Masterarbeit
am Institut für Künstliche Intelligenz

Referring Expressions in Ontological Explanations

Description

Ontology reasoners compute logical consequences that follow from explicitly specified axioms. For showing users why a consequence follows, one can compute a minimal set of axioms, a so-called justification, from which the consequence follows. To make justifications more understandable for non-logicians, verbalization techniques translate the formal axioms into natural language. A direct translation results, however, often in long and repetitive explanations.

The aim of this thesis is to develop a concept for using referring expressions and shortening techniques in the verbalization, implement the concept in an existing verbalization system and evalute whether its use yields any increase in user satisfaction and understanding.

Example of a verbalized justification: A vibrio vaccine is a bacterial vaccine. A vibrio cholerae vaccine is a vibrio vaccine. Vaxchora uses a live attenuated pathogen. Vaxchora is a vibrio cholerae vaccine. A bacterial vaccine is a vaccine. According to its definition, a live attenuated vaccine is a vaccine that uses a live attenuated pathogen. Thus, vaxchora is a live attenuated vaccine.

Explanation: Since vaxchora is a vibrio cholerae vaccine, which is a vibrio vaccine, which is a bacterial vaccine, which is a vaccine, vaxchora is a vaccine. Furthermore, since vaxchora uses a live attenuated pathogen, vaxchora is a vaccine that uses a live attenuated pathogen. A live attenuated vaccine is defined as a vaccine that uses a live attenuated pathogen. Thus, vaxchora is a live attenuated vaccine.

Shortened Explanation with referring expressions: Since vaxchora is a vibrio cholerae vaccine, vaxchora is a vaccine (get details). Since *it* uses a live attenuated pathogen, *it* is a vaccine that uses a live attenuated pathogen. *The latter* is defined to be a live attenuated vaccine. Thus, vaxchora is a live attenuated vaccine.

Tasks

- Understanding the rule-based explanation mechanism
- Develop, implement and evaluate a concept for using referring expressions in explanations

Requirements

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

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