Retrieving Information for Urgency Medical Services using Abundant Data Processing Method based on IoT

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Abstract—The Internet of Things (IoT) is the interconnection of uniquely identifiable embedded computing devices within the existing internet infrastructure. Delivering clinical information of patient at the point-of-care to physicians is critical to increase the quality of healthcare services, especially in emergency time. However, clinical data are distributed in different hospitals. It is sometimes difficult to collect clinical data of patient ubiquitously in case of urgency. In order to support the ubiquitous content accessing a resource model is first proposed to locate and get clinical data which are stored in heterogeneous hospital information systems using Hadoop Distributed File System. In the proposed method clinical data of patient is defined as resource with unique URL address. Related clinical data of one patient is collected together to form a combinational resource, and could be accessed by physician if authority is assigned to the physician, by using a mongo dB database technique efficiently in big data applications for better performance and scalability. This type of database support faster execution of queries compared to non-relational databases. By implementing the system that combines IoT with Big Data is built to provide quick and effective for different patients.

Keywords— Big Data, Decision support system (DSS), Internet of things (IoT), Resource model.

I. INTRODUCTION

In Recent years, Healthcare faces n-number problems, including high and rising expenditures, inconsistent quality of data and gaps in care and access data. For this reason, healthcare services represent a major position of government spending more money in most countries [1]. The amount of healthcare data in the world has been increasing enormously, and to analyses these large data set referred to as Big Data becomes a key basis of competition makes an innovation for productivity growth, new ideas and consumer surplus [2]. But the Big data means the data sets whose size is vast when compared to the ability of current technology method and theory to capture, manage, and process these data within an endurable lapsed time. Today, Big Data management provides viewpoints as a challenge for all IT companies. The solution to such a challenge is shifting increasingly from providing hardware to provisioning more manageable software solutions [3]. Big data also brings new opportunities and critical challenges to industry and academia [4] [5]. In Internet of things (Iot) technologies is present enormous potential for the high-quality and more convenient healthcare servicing. By employing these technologies in theactivities of healthcare servicing doctors are able to access different kinds of data resources online quickly and easily, helping to make emergency medical decisions, and reducing costs in the process[6] . Open and distributed file system, clinical decision support system will be a technical architecture takes full advantage of Electronic Health Record (EHR), patient databases, domain expert knowledge bases like decision support system, available

technologies and standards to provide efficient decision-making support for healthcare professionals [7].

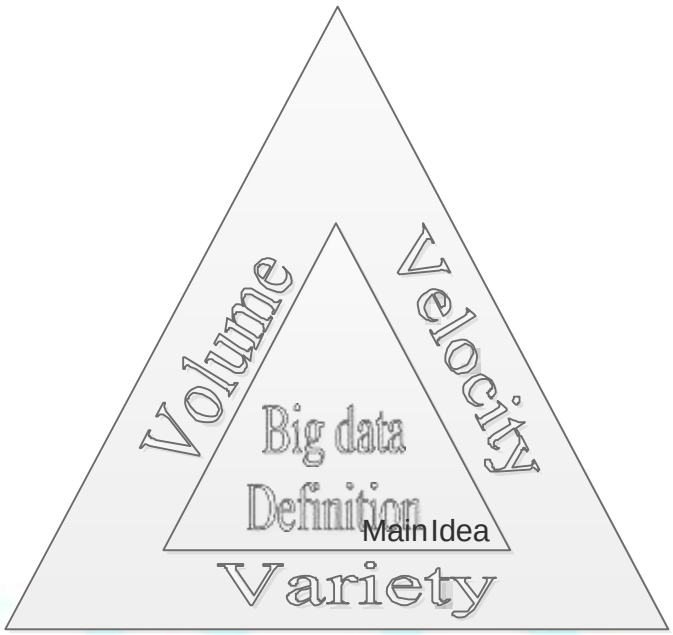

Figure 1Big datadefinition

II. LITRATURE SERVEY

JayavardhanaGubbi, RajkumarBuyya, [8] proposed system is to deploy large-scale, platform-independent, wireless sensor network infrastructure that includes data management and processing, actuation and analytics. It is often quite important to take advantage of the benefits of metadata for transferring the information from a database to the user via the Internet.

