



REVIEW ISSUES, TASKS & APPLICATIONS OF TEMPORAL DATA MINING IN IT INDUSTRIES

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ABSTRACT: Temporal Data Mining is a rapidly evolving area of research that is at intersection of several disciplines, including statistics, temporal pattern recognition, temporal databases, optimization, visualization, high-performance computing, & parallel computing. Spatiotemporal data usually contain states of an object, an event or a position within space over a period of time. Vast amount of spatiotemporal data can be found within several application fields such as traffic management, environment monitoring, & weather forecast. These datasets might be collected at different locations at various points of time within different formats. It poses many challenges within representing, processing, analysis & mining of such datasets because of complex structure of spatiotemporal objects & relationships among them in both spatial & temporal dimensions. In this research problems & challenges related to spatiotemporal data representation, analysis, mining & visualization of knowledge are presented. Several kinds of data mining tasks such as association rules, classification clustering for discovering knowledge from spatiotemporal datasets are examined & reviewed. System functional requirements for such kind of knowledge discovery & database structure are discussed. Finally applications of spatiotemporal data mining are presented. These applications are related to huge data of processed within IT industries.



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KEYWORDS: *Spatiotemporal data mining, spatiotemporal data mining issues, spatiotemporal data mining tasks, spatiotemporal data mining applications, Datamining, Fuzzy logic*

1. INTRODUCTION

A spatiotemporal object can be defined as an object that has at least one spatial & one temporal property. Spatial properties are location & geometry of object. Temporal property is timestamp or time interval for which object is valid. Spatiotemporal object usually contains spatial, temporal & thematic or non-spatial attributes. Examples of such objects are moving car, forest fire, & earth quake. Spatiotemporal data sets essentially capture changing values of spatial & thematic attributes over a period of time. An event within a spatiotemporal dataset describes a spatial & temporal phenomenon that may happens at a certain time t & location x . Examples of event types are earth quake, hurricanes, road traffic jam & road accidents. In real world many of these events interact with each other & exhibit spatial & temporal patterns which may help to understand physical phenomenon behind

them. Therefore, it is very important to identify efficiently spatial & temporal features of these events & their relationships from large spatiotemporal datasets of a given application domain. Significance of spatiotemporal data analysis & mining is growing with increasing availability & awareness of huge amount of geographic & spatiotemporal datasets in many important application domains such as

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