Wordnet in Prolog

Computers Playing Jeopardy! Course

Stony Brook University

Prolog Wordnet

- Wordnet: http://wordnet.princeton.edu/wordnet
  - **Prolog version of WordNet 3.0**
- **Accessing WordNet from Prolog, Sarah Witzig**

  http://www.ai.uga.edu/mc/pronto/Witzig.pdf

Prolog Wordnet Examples

- OpenRuleBench Prolog Wordnet benchmarks:

http://projects.semwebcentral.org/scm/viewvc.php/openrulebench/wordnet/?root=rulebench

```
sameSynsets(Word1,Word2):-
    s(Synset_id,_W_num1,Word1,_Ss_type1,_Sense_number1,_Tag_count1),
    s(Synset_id,_W_num2,Word2,_Ss_type2,_Sense_number2,_Tag_count2),
    Word1 \= Word2.

gloss(Word1,Gloss):-
    s(Synset_id,_W_num1,Word1,_Ss_type1,_Sense_number1,_Tag_count1),
    g(Synset_id,Gloss).
```

Prolog Wordnet Examples

- Find sentence reformulations using synonyms:

```
sameSynsets(Word1,Word2):-
    s(Synset_id,_W_num1,Word1,_Ss_type1,_Sense_number1,_Tag_count1),
    s(Synset_id,_W_num2,Word2,_Ss_type2,_Sense_number2,_Tag_count2),
    Word1 \= Word2.
sameSynset(Word,Word).

reformulate([], []).
reformulate([H|T], [H2|T2]):-
    sameSynset(H, H2),
    reformulate(T,T2).

?- reformulate([‘to’, ‘be’, ‘or’, ‘not’, ‘to’, ‘be’], X).
      X = [‘to’, ‘exist’, ‘or’, ‘not’, ‘to’, ‘exist’]
      ...
```

Prolog Wordnet Examples

```
directHypernym(Word1,Word2):-
    s(Synset_id1,_W_num1,Word1,_Ss_type1,_Sense_number1,_Tag_count1),
    hyp(Synset_id1,Synset_id2),
    s(Synset_id2,_W_num2,Word2,_Ss_type2,_Sense_number2,_Tag_count2).
```

Prolog Wordnet Examples

- Hierarchy hypernyms:

```
hypernymSynsets(S1,S2):- hyp(S1,S2). % direct hypernym synsets
hypernymSynsets(S1,S2):- % multiple-levels hypernym sets
    hyp(S1,S3),
    hypernymSynsets(S3,S2).

hypernym(Word1,Word2):-
    s(Synset_id1,_W_num1,Word1,_Ss_type1,_Sense_number1,_Tag_count1),
    hypernymSynsets(Synset_id1,Synset_id2),
    s(Synset_id2,_W_num2,Word2,_Ss_type2,_Sense_number2,_Tag_count2).
```

Prolog Wordnet Examples

```
antonym(Word1,Word2):-
    s(Synset_id1,W_num1,Word1,_Ss_type1,_Sense_number1,_Tag_count1),
    ant(Synset_id1,W_num1,Synset_id2,W_num2),
    s(Synset_id2,W_num2,Word2,_Ss_type2,_Sense_number2,_Tag_count2).
```