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Walaa N. Ismail, Mohammad Mehedi Hassan, Hessah A. Alsalamah

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Mining of Productive Periodic-frequent Patterns for IoT Data Analytics

Walaa N. Ismail

435204202@student.ksu.edu.sa

Mohammad Mehedi Hassan

mmhassan@ksu.edu.sa

Hessah A. Alsalamah

halsalamah@ksu.edu.sa

Information Systems Department, College of Computer and Information Sciences, King Saud University, Riyadh, Saudi Arabia

Abstract

Healthcare applications in Internet of Things (IoT) systems have been increasingly researched because they facilitate remote monitoring of patients. Though IoT may create data consisting of much useful information, finding meaningful patterns in huge amounts of IoT data is a challenge. In this paper, we propose a new type of behavioral pattern called productive periodic-frequent sensor patterns (PPFSP). PPFSP can find a correlation among a set of temporally frequent sensors patterns which can reveal interesting knowledge from the monitored data. We also present two approaches to discover PPFSP; a parallel method using a compact productive pattern sensor tree (PPSD-Tree) and Map-reduced PPFSP-H mining algorithm on Hadoop to facilitate PPFSP mining on large data. Results show that our methods are both more time and memory efficient in finding PPFSP than the existing algorithms.

Keywords: Internet of things, Healthcare, Parallel data mining, Productive periodic-frequent patterns, Map reduce, Periodic Patterns

1. Introduction

In recent years, IoT is being used in healthcare domain. Knowledge discovery in IoT data is the process of exploring new information from the surrounding environments using IoT-sensors' collected meta-data that describes the IoT-sensor behavior. Mining such interesting knowledge from large volumes of data

*Corresponding author: Mohammad Mehedi Hassan