Institute for Integrated and Intelligent Systems (IIIS) and School of Information and Communication Technology (ICT)

Is pleased to present the SEMINAR on

"A Parameterized Semantics to Solve Update Conflicts in Hybrid Knowledge Bases"

Sebastian Binnewies  PhD Student

**Time** 11.00am - 12.00midday  
**Date** 26 July 2012  
**Venue** G39 1.20 Gold Coast campus Griffith University.

**Abstract:** With an increasing amount of data available on the World Wide Web, the extraction of desired information is becoming more cumbersome for users. The Semantic Web aims to enhance the current Web by specifying the meaning of Web content in such a way that machines can interpret it and, consequently, assist in the processing of information. A number of standards exist for realizing the Semantic Web, among them a language for building ontologies. Ontologies are used as a mechanism to represent knowledge about some part of the world. They establish a common definition of the terminology in a domain, so that Web Services can refer to this definition to specify and exchange information without ambiguities. Moreover, an ontology defines terms and their meaning in a formal manner, a feature that enables reasoning engines to derive logical conclusions automatically. While being an integral part of the Semantic Web architecture, knowledge representation in ontologies has several limitations. To address some of the limitations, many approaches have proposed to combine ontology languages with rule-based formalisms. Rules enrich ontologies with additional knowledge representation and reasoning properties, and the resulting combination is called a hybrid knowledge base. A critical shortcoming of these combination approaches, and of particular importance for practical applications, is that hardly any capture the dynamic nature of the Semantic Web, where information is frequently changing. In order to reflect these dynamics, a hybrid knowledge base needs to be updated accordingly. However, such an update is a non-trivial process since new information may conflict with existing information, which would cause the knowledge base to become inconsistent. In this work, we describe our intention to address such conflicting updates in hybrid knowledge bases. We first aim to examine which forms of updates can occur and to classify the types of conflicts they can induce, based on one specific combination of ontology and rule language. We then plan to design a hybrid formalism that can efficiently handle updates and resolve arising conflicts. Finally, we intend to investigate how our formalism can be extended to other combinations of ontology and rule languages.

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