

A multidimensional data model using the fuzzy model based on the semantic translation

Abstract

With the rapid development of Web 2.0 sites such as Blogs and Wikis users are encouraged to express opinions about certain products, services or social topics over the web. There is a method for aggregating these opinions, called Opinion Aggregation, which is made up of four steps: Collect, Identify, Classify and Aggregate. In this paper, we present a new conceptual multidimensional data model based on the Fuzzy Model based on the Semantic Translation to solve the Aggregate step of an Opinion Aggregation architecture, which allows exploiting the measure values resulting from integrating heterogeneous information (including unstructured data such as free texts) by means of traditional Business Intelligence tools. We also present an entire Opinion Aggregation architecture that includes the Aggregate step and solves the rest of steps (Collect, Identify and Classify) by means an Extraction, Transformation and Loading process. This architecture has been implemented in an Oracle Relational Database Management System. We have applied it to integrate heterogeneous data extracted from certain high end hotels websites, and we show a case study using the collected data during several years in the websites of high end hotels located in Granada (Spain). With this integrated information, the Data Warehouse user can make several analyses with the benefit of an easy linguistic interpretability and a high precision by means of interactive tools such as the dashboards.

Keywords

Multidimensional data model, Fuzzy linguistic modelling, Linguistic multidimensional data model, Opinion aggregation