Marisol García-Valls, Pablo Basanta-Val, [9] proposed were the level of hardware, networked embedded systems (NES) are becoming a cloud of hundreds, and even thousands, of heterogeneous nodes connected by means of heterogeneous networks as well; they are now used in various domains such as cloud or grid.

Keling DA, Marc DALMAU, Philippe ROOSE, [10] proposed system is context collector first collects information on the operating environment from the operating system and the user context.

Li Da Xu, [11] proposed is to be properly managed, the integration of KM and ERP becomes a strategic initiative for providing competitive advantages to enterprises. ERP III enables ES applications to transform an enterprise into a knowledge-based learning organization and to capture know- how for developing business solutions.

Boyi Xu, Li Da Xu, [13] proposed system is it based on emergency system.it will be collected the information about the patient and stored in a could.it will access by distributed system.It can be access the patient data in a emergency time.by using IoT it more flexibly to provide at time of emergency medical services.It can be support the data accessing in mobile computing platform. .

III. Disadvantages of Existing System

1) No importance to decision making
2) Information are handled within their local system administrator.it will not support for heterogeneous formats.
3) It is on unified data model and semantic data explanation by ontology in data storage (Sql) and accessing.
4) Health Book contains patient's medical information like previous medical histories.

IV. Proposed System

IV. PROPOSED SYSTEM

The proposed system, the clinical data of patient is defined as resource with unique URL address. It is access the patient information by the thumb finger authentication it useful for the emergency situations. The clinical data of one patient is collected together to form a combinational resource in cloud, and could be accessed by physician if authority is assigned to the physician, by using a mongo dB database technique efficiently in big data applications(by hdfs) for better performance and scalability. This type of database support faster execution of queries compared to non-relational databases. By implementing the system that combines IoT with Big Data is built to provide quick and effective for different patients.

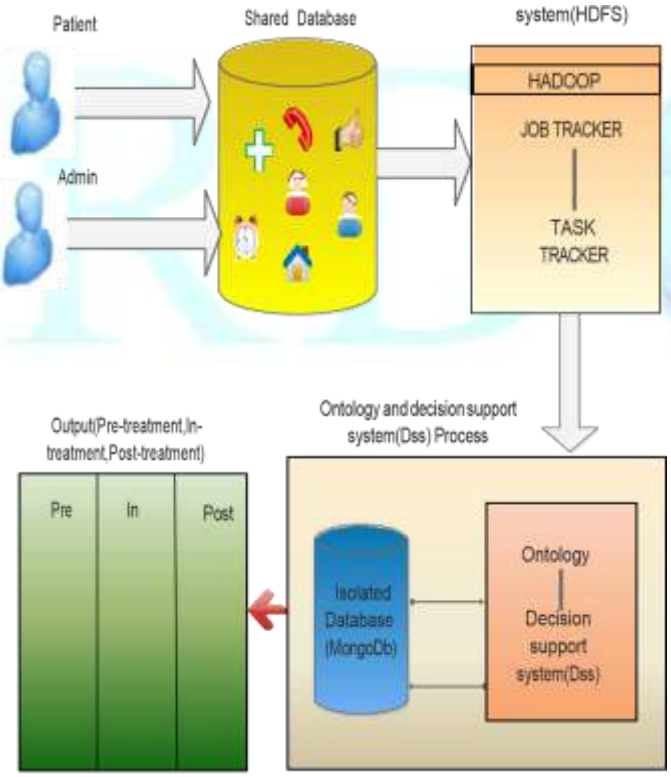

Figure 2 Proposed System Architecture

Authentication

Authenticity of the Patient is the main issue in now day's internet of things such as distributed file system. The Password has been the most share to provide the patients information. Hash code is generated for the patients in unique id and it is stored in the hospitals used for authentication

mechanism which is subjected to online attacks (it is provides from online hacker).. To give solution for this problem one of the process using for authentication is BIOMETRIC based Cryptography scheme to address the authentication issues. This methodology proposes the finger print image which is obtained from the user is Steganographed with PIN NUMBER of the user and the Steganographed image which in turn is divided into two shares. One share is stored in the hospitals database and the database. One Time Password(OTP) is used every time to ensure the trusted submission of shares. The system not only ensures the secured transaction of process but also verifies the true identity of the person through one time password. The patients present the share during all of his/her transactions after entering the OTP. When the patients present his share the hash code is generated and compared with the database value. If it matches, the shares are databases to get the original Steganographed image. Again, the Desteganography process is carried on to obtain the original finger print image and the PIN NUMBER. The user is allowed to proceed further only after this authentication. This process ensures proper security scheme[18].

