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Smart Healthcare System Using Internet of Things over Big Data Applications

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Abstract *— This system reduces the paper works. Application will contains the Basic modules like login and Make Registration to use the Application.But the unique concept of these system is we are using RFID for gathering information (temperature, humidity, and other gases)about the user's living environment.We are using Big data for store huge data of medical records. It's very known problem for all the medical store owners and patients to read, maintain and understand prescription written by Doctors. and its time taking to write prescription for doctors. So we're trying to find solution for saving time and reducing paper work.*

Keywords*: - Medical Prescription, Map Integration, Healthcare, Medical, Big Data, RFID*

I. INTRODUCTION

Generally healthcare domain produces large amount of data by self processed data like store, sharing, searching, patient detail, transferring. So in traditional system all the data are stored in hard copy format. So it is very hard to maintain, share and transfer. So we are using big data for storing all huge amounts of data. It includes clinical data from clinical decision support systems patient data in electronic patient records (EPRs).Big data has a new ways for organize the data of healthcare system. We are also using this concept of Internet of Things helps to put in the information about human behavior, natural habits of human and his body.

II. LITERATURE SURVEY/REVIEW

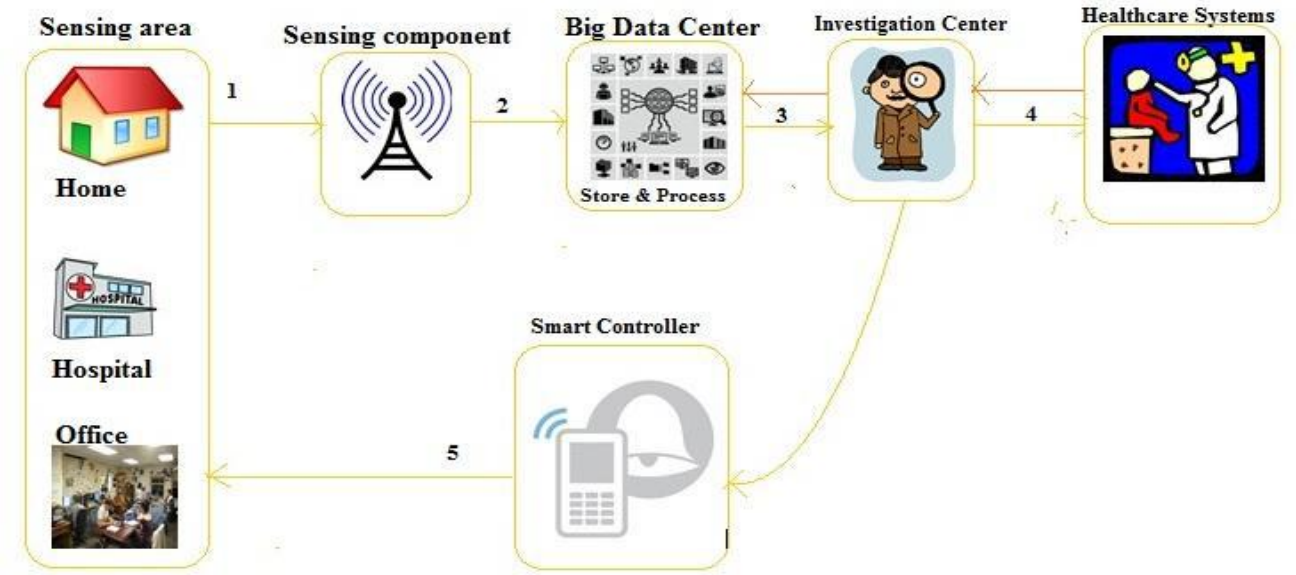

Fig. 2.1 Smart HealthCare Monitoring System

In this we explore basic operations which are performed in our Smart Health Framework as shown in figure.

Sensing component: By placing the device inside the patient body we getting the user's health condition information continuously.

Big Data Center: It collects the data from various sources and stored it.

Investigation Center: In this process doctors directly communicate with the patients and inquired, invoke the patient data in the investigation center depends on query.

Healthcare Systems: In this doctor alarm for best health care treatments.

2.1 Devices

2.1.1 Glucose Level sensing

Diabetes is a group of metabolic diseases in which there are high blood glucose (sugar) levels over a prolonged period. Blood glucose monitoring reveals individual patterns of blood glucose changes and helps in the planning of meals, activities, and medication times. In this method, sensors from patients are linked through IPv6 connectivity to relevant healthcare providers.

