Temporal ABox Cleaning in TDL-Lite

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The Problem of Cleaning ABoxes in TDL-Lite KBs

The key idea is to map a TDL-Lite KB into an equisatisable DL-Lite KB, and then apply DL Reasoners.

The translation Function Syntax

The best temporal repair is an adaptation of the technique presented in [6] with considering the allowed rigid predicates and the time order of assertions.

ABox A is a set of concept assertions of the form or role assertions of the form .

The maximal repair is obtained by removing vertices in the intersection of hyperedges i.e. assertions who are involved in more than one conflict.

Maximal Repair Versus Maximal Temporal Repair

Our aim is to guide the repair algorithm when removing assertions with the same Inconsistency degree I, by choosing to remove assertions having the lowest temporal weight.

We apply Pellet and we report those explanations in an intuitive way by building an inconsistency graph IG which is similar to the conflict-hypergraph [6,7,8]

Syntax

We consider here the logic TDL-Lite(N) combining DL-Lite with LTL, but with just future temporal operators and thus interpreted over the natural numbers. TDL-Lite(N) roles R which are either local L or global G, basic concepts B, and (temporal) concepts C are given by the following grammar:

A TBox T is a set of GCI of the form and an ABox A is a set of concept assertions of the form or role assertions of the form .

Inconsistency Detection

We apply Pellet and we report those explanations in an intuitive way by building an inconsistency graph IG which is similar to the conflict-hypergraph [6,7,8]

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We assign a temporal weight UT for each inconsistent

The intuition behind using the lifespan value σ for each rigid concept in NRC and global role in NC is to set a duration after which its instances are weakened.

Bibliography