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Identification and resolution of conflicts during ontology integration using rules

By

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Integration of ontologies of information sources and consumers is an important phase in achieving semantic interoperability, which is in particular important for web-based information systems and applications. We present an approach for identifying certain semantic conflicts, in particular homonymy and synonymy between elements of the ontologies during their integration. In our approach, homonymy and synonymy map to naming conflicts and entity-identifier conflicts, respectively. The novel concept of the mask of interoperability is introduced for the identification of synonymy. The mask of interoperability is expressed in a declarative way as a set of rules, which can be then used for resolution of conflicts during integration of ontologies. We implemented ontologies using Ontology Web Language (OWL), and the rules - using the emerging rule language, Semantic Web Rule Language (SWRL). Using OWL facts and SWRL rules, we applied Jess and Bossam reasoning engine to identify semantic homonymy and synonymy.

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