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Applying Rough Set Theory in Multimedia Data Classification

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ABSTRACT

The huge size of multimedia data requires for efficient data classification and organization in providing effective multimedia data manipulation. Those valuable data must be captured and stored for potential purposes. One of the main problems in Multimedia Information System (MIS) is the management of multimedia data. As a consequence, multimedia data management has emerged as an important research area for querying, retrieving, inserting and updating of these vast multimedia data. This research considers the rough set theory technique to organize and categorize the multimedia data. Rough set theory method is useful for exploring multimedia data and simplicity to construct multimedia data classification. Classification will help to improve the performance of multimedia data retrieving and organizing process.

KEYWORDS

Rough set theory, multimedia data management, approximation, classification, decision tree

1 INTRODUCTION

Everyone deals with multimedia data at every walk of lives. Multimedia data consist of texts, graphics, animations, video, sounds, music etc. People are working with multimedia data and surrounded by them. Therefore, there are many issues and challenges faced by multimedia data providers to fulfill the user requirements. One of the issues is to organize and classify the huge multimedia data so that the information can be obtained easily at any point of time. An efficient multimedia data management is highly required because it will improve the process of multimedia information discovery especially for decision making application, business marketing, intelligent system, etc [1]. To do so, multimedia data management is a tool required to manage and maintain huge multimedia data.

Rough set theory is an effective tool for classification applications and, it has been introduced by Pawlak [2] [3]. Rough set theory is a mathematical tool that can be used for processing and analyzing of inexact, uncertain, and vague datasets. It is an extension of set theory for study of the intelligent system characterized by insufficient and incomplete information [3]. Various efforts have been made to improve the efficiency and effectiveness of classification with rough sets [4]. Practically, rough set theory has been applied to the number of application domains such as medical diagnosis, engineering reliability, expert systems, empirical study of materials data, machine diagnosis, business failure prediction, activity-based travel modeling, travel demand analysis,