A STUDY ABOUT THE USE OF OWL 2 SEMANTICS IN RDF-BASED KNOWLEDGE GRAPHS

Pierre-Henri Paris, Fayçal Hamdi and Samira si-said Cherfi

pierre-henri.paris@upmc.fr, faycal.hamdi@cnam.fr, samira.cherfi@cnam.fr

MOTIVATION

Previous studies have shown that OWL 2 semantics is not always used in KGs. But, is this still the case today? Has progress been made?

How to choose between two knowledge graphs (KGs) covering the same domain but modeled differently? For example, the first KG could use complex OWL constructs, and the second one only very simple definitions.

Or

How to choose the appropriate tool for a given task, depending on (i) the techniques they use and (ii) the semantics contained in the knowledge graph(s)?

RESULT HIGHLIGHTS

• Only 34% of large graphs use at least one semantic feature of OWL 2!
• Properties like propertyDisjointWith are almost not used.
• Cross domain graphs are among the top users of OWL 2 semantics.


SOURCES

LOD Cloud:
• Well-established graphs
• Metadata
• Field(s) of graphs
• Limited number of graphs

LOD Laundromat:
• A lot of data
• Ease of use
• Graphs distinguishable from each other
• Metadata

ONTOLOGY

An ontology to capture the semantics used in a knowledge graph:
http://cedric.cnam.fr/isid/ontologies/OntoSemStats.owl

Both users and data publishers will be delighted: the former will find their work easier and the latter will see their data used more often.

TOOLS

To instantiate the ontology for a given SPARQL endpoint, we provide several tools! They are available on GitHub under GPL open-source license.


ANSWER:

You need to explore the knowledge graph(s) to find out which classes or properties are defined with the desired semantic features! But this task is time-consuming and is difficult to perform automatically. We have the solution!

Used technologies:

C# • RDF • Docker

ONLINE LIVE DEMONSTRATOR
• COMMAND-LINE
• WEB API