

# Building an Efficient OWL 2 DL Reasoner

Boris Motik

University of Oxford

## Abstract

The Ontology Web Language (OWL) has received considerable traction recently and is used in a number of industrial and practical applications. While decidable, all basic reasoning tasks for OWL are intractable (most of them are N2ExpTime-complete). Thus, in order to obtain a system capable of solving practically-relevant nontrivial problems, a number of theoretical and practical issues need to be resolved. In my talk I will present an overview of the techniques employed in HerMiT, a state-of-the-art OWL reasoner developed at Oxford University. I will present the main ideas behind the hypertableau calculus and contrast them with the tableau calculi used in similar systems. Furthermore, I will discuss optimization techniques used in HerMiT such as the blocking cache, individual reuse, and core blocking. Finally, I will discuss certain higher-level optimizations implemented on top of the basic calculus, such as the recently-developed optimized classification algorithm.