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MINING TECHNIQUES FOR STREAMING DATA

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ABSTRACT

The huge explosion on using real time technology leads to infinite flow of data which known as data streams. The characteristics of streaming data require different techniques for processing due its volume, velocity and volatility. Include issues related to the limited storage capabilities. Hence, this research highlights the significant aspects to consider when building a framework for mining data streams. It reviews the methods for data stream summarizing and creating synopsis, and the approaches of processing these data synopses. The goal is to present a model for mining the streaming data which describes the main phases of data stream manipulations.

KEYWORDS

Data Streams, Data Mining, Data Synopsis, Micro-clusters.

1. INTRODUCTION

The amounts of the existed data globally almost reached to 64 zettabytes by the end of 2020, and the forecasts indicate that it will grow to 175 zettabytes by the end of 2025 [1].This is encouraging the data mining to become an integral part in many sectors such as businesses, financial, medical, manufacturing, media, and many others. It helps to extract knowledge that improve several processes like decision making, goals defining, customer personalizing, decreasing risk and fraud.

The great interest in data mining leads to produce new data mining techniques that could process huge infinity data flows that come from different sources such as sensors, network traffic, call center records, social media posts, ATM and credit card operations, web searches, etc. All these sources produce continuous sequences of massive data that generated in high speed rate and known as data streams [2].

A data stream consists of infinite sequence of elements that keep flowing with high speed rate. Every element of a stream is a pair of (Xi,Ti), where Xi is a dimensional vector arrives at time stamp Ti. The time stamp identifies when the element occurred [3]. Mining such type of data streams is a continuous process of extracting knowledge and valuable insights from infinite and rapid data signals. The main goal is to predict the class or the value of the new elements using machine learning techniques such as clustering, classification, regression, etc [2].

Data stream is much related to the Big Data concept, since the big data comes as result of streaming the data. The continuous flow of fast data causes too large volume of data which is known as big data. It is important to clarify that streaming data growth and produce big data, but it is not necessary that all big data comes from data stream. Big data usually reflects data at rest mode even if it was petabytes while streaming data reflects data that in motion mode which need a different technology to handle it [3].

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Research Issues In Data Engineering Stream Data Mining And Applications Proceedings

A Gutmann

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