ulm university universität ulm

Master's Thesis

at the Institute of Artificial Intelligence

Retrieving Instances of Complex Classes in Ontologies

Description

In the context of ontologies, the term materialization refers to the calculation of all instances of all (named) classes. This refers not only to explicitly stated instances, but through automatic reasoning also implicit instances (logically following from the background knowledge) are derived. For this purpose, we recently developed a method based on the concept of abstraction and refinement, where reasoning is performed not on the original and often very large amounts of data, but on representative data (the abstraction). The abstraction is iteratively refined in a fix-point procedure. Materialization, however, only calculates instances of named classes. Complex classes, e.g. formed as a conjunction of other classes, are not considered. In the context of the work an algorithm for the computation of instances of complex classes is to be developed, implemented, and tested based on the existing system for reasoning via abstraction and refinement.

Tasks

- Extension of the existing reasoning system for reasoning via abstraction and refinement with a component for retrieving instances of complex classes in Java.
- Evaluation of th implementation over existing ontologies and possibly a comparison with other reasoners.

Anforderungen

Good implementations skills in Java and knowledge of Semantic Web technologies (OWL, DLs, reasoning, . . .) are required.

Further thesis offers are available at the institute's website at `http://www.uni-ulm.de/in/ki.html`.

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