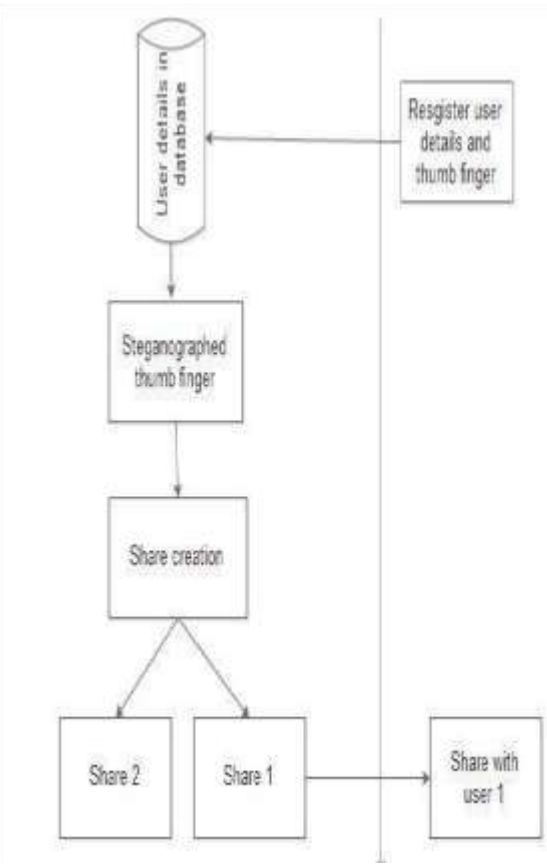

Figure 3 Authentication thumb finger

B. Hadoop distributed file system(hdfs) The HDFS (Hadoop distributed file system) is a open-source platform. It is as some advantages more scalable and reliable. The Hadoop frameworks will allow for the distributed processing of large (million) number data sets to clusters from computers using small programming models. It is use full to scale up from one server to ten thousands of machines. Another advantages in hadoop distributed file system the hardware to deliver high-availability, The Hadoop has two components such as and MapReduce. HDFS used for data storage and Map Reduce for data processing. HDFS will

"just work "under a variety of physical and systemic circumstances. By distributing storage is useful for computation across multi servers, the combined storage resource can reduce the size of the server and will very efficiency at every size.

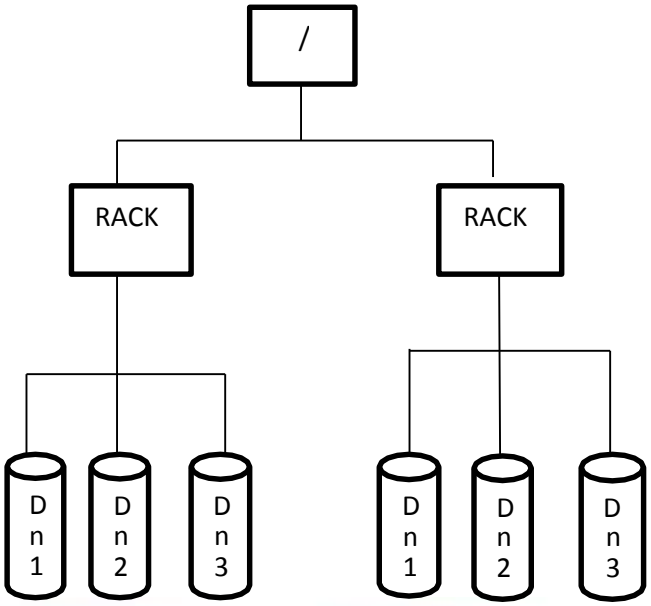

Figure 4 Hadoop distributed file system

C. Map reduce

HDFS was designed to be a scalable, fault-tolerant, distributed storage system that works closely with Map Reduce. Map Reduce is used to execute the Mongodb query and provide the parallel processing over a large number of nodes to simplify the data[17]. Finally, the Mangodb query language is created for the graph and the data is retrieved from the HDFS.

