

Towards Consistency Checking over Evolving Ontologies

Reference:

J. Wu and F. Lecue, "Towards Consistency Checking over Evolving Ontologies (accepted for publication)," in the 23rd ACM Conference on Information and Knowledge Management (CIKM 2014), Shanghai, China, November 3-7, 2014, pp. NN-NN.

Abstract:

Data captured in OWL ontologies is generally considered to be more prone to changes than the schema in many situations. Such changes often necessitate consistency checking over the resulting ontologies in order to maintain coherent knowledge, specifically in dynamic settings. In this paper, we present an approach to check the consistency over an evolving ontology resulting from data insertions and deletions, given by some expressive underlying Description Logic dialect. The approach, assuming an initially consistent ontology, works by syntactically identifying "relevant" and representative parts of the data for the given updates, i.e., the part that may contribute to subsequent consistency checking. Our approach has demonstrated its efficacy in checking consistency over large and real-world ontologies and outperforms existing approaches in several circumstances.