

A Structured Semantic Query Interface for Reasoning-Based Search and Retrieval

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Abstract. Information and knowledge retrieval are today some of the main assets of the Semantic Web. However, a notable immaturity still exists, as to what tools, methods and standards may be used to effectively achieve these goals. No matter what approach is actually followed, querying Semantic Web information often requires deep knowledge of the ontological syntax, the querying protocol and the knowledge base structure as well as a careful elaboration of the query itself, in order to extract the desired results. In this paper, we propose a structured semantic query interface that helps to construct and submit entailment-based queries in an intuitive way. It is designed so as to capture the meaning of the intended user query, regardless of the formalism actually being used, and to transparently formulate one in reasoner-compatible format. This interface has been deployed on top of the semantic search prototype of the DSpace digital repository system.

Keywords: Semantic Web, queries, ontologies, entailment, guided input.

1 Introduction

The growing availability of semantic information in today's Web makes ontology-based querying mechanisms necessary. Europeana for example counts over 10M of semantic objects corresponding to heritage and collective memory resources [14]. And this currently forms only the tip of the iceberg: Vast amounts of Linked Data exist and continuously emerge out of DBpedia, social applications, open government data and other sources.

However, querying the Semantic Web is not a straightforward task, especially in case of expressive ontology languages, like OWL and OWL 2 where inference holds a key part. In addition to the current lack of protocols and standards for efficiently