DSSim Results for OAEI 2008

Miklos Nagy, Maria Vargas-Vera, Piotr Stolarski and Enrico Motta

The Open University
Computer Science
Department

KNOWLEDGE MEDIA INSTITUTE

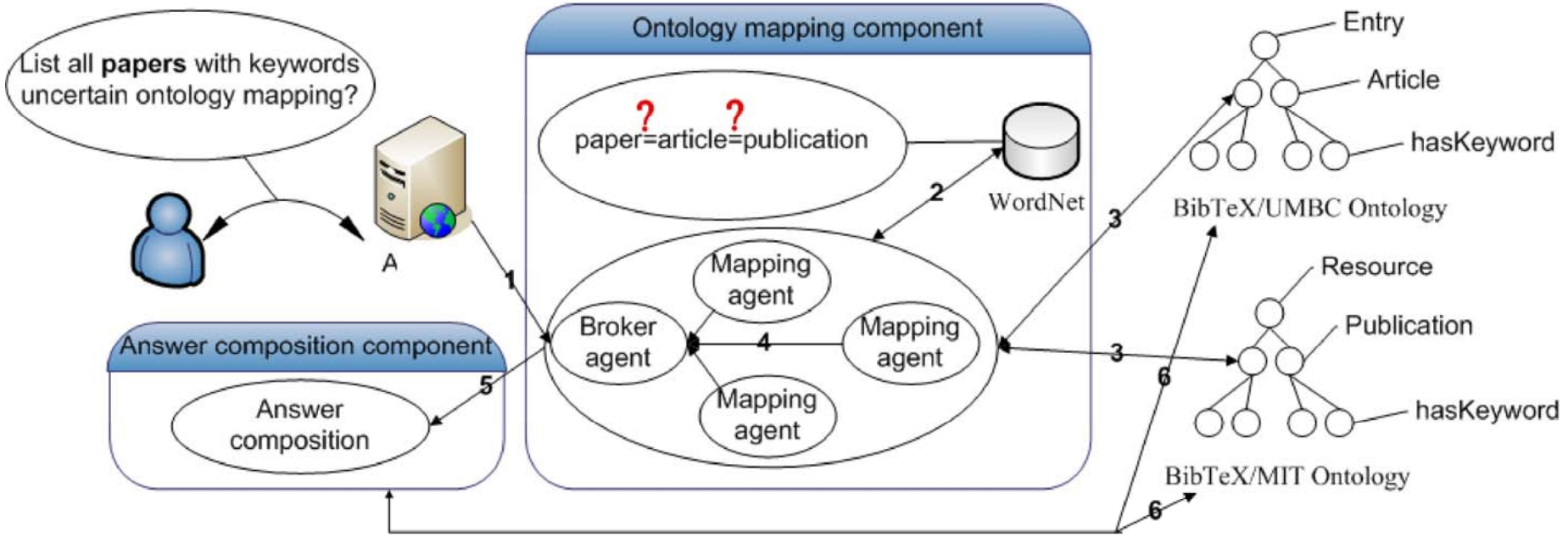
Outline

- Introduction and context
- DSSim Ontology mapping
- OAEI Mapping process
- Comments on OAEI tracks
- Future work

Introduction and context

- Question answering over multiple heterogeneous sources
- Incomplete and uncertain results of the different similarity algorithms
- Domain knowledge as a result of context dependent interpretation
- Distributed and dynamic environment

