CSE-291 Spring'04: Ontologies in Data and Process Integration

April 29, 2004

Schedule of Presentations

Date	Name (Topic)
May 21	Dipti (#2), Michael (#3), Daniel (#3)
May 28	Matt (#1), David (#?)
June 4	Kiran (#6), Chien-Yi (#7)

Set of Possible Topics and Assignments

1. *Ontology Foundations and Philosophical Background.*

   - John F. Sowa: Signs, Processes, and Language Games – Foundations for Ontology
   - Barry Smith, e.g. Ontology

2. *Comparative Analysis of Ontology Languages: OWL variants, RDF, and RDF(S).*

   Study the logic formalisms underlying OWL (description logics, first-order logic), RDF, and RDF(S). Provide a comparative analysis of the features of the languages (e.g., expressiveness, querying and reasoning support). Create your own examples to illustrate what can and cannot be done in the different languages. Clarify the relationship between RDF, RDF(S), and the various OWL dialects (lite, DL, full).

   [BAADER *et al.*, 2003] [OWL, 2003] [SMITH *et al.*, 2003] [HORROCKS, 2003] [RDF, 2003] [PARSONS & WAND, 2000] [PARSONS & WAND, 2002]

3. *Web Service Composition and Semantics*

   The goal here is to study various approaches to web service composition and semantics. Use your own examples whenever possible to show the various features.

   (a) Introduce the basic ideas behind OWL-S [COALITION, 2004]. Then present an overview on web service composition, based on [SRIVASTAVA & KOEHLER, 2003]. Consider additional material from [HULL, 2003].

   (b) Present and compare the results on web service composition from [BERARDI *et al.*, 2003] and [MCILRAITH & SERVICES, 2002]

4. *Benchmarking Ontology Reasoners.*

   Develop a set of OWL ontologies (see the OWL test cases) and use them to benchmark the Racer, FaCT, Jena, Pellet, and Jess OWL reasoners. (Note that most of these can be used within Protege.)

   [HORROCKS, 1999] [HAARSLEV & MLLER,] [PROGRAMME,] [KOPENA & REGLI,] [MINDSWAP,] [PRO, 2003]

5. *Formal Concept Analysis: Introduction and Applications.*

   Provide an introduction to FCA and illustrate some applications. Demonstrate an example (e.g., using Toscana)

   [GANTER & WILLER,] [BURMEISTER, 2003] [GANTER & WILLE, 1999] [TOS, 2003]

6. *Biological Pathways and other Biological Ontologies and Graph Databases*

   *** REFERENCES WILL BE UPDATED ***

   EcoCyc, BioCyc: [KARP, 1999], [KARP, 2000], [KARP, 2001], [BIO, 2003]

   Gene Ontology: [CONSORTIUM, 2002]

   Conceptual Modeling of Genomic Information: [PATON *et al.*, 2000]

   UMLS: [UML, 2003b], [UML, 2003a]

   [MCENTIRE *et al.*, 2000], [OLKEN, 2003]

   [KRISHNAMURTHY *et al.*, 2003]

7. Chien Yi: *Comparative Analysis of Process Models*, e.g.:

   - Petri nets,
   - abstract state machines,
   - temporal logic

References

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