evaluations, demos, case studies, use cases, experience reports, best practice solutions (such as design patterns, reference architectures, and models), rule-based implementations/tools/applications, demonstrations of engineering methods, implementations of rule standards (such as RuleML, W3C RIF, ISO Common Logic, SBVR, PRR, and API4KB), industrial standards for representing and exchanging rules and related information (such as XBRL, MISMO, and Accord), and industrial problem statements. The Rule Challenge Track also included an invited tutorial on using rules to handle XML in government contexts such as NIEM, the United States National Information Exchange Model.

This was the third year that RuleML held a Doctoral Consortium. Aimed at attracting and promoting PhD research in this area, the Doctoral Consortium offers students close contact and mentoring opportunities with leading experts in the field, as well as the opportunity to present and discuss their ideas in a dynamic and friendly setting.

This volume includes all papers from the main technical track, the top three papers from the Human Language Technology Track, and abstracts of the keynote and invited talks and tutorials. In two cases, for Benjamin Grosf's invited paper and for the LegalRuleML tutorial, extended abstracts are provided. Human Language Technology Track papers that are not published in this volume, as well as Rule Challenge papers and Doctoral Consortium papers, are published as a CEUR Workshop Proceedings, at <http://ceur-ws.org/>. The five editors of this volume comprise the two Program Chairs of the main technical track, Leora Morgenstern and Petros Stefanos, the two Program Chairs of the Human Language Technology Track, François Lévy and Adam Wyner, and the Conference Chair, Adrian Paschke. Note that the chairs of the Human Language Technology track were not involved in the selection for this volume of any papers that they authored.

We are pleased to announce the winner of the RuleML 2013 Best Paper Award, "Computing the Stratified Semantics of Logic Programs over Big Data

Through Mass Parallelization” by Ilias Tachmazidis and Grigoris Antoniou. This paper examines how logic programming techniques, particularly stratification, can facilitate mass parallelization in order to handle vast quantities of data.

Special thanks are due to the excellent Program Committee for their hard work in reviewing the submitted papers. Their criticism and very useful comments and suggestions were instrumental in the high quality of the papers. We thank the symposium authors for submitting solid contributions to research, responding to the comments of the reviewers, and abiding by our production schedule. We are grateful to the keynote and invited speakers for contributing thought-provoking talks and providing research leadership for the RuleML community, and to the tutorial presenters for organizing and transmitting their deep and broad knowledge of their areas of expertise.

We thank OASIS LegalXML for its financial support of RuleML 2013 and acknowledge our various industrial, academic, and professional society partners for technical and organizational support. We also thank the EasyChair conference management system for facilitating the paper submission and reviewing process and both EasyChair and our publisher, Springer, for their support in the preparation of this volume and the publication of the proceedings.

Finally, we gratefully acknowledge the assistance and support of Frank Olken, who contributed so much to the organization of this symposium and helped ensure its success.

May 2013

Leora Morgenstern  
Petros Stefaneas  
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