Context Awareness Technology Using Parallel Mining for Ambient Assisted Living System

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Abstract

In this paper, context awareness is a promising technology that provides health care services and a niche area of big data paradigm. The drift in Knowledge Discovery from Data refers to a set of activities designed to refine and extract new knowledge from complex datasets. The proposed model facilitates a parallel mining of frequent item sets for Ambient Assisted Living (AAL) System [a.k.a. Health Care [System] of big data that reside inside a cloud environment. We extend a knowledge discovery framework for processing and classifying the abnormal conditions of patients having fluctuations in Blood Pressure (BP) and Heart Rate(HR) and storing this data sets called Big data into Cloud to access from anywhere when needed. This accessed data is used to compare the new data with it, which helps to know the patients health condition.

Keywords: AAL; Big data; Cloud computing; Context management system; Rule induction

1. Introduction

Generally, now-a-days everyone is facing health problems and consulting doctors regularly during these times, the records given by them regarding health conditions, medicines etc are in the written format, and sometimes there is a chance of losing that data. Due to the unavailability of that old records the doctors can't predict easily what our health condition is? And also sometimes many major accidents are occurring during that time only the victim is available we don't know what is his data base(HR,BP etc),due to the lack of data the treatment will get delay. Because, of taking basic tests of Heart Rate, Blood Pressure etc. To over-come   this delay we store every data set, linking with   aadhar card of every individual. This all data sets are together   called as Big data which is to be stored into Cloud. So, that   we can access it from anywhere at any time

1.1 Cloud

Cloud is an advanced technology which is world wide

mostly by every internet user to store and access data easily.

1.2 Big Data

Big data is a collection of all the data together.

2. Overview

Traditional healthcare system gained importance by the proliferation of Information Technology (IT). E-Health applications have become the mandate with adherence of medical standards for interoperability to share the medical data. It becomes the onus of the fraternity of IT to work for the progress of   Healthcare to improve the patient care, reduce the cost of the treatment and better manageability in the benefit of healthcare providers.

Healthcare application has become one of the most popular Applications over the Internet. Ambient Assisted Living (AAL) system consists of very huge amount of large raw data every day.

3. Description

Collect all the data sets of from every individual patient .from every hospital. AAL Data set is used gather all the data sets of all. The samples of BP,HR etc and is sent into data collector which is used to store all the data in it which is used for further actions. Data aggregator is used for the purpose of getting more information about particular used based on specific variables such as name, age, HR, BP ,health ,oxygen level etc..Rule matching is a technique that is used to make a comparison between old data records with new data to analyze the health condition of the patient. All this data again segmented according to similarities of health conditions.

All these huge data are called as Big data .Which is stored into Cloud . This data can be accessed from anywhere at any time of every individual linking with aadhar , aadhar acts as a id proof for login to access data. This process helps in the storage of every data during consultancy of doctor. And also it gives the data about the medicine taken by the patient and the previous health conditions of the patient. from the old data the doctor can conclude what is what? And he will proceed for further treatments.
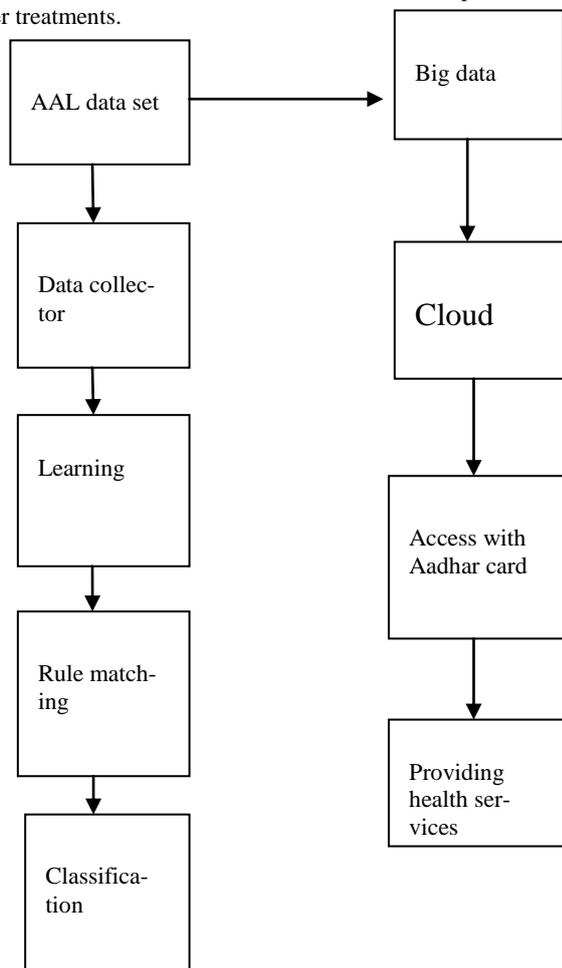

Fig.1: Flow chart of context management system

4. Architecture for Context Management System

The put forth architecture for AAL Context Management System is depicted in Figure 1. The model facilitates a parallel mining of frequent item sets for Ambient Assisted Living System of big data inside the cloud environment.

