Journal of Artificial Intelligence Research
2013

Defeasible Inheritance-based Description Logics

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Abstract

Defeasible inheritance networks are a non-monotonic framework that deals with hierarchical knowledge. On the other hand, rational closure is acknowledged as a landmark of the preferential approach to non-monotonic reasoning. We will combine these two approaches and define a new non-monotonic closure operation for propositional knowledge bases that combines the advantages of both. Then we redefine such a procedure for Description Logics (DLs), a family of logics well suited to model structured information. In both cases we will provide a simple reasoning method that is built on top of the classical entailment relation and, thus, is amenable of an implementation based on existing reasoners. Eventually, we evaluate our approach on well-known landmark test examples.