

Towards a Visual SPARQL-DL Query Builder

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XXIV Congreso Argentino de Ciencias de la Computación
Octubre 2018



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Objective

- We have a big ontology.
- How can we query it?
- But OWLlink/DIG is difficult to use!
- We want to query whatever we want!
 - Not only data, structure too!
- It would be awesome if it is a graphical language!

Then, we want to:

- Make queries.
- With great expressiveness.
- Easy to read, write and understand.



crowd

What is crowd?

Web tool for graphical ontology modelling

Why crowd?

- Web tool.
- Adaptable and expandable.
- Supports UML as graphical language.
- Berardi *et al.* encoding to OWL 2 and reasoning support.



A crowd screenshot



SPARQL-DL

What is SPARQL-DL?

A Query Language for OWL-DL ontologies significantly more expressive than existing DL QL.

Why SPARQL-DL?

- Allows combined ABox, RBox and TBox queries.
- Aligned with SPARQL.
- Can be used on top of OWL-DL reasoners.

Example

```
SELECT * WHERE {Class(?x), Class(?y),
  DirectSubclassOf(?y, ?x)}
```



UML-like VQL

UML-like VQL

Let's define a UML-like Visual Query Language.

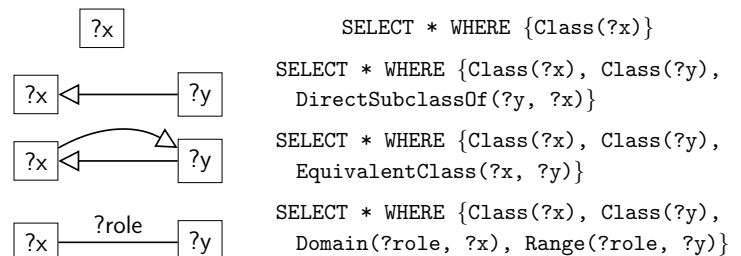
- crowd has UML support.
- UML is well-known.
- We allow to use variables as classifier names.
For example: ?person

UML	DL	OWL 2
TBox		
Classes	Concepts	Classes
Associations	Roles	Object Properties
Generalizations	Inclusion	SubClassOf
ABox		
Objects	Instances	Individuals/Instances



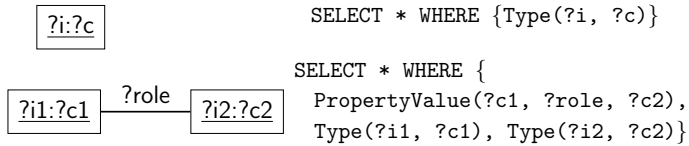
SPARQL-DL Encoding

Now we need to encode the UML-like primitives into SPARQL-DL.



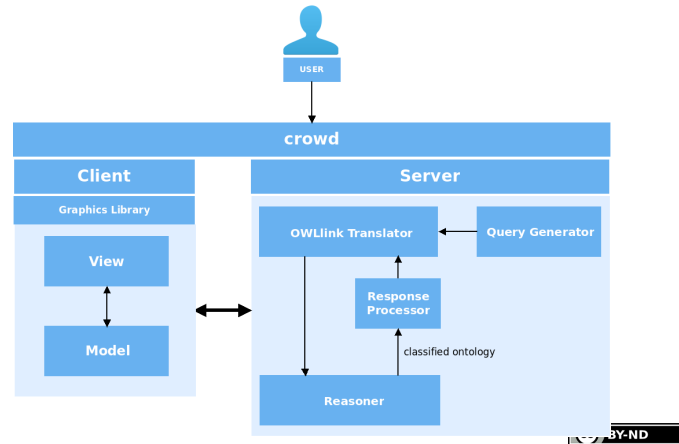
SPARQL-DL Encoding (instances)

Now we need to encode the UML-like primitives into SPARQL-DL.



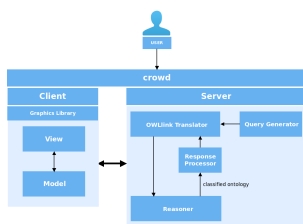
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crowd Architecture

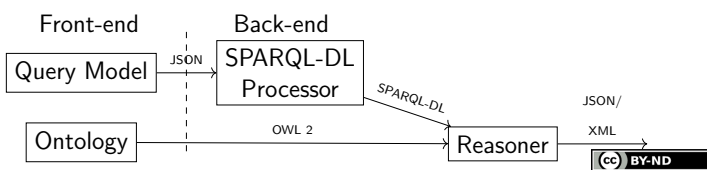


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crowd Architecture



Back-end steps for processing the query modelled by the user.

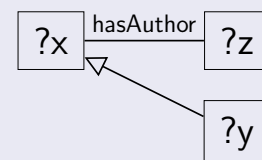


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Example

UML-like Query

A query expressed in UML-like class diagram model.



SPARQL-DL Encoding

```

SELECT ?x,?z,?y WHERE
{Class(?x), Class(?z), Class(?y),
 DirectSubclassOf(?y,?x),
 Domain(?x,:hasAuthor), Range(?z,:hasAuthor)}

```

Thank you!

Thank you!

Questions?



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