4.1 Architectural Components

4.1.1 Data Set

Data set contains large no of samples of HR and BP.

4.1.2 Data Collector

Data collector is the process of gathering and measuring information from the data set and storing it in the Database for further actions.

4.1.3 Data Aggregator

Data aggregation is any process in which information is gathered and expressed based on context; In common aggregation purpose is to get more information about particular User based on specific variables such as name, age, health, HR, BP, oxygen level, Etc..,

4.1.4 Rule Matching/Induction

Rule induction is one of the most important techniques of machine learning. Since regularities hidden in data are frequently expressed in terms of rules, rule induction is one of the fundamental tools of data mining at the same time.
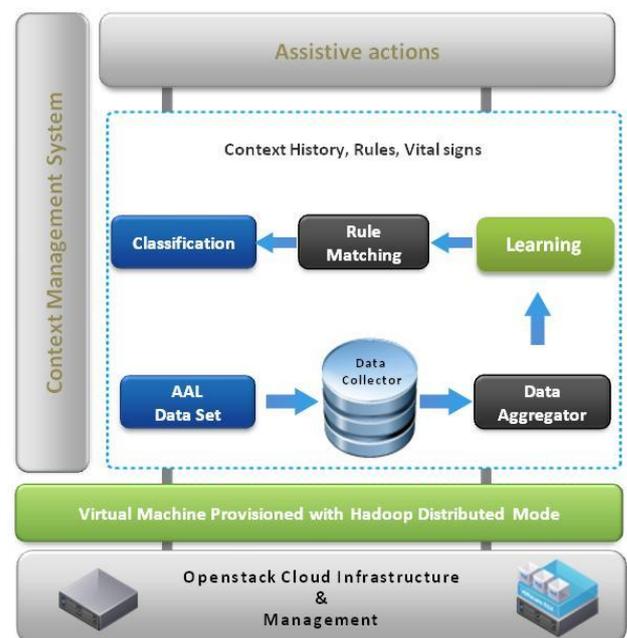

Fig.2: Architecture of context aware system with HPC for AAL

5. Literature Review

In ambient assisted living system it was researched that it strive to serve the people with disabilities. . Designed a cloud-based model for a context-aware system For ambient assisted living system they have designed a cloud based model for context aware system ,so as to perform key observing and data-aggregation tasks and also necessitating data transmission and computation at central locations. The focus here is on the development of a advantages and context aware system's frame work. And get through the flow between data collection and data processing. This system always analyses the issues related to advantages,scalability, cost, and support of heterogeneous services based on aa single model.

In now a day's context aware system observing and personifies the health care system in the place of big data application. Knowledge discovery based approach allows the context aware system by analyses large amounts of data and also adapts the behavior and generates the system of ambient assisted living. It stores in cloud repositories. The proposed model facilities analysis of big data inside a cloud environment. It firstly sees the trends and patterns in data of an individual person with the corresponding probabili-

ties. It uses the knowledge to learn abnormal and proper conditions.

Amazon Cloud is a remote computing service and it is also known as web services. That together makeup a cloud computing platform. Most of the services are AmazonEC2 and AmazonS3. This services provides large computing capacity(potentially large number of services). It is much faster and cheaper service.

Venkatesh et al (2012) focuses on monitoring the patients health condition at every moment to give timely updates .the monitoring system is much secured and safety.

6. Conclusion

As of now, a generalized framework for personalized healthcare, this leverages the advantages of context-aware computing, monitoring, cloud computing and big data. The Data set contains large no of samples of HR and BP are collected, using data collector the data set are stored in the Database for further actions. This provides a systematic approach to support the fast-growing communities of people with chronic illness who live alone and require assisted care. The evaluation can be shown as a better estimate of detecting proper anomalous situations for differenttypes of patients using strong rules. Developing an application on providing 24*7 health services using this data access from cloud.

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