Preferential Semantics as the Basis for Defeasible Reasoning in Ontologies

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Abstract. Preferential extensions of classical logics provide a promising foundation on which to base notions of entailment for defeasible reasoning. In this talk I will give an overview of one such a preferential extension, originally proposed by Sarit Kraus, Daniel Lehmann, and Menachem Magidor. This approach has two main advantages. Firstly, it permits a formal analysis of defeasible properties, which plays a central role in assessing how appropriate the obtained results are. And secondly, it allows for decision problems to be reduced to classical entailment checking, sometimes without blowing up the computational complexity with respect to the underlying classical case. The focus of the talk will be on the recent application and extension of this approach to the class of description logics, allowing for the expression of defeasible subsumption, defeasible equivalence, defeasible disjointness, defeasible quantification, and defeasible querying.