

VerbOWL



Verbalisation of Afrikaans OWL 2 DL Ontologies

PROBLEM

Ontologies provide information about objects and relations between objects and is represented in a formal language. However, it can be difficult for end users to read formal languages. To make it more accessible, ontologies can be verbalised into natural language sentences.

OBJECTIVES

- Investigate two different approaches to verbalising OWL 2 DL ontologies.
- Determine if these approaches can be used to verbalise ontologies into Afrikaans sentences.

`lion ⊆ animal`

serialises as:

```
<owl:Class rdf:about="&AfricanWildlifeOntology1;lion">
  <rdfs:subClassOf rdf:resource="&AfricanWildlifeOntology1;animal"/>
</owl:Class>
```

TEMPLATE-BASED APPROACH

```
<Text>Elke</Text>
<Object
index="0"/>
<Text>is 'n</Text>
<Object
index="1"/>
```

SubClassOf Template

Each axiom in the ontology has a direct mapping to a template which outlines the structure of the generated sentence. The template has nodes into which the OWL objects and properties can be inserted.

GRAMMAR-BASED APPROACH

Axioms are pre-processed and fed into Grammatical Framework (GF). GF contains function definitions for each axiom in the abstract syntax, and a concrete syntax which uses these definitions to form language specific sentences.

```
SubClassOf x y
=
{s="elke"++x.s
++"is "++y.s};
```

Concrete Syntax
Extract

Elke leeu is 'n dier.
'Every lion is an animal.'

Example Output Sentence

CONCLUSIONS

- It is possible to verbalise OWL 2 ontologies in Afrikaans.
- Simple axioms are more likely to be verbalised into grammatically correct sentences.
- Complex axioms (involving nested class expressions) are more difficult to verbalise into grammatically correct sentences. They require more manipulation of the code.



University of Cape Town
Computer Science Department
Private Bag X3
Rondebosch
7700
Tel: 021 650 9111

Team members
Lauren Sanby
Ion Todd

Project website
<http://people.cs.uct.ac.za/~tddion001>

Supervisor
Dr Maria Keet

