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SYNTAX VERIFICATION AND SEMANTIC ANALYSIS OF SENTENCES USING ASSOCIATION RULES WITHOUT CANDIDATE GENERATION

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Abstract

The human-machine interaction through natural language is the very fast developing concept. The process of checking and analyzing the syntax and semantics of natural language sentences is one of the primary goals in linguistics. This paper explores a model to verify the syntax and hence the meaning of English statements using association rules in a limited domain. The domain of 'Book' is selected for analysis. Lexicon is constructed with the words belonging to this domain and the sentences with these words alone are analyzed for syntax and semantic validation. The words are combined to form a sentence which will be analyzed for syntax using grammars and parsers. If it is qualified for syntax, the meaning will be verified using FP-growth algorithm. Data mining has emerged to address problems of understanding ever-growing volumes of information for structured data. Association rules, the data mining technology is applied to the problem of natural language understanding such a way that uses rules formed for semantic verification of English sentences. These rules are generated using the semantic database, which is constructed for a specific domain. The usage of FP-growth method reduces the time and memory required for candidate set generation. Since the natural language processing and understanding is an endless process, this work opens the door of semantic analysis of sentences using association rules for a defined domain.

Keywords: Syntax and semantic, Association rules. Semantic database.