UBIQUITOUS DATA ACCESSING – INTERNET OF THINGS IN HEALTHCARE INFORMATION SYSTEM

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ABSTRACT

Internet of Things (IoT) is an emerging technology that is expected to discover new drugs and medical treatments. Its flexibility, adaptability, affinity, cost shrinkage, and high speed up features have high potential to lift the efficiency and quality of healthcare. Though, it is also important to understand specific risks related to security and privacy that this technology brings. This paper focuses on a Healthcare information system based on Ubiquitous Data Accessing (UDA) method. In particular, security and privacy challenges are identified in the proposed UDA-based healthcare information system. Moreover, a functional infrastructure plan is provided to demonstrate the integration between the proposed application architecture with the Internet of Things and cloud infrastructure.

Keywords: Internet of Things (IOT), Cloud Infrastructure, Healthcare Information System, Ubiquitous Data Accessing (UDA)

I INTRODUCTION

Internet of Things (IoT) is mainly to connect the   world through multiple devices. Cloud refers to a network or an Internet. In other words, cloud is something, which is located at remote location. Cloud can afford services by network, i.e., over public networks or private networks such as Wide Area Networks, Local Area Networks or Virtual Private Networks. Applications namely e-mail, web conferencing, customer relationship management (CRM), all run in cloud. Hardware and software can plays a major role in computing resources that are delivered to users from a Web-based service is referred to as Cloud Computing Technology. The residue of the paper is organized as follows. Section 2 we presents Internet of Things with cloud technology. Section 3 proposed the methodology of health care information system using Ubiquitous Data Accessing-Internet of Things. Section 4 we resolved proposed work. In section 5 concludes this paper.

II DATA MODEL FOR IOT – BASED MEDICAL SERVICES

In emergency medical services, to improve the quality of healthcare services, delivering clinic information of patient at the point-of-care to physicians is critical [1]. However, medical records and clinic data are stored in different hospitals, it is sometimes difficult to gather clinic data of patient ubiquitously in case of emergency. In

order to continue the ubiquitous content accessing, this paper proposed a resource model to locate and get clinic data which are stored in heterogeneous hospital information systems. Then, a ubiquitous data accessing method is introduced based on the resource model. In the new method, clinic data of patient is defined as resource with unique URL address. Related clinic data of one patient is gathered together to form a aggregated resource, and could be connected by physician if authority is assigned to the physician. Finally, case study is discussed to explain the method of clinic data accessing through Internet from different healthcare units. The result shows that the patients record could be accessed more conveniently.

In healthcare service, doctors, patients, physicians play a major role and they also involved in an entire servicing. Doctors have to access the patient record from anywhere by storing it in a distributed manner. Patients also needs to about the doctors availability and the equipments status (busy/free). In order to help patient accessing doctors availability status, a resource model is needed for this accessibility.

III METHODOLOGY

Now a day's the people in the world are sick with so many health problems and there are some problems which are unknown to the doctors also so in that situations the doctors need to know how to treat that patients, to overcome this type of problems we suggested a new era of technology called cloud computing in medical sciences [3]. Here the doctors has to prepare some document whenever he got any critical cases which he has ever seen and treated in that situation he has to make it a document that is how to treat that patient. There are some points that a doctor need to mention while documenting regarding a problem they are

- ✓ Symptoms;
- ✓ Analysis;
- ✓ Treatment.

3.1 Symptoms

Here if the doctor found any disease that doctor has ever seen then, at first doctor has to mention the symptoms of that disease and make a note of it to inform other doctors, if any doctor faces the same disease cases. It is possible only if the other doctor is friend to him or he is a doctor in another hospital in the same city/region.

3.2 Analysis

After confirming all symptoms of the patient the doctor conclude that what type of disease it is and how it came and is it cures for normal treatment or patient has to take a special treatment for that disease all these concerns are analyzed.

3.3 Treatment

After analyzing all the things regarding the disease the doctor will start the treatment, here in this phase doctor will give medicines to the patient and the doctor has to mention what the medicines are given to the patient and the dosage of it. There are some points that the doctor has to follow while treating the patient they are. Mention the medicines and dosage which are given to the patient. Notice the patient while the treatment is going on whether is there any changes in patient body or health. Mention which type of treatment the doctor has given to

the patient. To guide the patient, the doctor has to mention all the above while treating the patient.

IV IMPLEMENTATION

4.1 Existing system

In the Existing system the doctors didn't use any cloud to inform about new diseases in patients so it is very difficult to cure and they don't know how to save people in the world from that disease because, if the disease found in other countries then the doctor in India may not know about that and they have to know only through media even though many people were died of that disease so the death rate is increasing enormously. Also in the existing system doctors didn't able to make decision in case of any emergency.