DSSim ontology mapping



KNOWLEDGE MEDIA INSTITUTE

DSSim ontology mapping

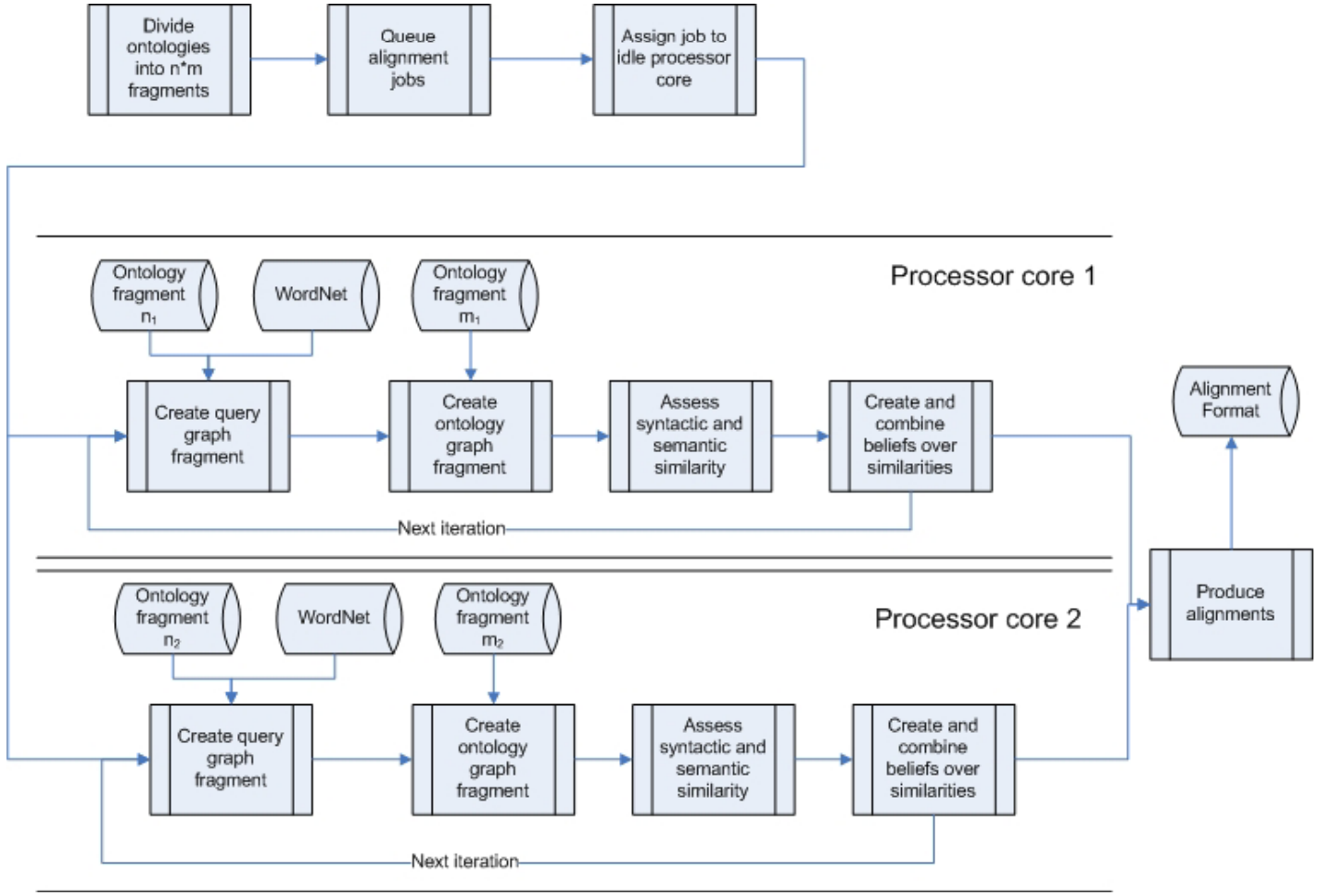
- Concept, property names & hierarchies
- WordNet in order to exploit synonymy at the lexical-level
- Different syntactic similarity measures like Monger-Elkan, Jaccard
- Graph matching for semantic similarity
- Possible mappings as hypotheses in Dempster Shafer theory

