Web-based Ontology Analysis and Partitioning Tool

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Overview

With the increasing use of ontologies in many branches of science and industry not only the number of available ontologies has increased considerably but also many widely used ontologies have reached a size that overburdens development and quality control procedures. It has been argued that the maintenance of large ontologies would be greatly facilitated by decomposing large ontologies into smaller modules that cover certain subtopics of the ontology. To accomplish this, the **"Web-based ontology analysis and partitioning tool"** is developed as an open platform web application. Its design allows for quickly uploading large ontologies and partitioning the ontologies into smaller modules.

Implementation Details

The tool is a web-based application running on the MEAN stack (without MongoDB) having Java 1.7 as a dependency.

Software used:

- **E**xpress,js v4.13.3
- **A**ngularjs v1.3.15
- **N**ode.js v0.12.2 (release date May 2015).

Furthermore, other **Node.js** modules are used to ease the development and to accomplish different functions, such as file handling. The **semantic web** specific libraries used are:

- RDFSTORE
- VisJS
- OWL2VOWL

Future Work

- Enable editing of ontology(i.e adding and removing nodes.
- Improve partitioning by adding more algorithms.
- Generate OWL file from JSON file.
- Add database support (MongoDB).

Virtual Machine and Remote Access

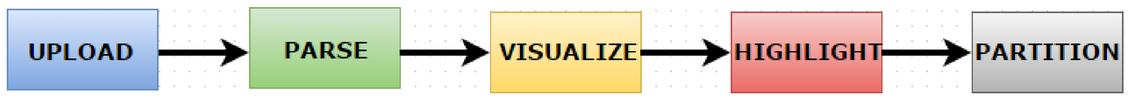
Workstation name: EIS03
Username: 331986084
Password: E1sontotool

OS: Windows (64 bit)
Username: user
Password: EIS2015

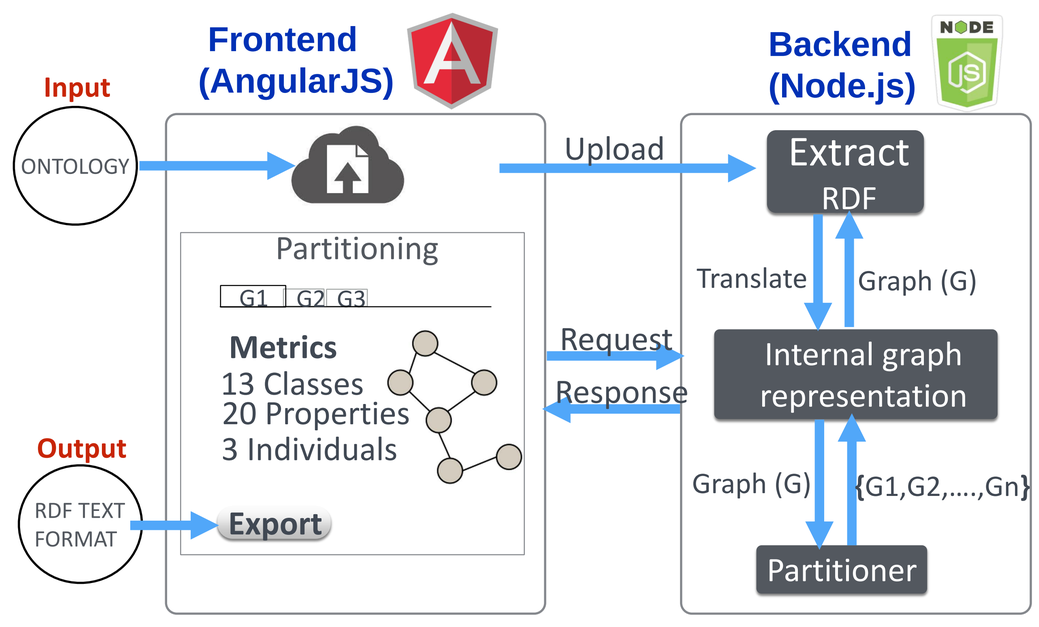
Source code and Documentation

https://github.com/EIS-Bonn/MA-INF3232-Lab-SS2015.git

Application Workflow



Architecture



Results

- Conversion of the ontology into RDF triples
- Visualization of triples as a directed graph
- Metrics that count specific elements of the graph
- Filtering & highlighting
- Random colors and shapes to highlight
- Partitioning
- Saving the result as a file