4.2 Proposed system

In this proposed system we are going to introduce cloud computing in medical sciences because it is very easiest way to know all the doctors over the world through the cloud about the diseases which are very recently found and how to cure it, by applying this we can reduce death rate. The doctors will give treatment for all the diseases regularly in general but there are some cases which are very difficult cure in such cases the doctor willing to cure that as soon as possible and at last he will cure it, in the same way if any doctor faces the same problem in the patient then it is very easy to inform to that doctor about the disease and how to cure it if the second doctor is friend of another doctor or both the doctors are in the same city, if the same problem is arises in another country then it is very difficult to inform that doctor about the treatment and how to cure it. For that ontology is used to access the information from the database. Active ontology plays a major role in many healthcare.

By Sharing the information on cloud the reputation of hospital and doctor will increase globally [4]. In the figure 2 accessing the ubiquitous data process is explained. Here the doctors, patients, nurses records are stored in database through the resource register. Isolated database is mainly to store the doctors record. Shared database is mainly to store the patients details. It can be accessed by both doctors and patients. Suppose patient wants to know about the availability of the doctor then the patient from the home itself find the availability. Here the resource sharing process is done by dividing the multiple tasks to execute the workflow process. After resource sharing, Emergency event is occurred. It can be done by decision maker.

In emergency medical service, Decision Support System (DSS) make decision based on ontology construction [5]. Here the collected information in databases is stored in the owl format. The active ontology displays an overview of the ontology class, including metrics on its contents [6]. The Constructed Ontology is created as follows
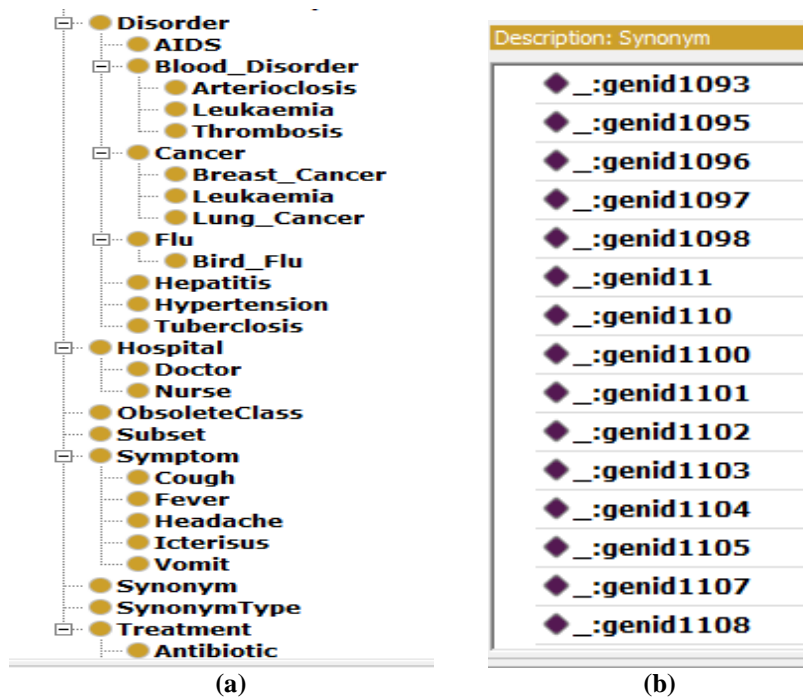
(a)   **(b)**

Figure 4: Medical Ontology Class construction

V RESULT

Emergency medical rescuing process can involve multiple types of resources. The coordination of multiple resources is complex. In our method, the user use Internet of Things (IoT) platform to coordinate data across organizations through the tool named PROTÉGÉ [2]. Here the Protégé tool is used to denote the relationship. The solution for the disease can be retrieved from the Protégé tool result as follows

Table 1. Rehabilitation Process

Subject	Object
Vallecula	Brain_Part
Vasa_Vasorum	Blood_Vessel
Elastin_Fiber	Skin_Part
Extrahepatic_Bile_Duct	Bile_Duct
Splenic_Marginal_Sinus	Splenic_Sinus
Distal_phalanx_of_Foot	Foot_Phalanx

In existing system, Data models which can support data access, plays critical role in the architecture of the mobile Decision support systems. Here they faced the problem of accessing the heterogeneous IoT data. But in our proposed system, we satisfy the challenges in existing system. For this, we build ontology through the protégé tool. Here the Ontology's data model is used to reason about the objects in that domain and the relations between them.

VI CONCLUSION

In this paper IoT technology is introduced in health care system. It is widely used for patients because there is no need to come to hospital and consult the doctor directly. Instead they get the solution for the disease through the system database or server. Here, we utilize the existing enhancement of security protocols for authenticating the treatment information. By using Internet of Things will reduce the time required for patient to become into normal stage (i.e) act of curing abnormal stage into normal stage. Internet of Things will create a major impact on healthcare, and contribute to an overall improvement in its quality. In future, new devices for remote patient-monitoring and communication systems have been implemented that needs to be flexible, on demand platform and infrastructure services for minimizing the expenses in buying and upgrading new software's as well as hardware's.

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