Chapter 73

Management of SME's Semi Structured Data Using Semantic Technique

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ABSTRACT

Management of data for an organization is crucial task but when data goes to its complex form then it becomes multifaceted as well as vital. In today era most of the organizations generating semi structured or unstructured data that requires special techniques to handle and manage. With the needs to handle unstructured data, semantic web technology provides a way to come up with the effective solution. In this chapter Synthetic Semantic Data Management (SSDM) is explained that is based semantic web technique and will helps to manage data of small and Midsized Enterprise (SME). SSDM provide the procedure to handle, store, manages and retrieval of semi structured data.

INTRODUCTION

Big data analytics is process to analyze organizations data that may be of structure, unstructured or semi structured type and leads to meaningful insights and information. This analysis process uncovers hidden facts, unknown relations, customer requirements and business needs. Result of analysis provides effective customer services and edge over competitive environment. Data analysis done by traditional tool but big data analysis require special tool that can handle volume, verity and velocity. These may be of Hadoop related or NoSQL database type.

Semantic technologies can be effectively works with Variety, a third V of big data. Semantic technology is a type of graph model that deals with RDF data. This graph model helps to store data and analyze it using semantic query tool. Semantic technique provides easy and cost effective solution to unstructured data analysis. As in the current world wide web environment complexity and amount of data increase at unexpected rate that demands new storage techniques that can handle data semantically.

Traditional data storage methods are based on relational techniques that are not effective to handle unstructured data so unstructured nature of data motivates to use semantic technology. Facebook and Google like big data generator uses semantic graph for its data storage and handling. Semantic technology uses RDF as a flexible data model and ontology to represent linked data. Ontologies are use to represent semi-structured data and provides means to store and extract knowledge. Current relational model and XML model are widely used to represent structured and semi structured data with limited functionality. XML model provides syntax based data representation but weak semantic support whereas entity relationship model (relational model) can deal with semantic at non user end but create difficulty for end user to understand when it is transformed to physical data model.OWL and RDFS ontology provide best means of storage of semantic and easy query based data retrieval.

With increasing market antagonism and complex business performance management, it is significantly important for contemporary organizations to maintain a single group of core entities across many systems within an enterprise to improve business efficiency and customer satisfaction. There arises high demand to analyze data, which refers to core business entities a company uses repeatedly across many business processes, such as lists or hierarchies of customers, suppliers, accounts, or organizational units.

In this chapter, we propose SSDM (Synthetic semantic data management) approach. SSDM provide data management solution for a Small and Medium size Enterprise (SME) that will be helpful for analyzing customer behavior and business intelligence. Ontologies are used for data representation data management and semantic queries are used to retrieve facts for stored data. In this chapter we manage data of food chain enterprise (SME) using OWL script. For storing data we use propose algorithm (SSDM) that implemented on RDOTE tool and data is retrieved using SPARQL queries and DL inference. This paper covers following topics after the introduction section:

- Survey of Big data and semantic technology,
- Semantic Web Languages,
- Synthetic Semantic Data Management (SSDM),
- Steps of Implementation,
- Tool used for SSDM,
- Conclusion, and
- References.

As an outcome of this chapter, we will be able to store and manage data using semantic technique and also able to handle variety of data. Chapter gives the of following:

- Introduction to semantic technique,
- Different type semantic scripts and their importance for big data management,
- Difference between XML, RDF, RDFs and OWL scripts,
- SSDM approach for data management,
- SPARQL query execution,
- DL inference for collecting facts from defined rule, and
- RDOTE and Protégé tool for data management and inference.

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