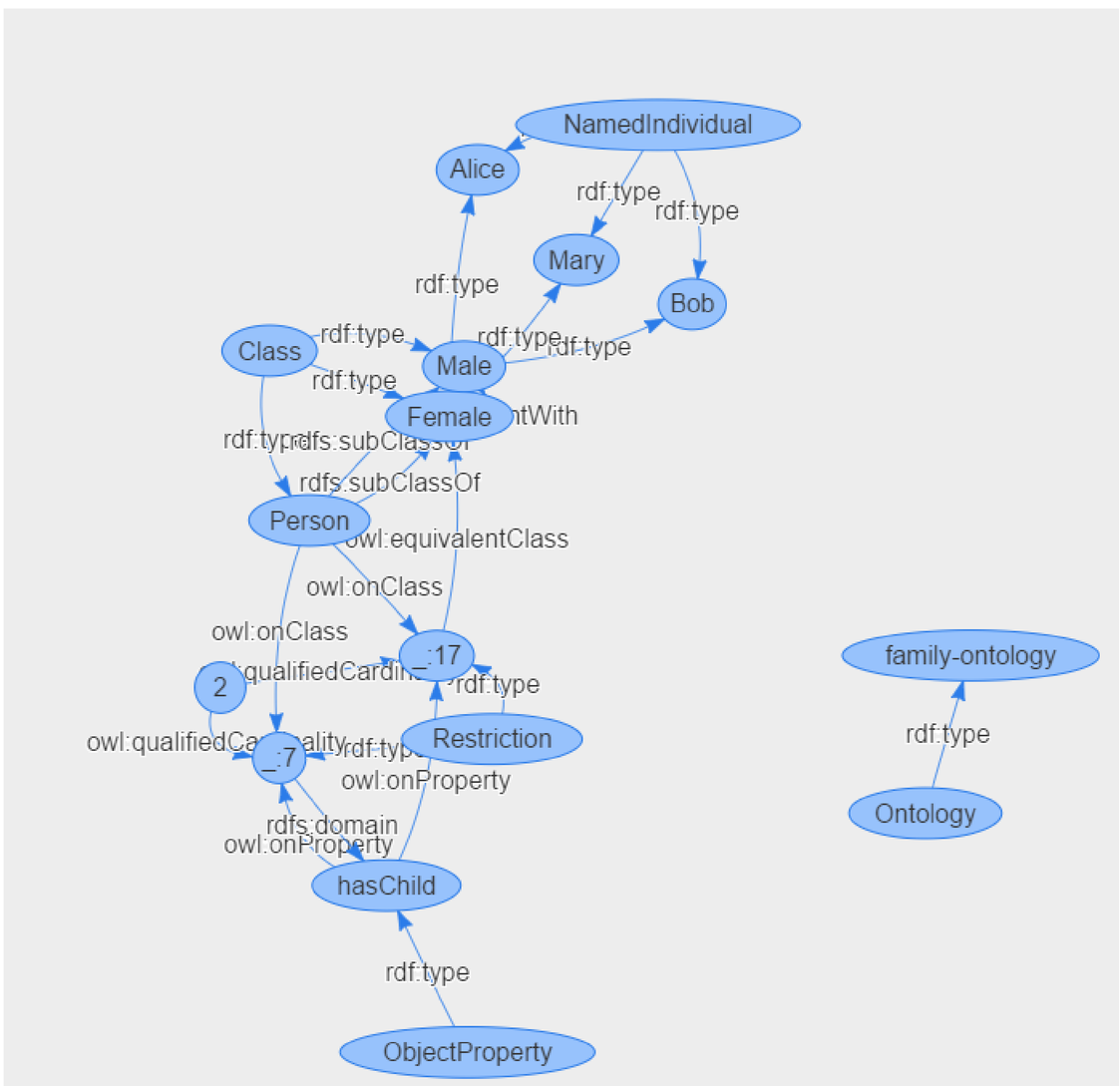


Image - Visualized Ontology