

Something I Prepared Earlier

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<http://www.ninebynine.org/Presentations/20041105-Swish-Project.ppt>

<http://www.ninebynine.org/Presentations/20041105-Swish-Project.pdf>

<http://www.ninebynine.org/>

5 November 2004

Swish

- Swish project
 - Experimental Semantic Web data processing
 - Inspired by CWM (and its shortcomings)
 - Developed in Haskell
 - Some features
 - Parsers: Notation 3, RDF/XML, CSV
 - Writer: Notation 3
 - Multiple inference rule styles: Horn rule, Class-based
 - Scriptable
 - Exploration of datatype inference
 - Graph differencing
 - Description Logic inference (work in progress)

A closer look at two features

- Graph differencing
 - Possible use for evaluating changes in ontology definitions
- Importing RDF data from spreadsheets
 - Possible relevance to integration of existing data sources into Semantic Web applications

Graph differencing (1)

- Related to graph isomorphism testing
 - Roughly: structural equivalence testing
 - cf. paper by Jeremy Carroll
- The difficulty: bnodes
 - correspondence between URI-labelled nodes or literal nodes is easily determined
 - determining the correspondence between bnodes requires an analysis of the graph structure
 - there may be more than one satisfying correspondence between bnodes

Graph differencing (2)

- My approach:
 - Partition graphs into subtrees
 - Each subtree root is a statement subject that is a URI node or a blank node that is not the object of exactly one statement
 - Compare URI-rooted subtrees
 - Compare all pairs of bnode-rooted subtrees
- Although my approach would perform poorly in awkward cases, I claim it effectively exploits patterns commonly found in RDF data

Graph difference example

```
hdr:RFC1766 a hdr:Specification_doc ;
  hdr:document rfc-editor:rfc1766.txt ;
  hdr:author
    [ foaf:name "H. Alvestrand" ] ;
  hdr:title "Tags for the
    Identification of Languages" ;
  hdr:status "standards-track" ;
  hdr:date "March 1995" .
```

```
hdr:RFC1864 a hdr:Specification_doc ;
  hdr:document rfc-editor:rfc1864.txt ;
  hdr:author
    [ foaf:name "J. Myers" ] ;
  hdr:author
    [ foaf:name "M. Rose" ] ;
  hdr:title "The Content-MD5 Header
    Field" ;
  hdr:status "standards-track" ;
  hdr:date "October 1995" .
```

```
hdr:RFC1864 a hdr:Specification_doc ;
  hdr:author
    [ foaf:name "M.T. Rose" ] ;
  hdr:author
    [ foaf:name "J. Myers" ] ;
  hdr:title "The Content-MD5 Header
    Field" ;
  hdr:document rfc-editor:rfc1864.txt ;
  hdr:status "standards-track" ;
  hdr:label "RFC 1864" ;
  hdr:date "October 1995" .
```

```
hdr:RFC1766 a hdr:Specification_doc ;
  hdr:document rfc-editor:rfc1766.txt ;
  hdr:title "Tags for the
    Identification of Languages" ;
  hdr:status "standards-track" ;
  hdr:date "March 1995" ;
  hdr:author
    [ foaf:name "H. Alvestrand" ] .
```

Importing spreadsheet data

- Not all interesting data is RDF ...
 - ... but may be presented as RDF
- Example: URI test data from spreadsheet:

```
# Test data for URI parsing

@prefix uri:      <http://id.ninebynine.org/wip/2004/uritest/>
@rowtype uri:UriTest

@columns
rdfs:label uri:test      uri:base      uri:abs      uri:rel      rdfs:comment uri:scheme  uri:auth      uri:user      uri:reg      uri:port
@coltypes
@string   @resource   @string      @string      @string   @string   @string   xsd:boolean  @string   @string   @string

@data
Syntax001 uri:AbsRf      http://example.org/aaa/bbb#ccc
Syntax002 uri:AbsId      mailto:local@domain.org
Syntax014 uri:RelRf      aaa%2Fbbb
Decomp01  uri:Decomp    http://user:pass@example.org:99/aaa/bbb?qqq#fff      http:      TRUE      user:pass@      example.org      :99
Decomp02  uri:Decomp    http://user:pass@example.org:99aaa/bbb      Invalid      FALSE
Relative01 uri:Relative    foo:xyz      bar:abc      bar:abc
Relative02 uri:Relative    http://example/x/y/z      http://example/x/abc      ../abc

@end
```

