Ontology, Rules, and Logic Programming for Reasoning and Applications

(RulesReasoningLP)

Ontolog Mini-Series Launch Event: Survey and Introduction
October 24, 2013

Benjamin Grosof (Coherent Knowledge Systems, Benjamin Grosof & Associates)
Leo Obrst (MITRE)
Topics: Ontology, Rules, Reasoning, Logic Programming, and Applications

- 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]

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

   October 31, 2013

   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

• … And more to come …
Today's Agenda

• Mini-series Launch Event - Survey and Introduction
  - Intro of the mini-series: This! (10 min)
  - Opening remarks by the champions, technology and community leaders (~2 min. each) (20 min total):
    • MichaelGruninger, MichaelKifer, LeoraMorgenstern, VinayChaudhri, HaroldBoley, HensonGraves, JohnSowa, KenBaclawski, MikeDean & PeterYim
  - Two survey / tutorials (by Leo and Benjamin) (25 min each) (50 min)
  - Q&A and open discussion (30 min)