Ontology, Rules, and Logic Programming for Reasoning and Applications (RulesReasoningLP)
Session 2

Concepts and Foundations of Rules and Ontologies: Logic Programs, Classical Logic, and Semantic Web - I
October 31, 2013

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Topics: Ontology, Rules, Reasoning, Logic Programming, and Applications
http://ontolog.cim3.net/cgi-bin/wiki.pl?RulesReasoningLP#nid3XS0

- Ontology-Rule Knowledge Representation containing Classical Logic, Declarative Logic Programs (Pure Prolog), and Rulelog
  - Standards incl.: Rule Interchange Format, RuleML, and Common Logic
- Ontology and Rule Reasoning Tools, Systems: Requirements, Design, Implementation
  - Examples include Semantic Web and Description Logic-based systems, First-Order Logic systems, Logic Programming systems, Rulelog systems, and Hybrid Description Logic + Logic Programming (Description Logic Programming) systems
  - E.g., Cyc, Pellet, Jena, Prover9, Vampire, SILK, Coherent, RuleLog; various Prologs such as SWI-Prolog, XSB Prolog, Ciao Prolog, Prova, Flora-2
  - Answer Set Programming, Constraint Logic Programming, Deductive Databases, SAT and SMT reasoners, decision-support systems, business rule systems, etc. [Deductive, Inductive, Abductive, Probabilistic, etc., reasoning]
- Ontology and Rule Reasoning Optimization: Knowledge Compilation from Development Time Ontologies and Rules to Run-Time Reasoning, Tabling, Memo-izing, Extensionalizing, Delayed / Lazy Evaluation, Type Subsumption Encodings, etc.
- Ontology and Rule Reasoning Applications

Goals

1) Sketch out the current field of ontology and rule reasoning: what are the relevant standards, architectures, reasoning methods, reasoning engines, techniques, and applications?

2) Provide a perspective on emerging technologies, techniques, and tools relevant for ontology and rule reasoning

3) Discuss the issues and architectures involved in developing applications that use ontology and rule reasoning

4) Describe visualization and explanation technologies and techniques for ontology and rule reasoning

Mini-Series Program – sessions

[each with co-chairs listed]
http://ontolog.cim3.net/cgi-bin/wiki.pl?RulesReasoningLP#nid3XRK

1. RulesReasoningLP: Mini-series Launch Event - Survey and Introduction [Leo Obrst, Benjamin Grosof] October 24, 2013

2. ***Concepts and Foundations of Rules and Ontologies: Logic Programs, Classical Logic, and Semantic Web - I [Leo Obrst, Harold Boley]*** ***Today, October 31, 2013***

3. Concepts and Foundations of Rules and Ontologies: Logic Programs, Classical Logic, and Semantic Web - II [Leo Obrst, Pascal Hitzler] November 21, 2013

4. Guide to Reasoning Applications Development and Cases [Henson Graves, Ken Baclawski] December 19, 2013

5. Rule Standards: Common Logic, RuleML, and RIF [Harold Boley, Adrian Paschke, Mike Dean] January 9, 2014

6. … And more to come …

Today's Agenda

- The first of two sessions devoted to addressing the concepts and foundations of the technologies underlying ontology and rule reasoning, especially focused on logic programming and Semantic Web extensions

- Today's Panelists:
    - HaroldBoley (From Data to Knowledge through Grailog Visualization)
    - BenjaminGrosof (Hilog, Defeasibility, and the Foundations of Practical Meta Knowledge: A Brief Introduction)
    - GeorgGottlob (Datalog+/- a Unifying Framework for Ontological Reasoning and Query-Answering)

- Q&A and open discussion (30 min)