2.1.2 Electrocardiogram Monitoring

The monitoring of the electrocardiogram (ECG), that is, the electrical activity of the heart recorded by electrocardiography, includes the measurement of the simple heart rate and the determination of the basic rhythm as well as the diagnosis of multifaceted arrhythmias, myocardial ischemia, and prolonged QT intervals. The application of the IoT to ECG monitoring has the potential to give maximum information and can be used to its fullest extent. Here exists a comprehensive detection algorithm of ECG signals at the application layer of the IoT network for ECG monitoring.

2.1.3 Blood Pressure Monitoring

The question of how the combination of a KIT blood pressure (BP) meter and an NFC-enabled KIT mobile phone becomes part of BP monitoring based on the IoT is addressed in [21]. A motivating scenario in which BP must be regularly controlled remotely is presented by showing the communications structure between a health post and the health center in [22].

III. IMPLEMENTATION METHODOLOGY

3.1 System Flow

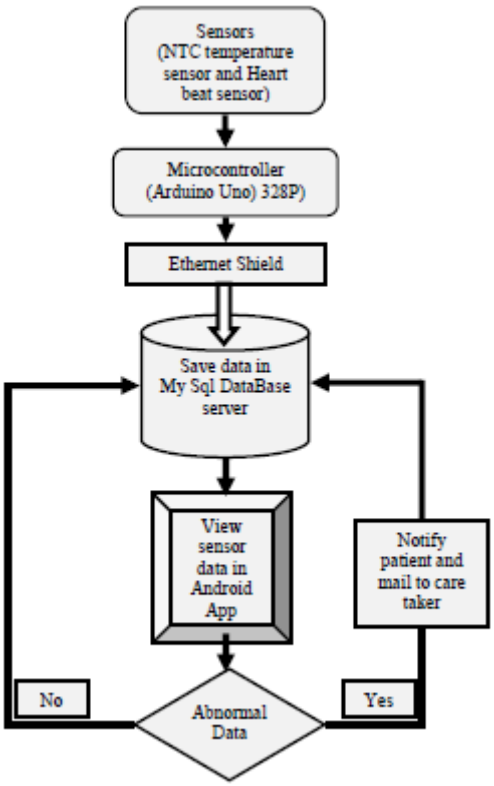

Fig. 3.1 Health Care System Flow

3.2 Following diagram shows the complete transmitter and receiver flow.

Here two sensors which are connected to Arduino Uno.The first sensor is DS18B20 digital temperature sensor which is using to measures the temperature of patient's body. Output of this is in the digital form. The second sensor is Heartbeat sensor which is used to measures the heart rate of patient's body. This both sensors are connected to the Arduino Uno which is connected to the HLK-RM04 serial to Wi-Fi module.It is provides serial communication. Then data is traversed to MySQL database. It is stores real time data and provides accessibility of data. For communication between Wi-Fi modules and web server HTTP protocol is used which is use to provide easy communication and for mail it is use FTP protocol.

3.2 Health Challenges

- Health is primary element that human require. It is important for individual the growth of individual as well as for the growth of society. So physical and mental fitness is very important as it plays important roll for development. Nowadays Global health issue is major concern.
- Definition of health according to World Health Organization is - "A state of complete physical, mental and social well being and not merely absence of disease and infirmity."

- Most of the countries having health care as their top most concern. Especially country like India which has 2nd rank in population [13], health issue effect their growth and development. It effect major population of India. There are many chronicle and non chronicle disease which plays major roll in health issue.