DSSim ontology mapping

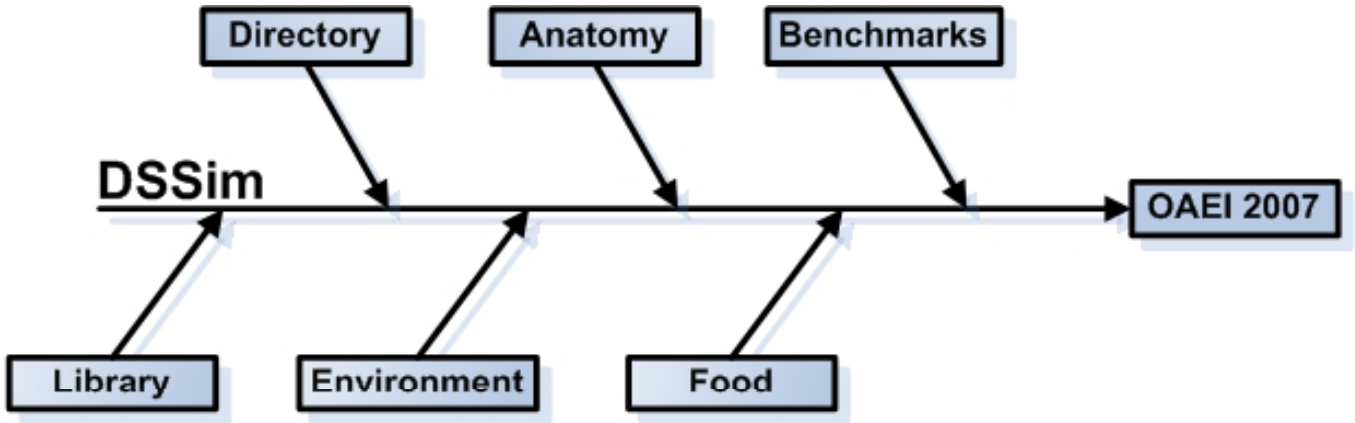
Compound nouns

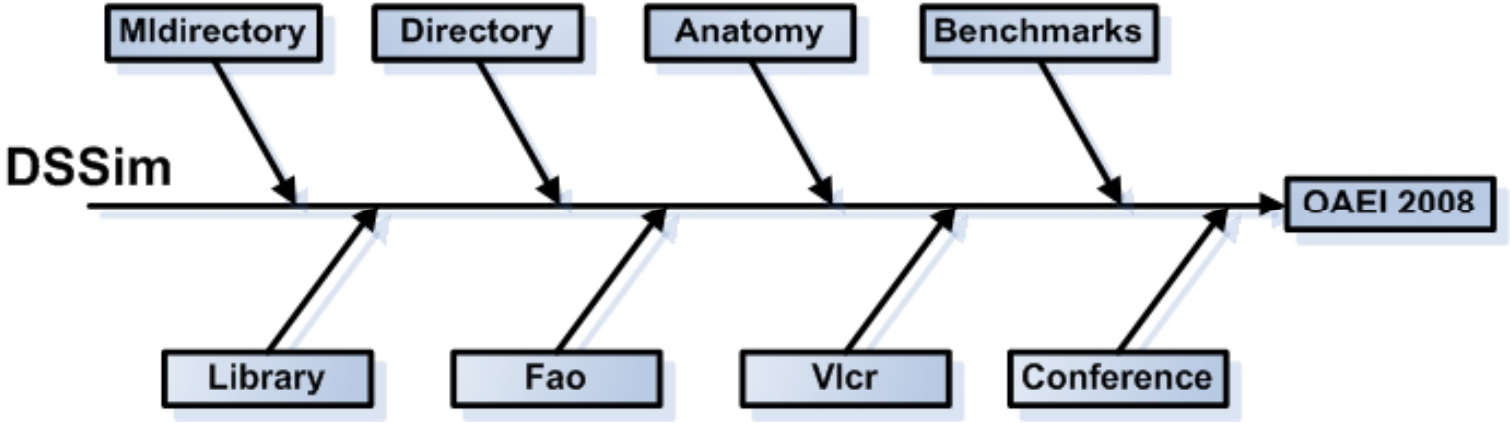
- Tokenise using different separators
- Consult background knowledge for each token
- Determine similarity for the intersection of tokens
- Assign compound noun into semantic rules

OAEI 2008 mapping process



OAEI 2008 mapping process





Comments on OAEI tracks

Benchmark track

Pros

- Relatively small ontology sizes
- Most ontologies contain instances

Cons

- Relatively small number of real word ontologies

Comments on OAEI tracks

Anatomy track

Pros

- Relatively small ontology sizes
- Real world ontologies

Cons

- We believe that domain specific background knowledge is needed for good results i.e. biological, has to be confirmed …
- Difficult names and labels for non experts (outer renal medulla peritubular capillary)
- No instances

Comments on OAEI tracks

Fao track

Pros

- Relatively small number of classes
- Large number of individuals
- Lot of additional information at the individual level

Cons

- Class information at the individual level

Comments on OAEI tracks

Directory track

Pros

- Small ontology sizes
- Large number of different ontologies

Cons

- Complexity for determining synonyms
  e.g. “News and Media”
- Individuals are modeled as classes
  e.g. 3D_Studio_Max

Comments on OAEI tracks

ML Directory

Pros

- Ontologies from different domains
- Manageable ontology sizes
- Large number of individuals compared to classes

Cons

- English-Japanese, Japanese-Japanese tests difficult to verify before submission

Comments on OAEI tracks

Library track

Pros

- Large real world ontologies
- Refer to broader and narrower concepts

Cons

- Difficult naming e.g. “gtt_291556558”
- SKOS -> OWL conversion, Chunk parsing
- Background knowledge in Dutch is necessary

Comments on OAEI tracks

Very Large cross lingual resources track

Pros

- Dutch-English/Dutch-English tests

Cons

- Difficult conversions from original format (DBPedia)
- Nearly unmanageable size
- Wordnet as background knowledge and source ontology

Comments on OAEI tracks

Conference track

Pros

- Large number of possible tests (around 200)
- Relatively small number of concept/properties
- Ontologies with different expressiveness

Cons

- Around 50% of possible alignments are empty

Future work

- Further test need to be carried out on fuzzy trust voting model
- Further optimise belief combination process
- Achieve better utilisation (query) of background knowledge
- OAEI 2009 participation…

DSSim-results for the OAEI 2008

Thank You!