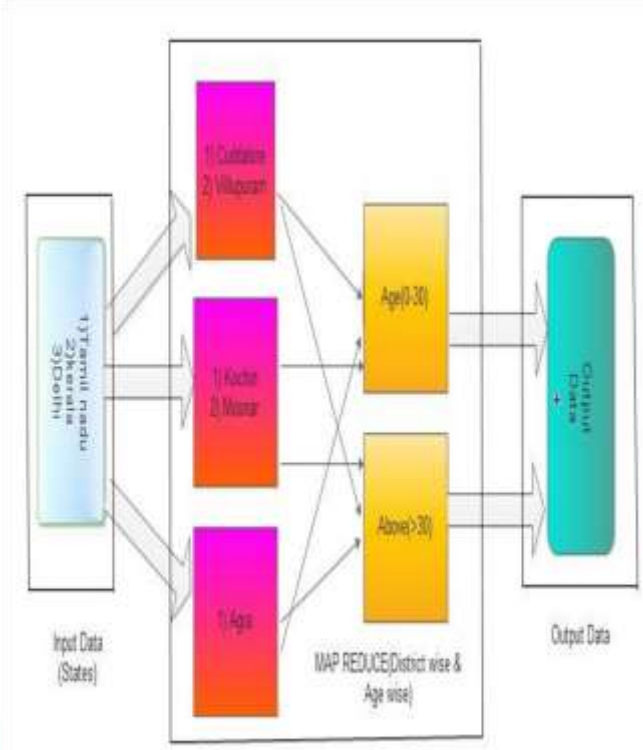

Figure 5 Map Reduce

D. Resource description framework(RDF)

Semantic Web is based on RDF, which integrates a variety of applications by using extensible markup language (XML) for syntax and universal resource identifier (URI) for naming. RDF [20] is an assertional language intended to be used to express propositions via precise formal vocabularies. An RDF data model is similar to conceptual modeling approaches, as it is based on the idea of making statements about resources.

The fundamental unit of RDF is a triple that is used to describe the relationship between two things. Its formal definition is <subject, predicate, object>, in which subject denotes a resource, and predicate denotes properties or aspects the resource and expresses in relationship between the resource and the object [19].

E. Decision support system(DSS)

Data + Analysis = Decision Support

A clinical decision-support system is any computer program designed to help health professionals make clinical decisions. In a sense, any computer system that deals with clinical data or medical knowledge is intended to provide decision support. Three types of decision-support function, ranging from generalized to patient specific

E1. BENEFITS OF USING THE DSS

1) Time savings: The time savings that have been documented from using computerized decision support are often substantial [16].

2) Cost reduction: DSS cost saving from labor savings in making decisions and from lower infrastructure or technology costs.

3) Allows for faster decision-making.

4) Provides more evidence in support of a decision.

V. ADVANTAGES IN PROPOSED SYSTEM

1) Full advantage it is the available Internet technology. Information is transferred from a database to the user via internet.

2) Large amount of data can be gathered, access time of data very less.

VI. EXPERIMENTAL SETUP

Our experiments use the Windows XP operating system with Intel processor, 4-Gbyte RAM with a clock speed as 1.8 GHz. The capacity of the Hard disk drive is 1TB. The tools and database such as Hadoop 0.18.10 and Mongodb are installed in the system. Our approaches are implemented in Java language with the version JDK 1.7 and running in eclipseSDK-3.3.1.1.

VII. DATA MODEL FOR IOT URGENCY MEDICIAL SERVIECS

A healthcare service is a dynamic process that includes the pre-treatment, in-treatment, post-treatment are shown in fig.6.

Figure 6 Experimental results

VIII. CONCLUSION

Innovative uses of IoT technology in healthcare not only bring benefits to hospitals (doctors and managers) to access wide ranges of data sources but also challenges in access heterogeneous IoT data, especially at real time IoT application systems. The big data and mongodb accumulated by IoT devices creates the easy for the IoT data accessing is fast, easy and quickly with more efficiency.it will reduce the time complexity at emergency services.

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