IV. RESULTS

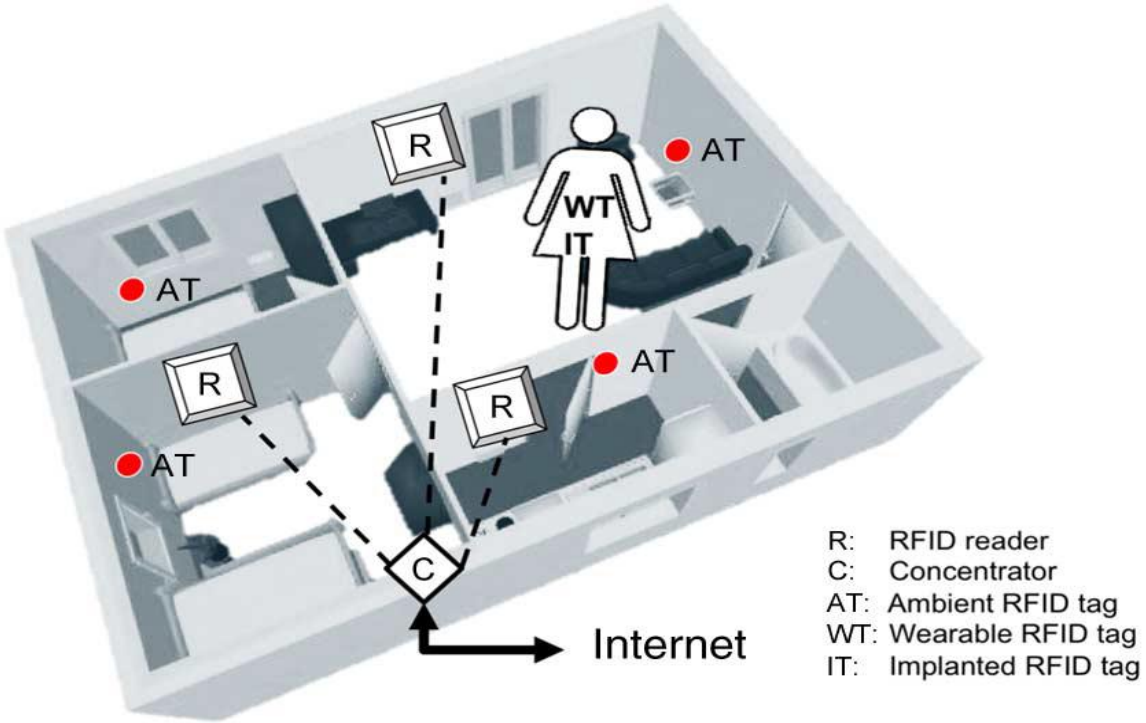

Fig. 4.1 Volatile Compound Sensors

a) Sketch of an RFID-powered habitat with ambient tags (AT) attaché over the walls and objects, wearable tags (WT), and implanted tags (IT) placed over and inside the human body, one or more RFID readers (R) scanning the rooms and a wireless concentrator (C) capable to pack the collected data for in-house processing and/or for internet streaming. (b) Example of RFID coverage [2] of a home-portion by a multiplicity of readers' antennas placed at the walls' side (RS) and over the top ceiling (RT).

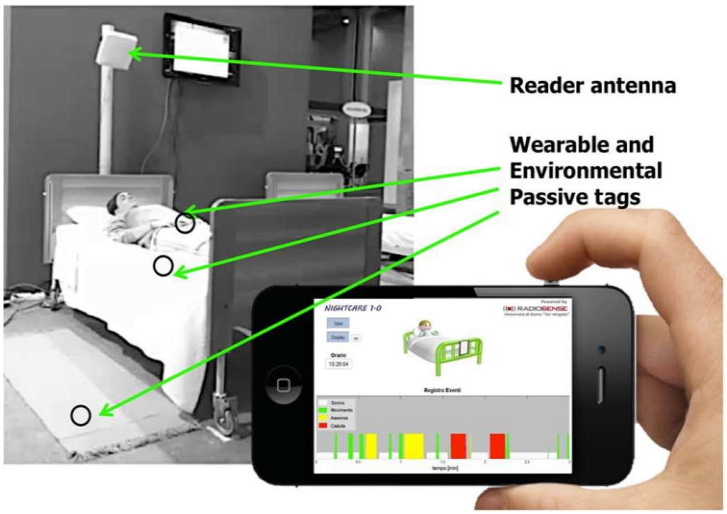

Fig. 4.2 Tracking Human Motion Inside Rooms

In above figure we shows that signals are received by the readers therefore carry information about human activity. Figure shows for example the measured power backscattered by five passive tags aligned on the wall of a corridor, that are interrogated by a fixed reader placed on the opposite side, when a man walks forward and backward at two different speeds. The system can be further improved by collecting also data coming from the wearable tags hosted by the subject, such to identify the person and to monitor more subjects at the same time.

V. CONCLUSION AND FUTURE WORK

Innovative uses of IoT technology in healthcare not only bring benefits to doctors and managers to access wide ranges of data sources but also challenges in accessing heterogeneous IoT data, especially in mobile environment of real-

time IoT application systems. The big data accumulated by IoT devices creates the problem for the IoT data accessing and we using the RFID for monitoring the patient and gathering the information of patient. We are using RFID for gathering information (temperature, humidity, and other gases) about the user's living environment. We are using big data for store huge data of medical records. It's very known problem for all the medical store owners and patients to read, maintain and understand prescription written by Doctors. And its time taking to write prescription for doctors. So we're trying to find solution for saving time and reducing paper work.

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