2008

OWL–S and SAWSDL Service Matchmakers

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Source: Klusch

Organisational Issues

- Open call for entries
  - Via SMR2 workshop CFPs and workshop Web site
  - Via S3 Web site: http://wwwdfki.de/~klusch/s3/
- Evaluated Entries
  - OWL-S
    - OWLS-iMatcher2 (U Zurich, CH) - hybrid
    - OWLS-MX 2.0 (DFKI, D) - hybrid
    - JIAC-OWLSM (TU Berlin/DAI Lab, D) - hybrid
  - SAWSDL
    - URBE (Politecnico di Milano, I) - non-logic-based
    - SAWSDL-MX (DFKI, D) - hybrid
- Testing environment
  - Evaluation environment SME2 release 2.0
  - OWLS-TC 2.2 (1007s,29q,34o), SAWSDL-TC 1.0 (894s, 26q, 24o)
**OWL-S Matchmakers: Summaries**

- **OWLS-iMatcher2**
  - Dev: C. Kiefer & A. Bernstein (U Zurich, CH)
  - *Logic-based*: Logical unfolding of service I/O concepts (Pellet)
  - *Non-logic-based*: Text similarity-based matching of unfolded service signatures and names (SimPack: Edit - Levenshtein, Monge-Elka, Jaro; Token - Cosine, Jaccard, Dice etc.; over built index, no matchmaker ontology)
  - Ranking is text similarity-based

- **OWLS-MX 2.0**
  - Dev: M. Klusch, B. Fries, P. Kapahnke (DFKI, D)
  - *Logic-based*: Logical unfolding of service I/O concepts (Pellet); Logic-based matching (exact, plug-in, subsumes, subsumed-by - over matchmaker ontology)
  - *Non-logic-based*: Integrated text similarity measurement of unfolded I/O concepts (Cosine, Jaccard, LOI - over additional I/O concept index)
  - Ranking is logic-based sorted by text similarities

**OWL-S Matchmakers: Summaries (2)**

- **JIAC-OWLSM**
  - Dev: Nils Masuch (TU Berlin - DAI Lab, D)
  - *Logic-based*
    - subsumption relations between service and query I/O concepts
    - mapping of logical matching degrees $l_{match}(R,S)$ to numeric scores
  - *Non-logic-based*
    - integrate simple text similarity between concept names (Java string.equal(): exact string match, string.contains(): exact substring match)
    - weighted sum of logic-based and text similarity based matching scores
Performance Evaluation: R/P and Runtime

**OWL-S Matchmakers**

**Total runtime:**
- owls-imatcher: 11,2 min
- owls-mx: 14,4 min
- jiac-owlsm: 3,9 min

- Service registrations w/ matchmaker ontology/index building
- Service matching & ranking (selection)

Source: Klusch

Performance Evaluation: AQRT

**OWL-S Matchmakers**

**Avg query response time:**
- owls-imatcher: 22,94 secs
- owls-mx: 5,26 secs
- jiac-owlsm: 7,54 secs

Source: Klusch
SAWSDL Matchmakers: Summaries

- **URBE**
  - Dev: Pierluigi Plebani (Politecnico di Milano, I)
  - *Non-logic-based*
    - Bipartite graph-matching of service operations
    - Ontology-based operation I/O concept similarity (worst-case path length in given reference ontology); Text similarity (WordNet-based) for property-class and XSD data type matching

- **SAWSDL-MX**
  - Dev: Patrick Kapahnke, Matthias Klusch (DFKI, D)
  - *Non-logic-based*
    - Bipartite graph-matching of service operations
    - See OWLS-MX
  - *Logic-based*
    - See OWLS-MX

Performance Evaluation: R/P and Runtime

**SAWSDL Matchmakers**

**Total runtime:**
- sawsdl-mx: 8.1 min
- urbe: 20.0 min

For SAWSDL-TC 1.0
Performance Evaluation: AQRT

SAWSDL Matchmakers

Average query response time:

- sawsdl-mx: 8.38 secs
- urbe: 45.89 secs