Asian Journal of Information Technology 15 (4): 730-737, 2016
ISSN: 1682-3915

A Systematic Mapping Study of Database Resources to Ontology via Reverse Engineering

Aftab Ahmed Abbasi and Narayanan Kulathuramaiyer
Faculty of Computer Science and Information Technology (FCSIT),
University Malaysia Sarawak (UNIMAS), Kot Samarahan, Malaysia

Abstract: This study aims at proposing transformation technique to build OWL ontology from relational database resources by following SQL-DDL (Structured Query Language-Data Definition Language) written version. Though, the databases has proposed the best form of techniques in order to store in memory for the purpose of managing data and retrieving data or for the purpose of recovering it for further functions. However, databases has been observed semantically absence in achieving world-wide objectives based on both web and data integration semantically. Semantic web is supported by ontology that has ability to represent data in meaningful, rich and readable form for both human and machine. This issue can be overcome through ontology would help in improving databases by semantic functions. This approach can capture meta-data from tuples by analysis of database relations. The meta-data can assist to take out several features of semantic and would not infer from Structured Query Language (SQL). As conceptual model is richer in semantics, so this study gets conceptual (EER) model by applying reverse engineering technique. Finally, the generated ontology is validated and enhanced through comparison with that of database conceptual model which is also known as EER diagram, for achieving the highest ontology.

Key words: Deep web, transformation technique, databases, semantic web, ontology, meta-data

INTRODUCTION

Presently, the research in the world of semantic web has drawn great focus for solving complex issues in the integration of data. Semantic web is an extension in current web providing a standard way for exchanging information between machine to machine and people. The ontology is known as the focal point of the semantic web. Ontology is an unequivocal subtle element in a typical conceptualized concept (Gruber, 1993). Moreover, this is described as a strictly unequivocal course of actions encircled in continuously sorted out course to depict conceptions based on certain treatise basis intended for learning (Swartout *et al*., 1997). Ontology expect a basic part in comprehension the considered database interoperability because of gigantic qualities (Noy and McGuinness, 2001), for instance sharing information structure, reusing and including rich and machine understandable semantic to data in it. Using ontology means, it is not projected as the replacement for certain developments of database. Truly, database is considered as more risky when compared to ontology for securing broad scale of these data sets. Hence, this study finds a structure partner for both the database techniques as well as ontology methods. Whereas, databases techniques are broadly used and addressable. However, this separating of rationality is non use-able for the most part of the approaches. Additionally, adding to a ontology beginning with no outside help is dismal, uninteresting, botch slanted and work-expansive at the season of building one by hand exhibits the same detriments (Li *et al*., 2005; Stojanovic *et al*., 2002). This suggested course of action used a couple of guidelines for changing an offered database to a ontology which can be used either for manual change or for an automated change of integrity processes (Stojanovic *et al*., 2002). In this regard, the terms mapping and transformation should be differentiated clearly. The change from database to the ontology infers for making ontology by following the perceptive model of databases by using a couple of procedures either by hand or through a structure applied by logical form databases and ontology which are remained existed (Astrova *et al*., 2007a).

Liteture review: In the research of (Astrova *et al*., 2007b), Slight the levels of relational tenet or the break standard at the time of mapping of tables by focussing on destinations diagraming. The fundamental approaches for

Corresponding Author: Aftab Ahmed Abbasi, Faculty of Computer Science and Information Technology (FCSIT), University Malaysia Sarawak (UNIMAS), Kot Samarahan, Malaysia