Data exported as CSV

```
#,Test data for URI parsing,,,,,,,,,,,,,

@prefix,uri:,<http://id.ninebynine.org/wip/2004/uritest/>,,,,,,,,,,,,,
@rowtype,uri:UriTest,,,,,,,,,,,,,
@columns,,,,,,,,,,,,,
rdfs:label,uri:test,uri:base,uri:abs,uri:rel,rdfs:comment,uri:scheme,uri:auth,uri:us
er,uri:reg,uri:port,uri:path,uri:query,uri:frag
@coltypes,,,,,,,,,,,,,
@string,@resource,@string,@string,@string,@string,@string,xsd:boolean,@string,@string,
,@string,@string,@string,@string

@data,,
Syntax001,uri:AbsRf,http://example.org/aaa/bbb#ccc
Syntax002,uri:AbsId,mailto:local@domain.org
Syntax014,uri:RelRf,aaa%2Fbbb,,,
Decomp01,uri:Decomp,http://user:pass@example.org:99/aaa/bbb?qqq#fff,,,,http:,True,user:pass@,example.org,:99,/aaa/bbb,?qqq,#fff,
Decomp02,uri:Decomp,http://user:pass@example.org:99aaa/bbb,,,Invalid,,False,,,,,,,,,
Relative01,uri:Relative,foo:xyz,bar:abc,bar:abc,,,,,,,,,,,,,
Relative02,uri:Relative,http://example/x/y/z,http://example/x/abc,..../abc,,,,,,,,,,,,,
@end,,,
```

Reinterpretation as RDF/N3

```
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .
@prefix uri: <http://id.ninebynine.org/wip/2004/uritest/> .

_:_1 uri:base "http://example.org/aaa/bbb#ccc" ;
     uri:test uri:AbsRf ;
     rdf:type uri:UriTest ;
     rdfs:label "Syntax001" .

_:_2 uri:base "mailto:local@domain.org" ;
     uri:test uri:AbsId ;
     rdf:type uri:UriTest ;
     rdfs:label "Syntax002" .

_:_3 uri:base "aaa%2Fbbb" ;
     uri:test uri:RelRf ;
     rdf:type uri:UriTest ;
     rdfs:label "Syntax014" .

_:_4 uri:auth "True"^^xsd:boolean ;
     uri:base
     "http://user:pass@example.org:99/aaa/bbb?qqq#fff" ;
     uri:frag "#fff" ;
     uri:path "/aaa/bbb" ;
     uri:port ":99" ;
     uri:query "?qqq" ;
     uri:reg "example.org" ;
     uri:scheme "http:" ;
     uri:test uri:Decomp ;
     uri:user "user:pass@" ;
     rdf:type uri:UriTest ;
     rdfs:label "Decomp01" .

_:_5 uri:auth "False"^^xsd:boolean ;
     uri:base
     "http://user:pass@example.org:99aaa/bbb" ;
     uri:test uri:Decomp ;
     rdf:type uri:UriTest ;
     rdfs:comment "Invalid" ;
     rdfs:label "Decomp02" .

_:_6 uri:abs "bar:abc" ;
     uri:base "foo:xyz" ;
     uri:rel "bar:abc" ;
     uri:test uri:Relative ;
     rdf:type uri:UriTest ;
     rdfs:label "Relative01" .

_:_7 uri:abs "http://example/x/abc" ;
     uri:base "http://example/x/y/z" ;
     uri:rel "../abc" ;
     uri:test uri:Relative ;
     rdf:type uri:UriTest ;
     rdfs:label "Relative02" .
```

End

- **Contact information:**

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<http://www.ninebynine.org/>

- **References:**

<http://www.ninebynine.org/RDFNotes/Swish/Intro.html>

<http://www.ninebynine.org/RDFNotes/Intro.html>

<http://www.ninebynine.org/Software/Intro.html>

<http://www.ninebynine.org/SWAD-E/Intro.html>

<http://www.ninebynine.org/Software/HaskellDL/DLExploration.lhs>