Belief Change for Ontology Evolution

Motivation

❖ Lack of adequate formalizations
❖ Manual execution
❖ Too many operators to consider

Our Approach (Key Ideas)

✓ Proposed a novel, automatic and more formal approach to ontology evolution based on and inspired by belief change
✓ Studied belief change formalisms, principles, ideas and techniques under the prism of ontology evolution

Main Results

❖ Adequate formalisms provided by belief change and Tarski’s logical model
❖ Belief change is automatic: relevant ideas, intuitions, techniques and models are useful
❖ 4 operations only (revision, contraction, update, erasure)

Generalization of the AGM Theory

Motivation

❖ The above model is very abstract; we need a more concrete approach

Our Approach (Key Ideas)

✓ AGM theory is the most influential approach in belief change; DLs and OWL are the most useful formalisms for the representation of ontologies
✓ Dropped the AGM assumptions: our work is applicable to all logics under Tarski’s model
✓ Generalized the AGM theory of contraction and the AGM postulates

Main Results

❖ Evaluation of the feasibility of applying the AGM theory in all logics under Tarski’s model (AGM-compliance)
❖ Connection with foundational operators
❖ Study and development of specialized conditions and heuristics regarding the AGM-compliance of DLs and OWL
❖ Theoretical foundations that allow the development of more concrete approaches