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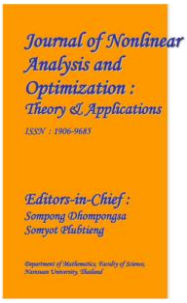

SMART TECHNOLOGY FOR HEALTHACRE SIDE USING INTERNET OF THINGS

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ABSTRACT:
The hasty development in the Internet of things (IoT) technology makes it possible for connecting various smart processes together through the Internet and providing more data interoperability methods for many application purposes. Recent research shows more potential healthcare applications of IoT in information intensive industrial sectors such as healthcare services. Meanwhile, the use of IoT technology in applications has spurred the increase of real-time data, which makes the information storage and accessing more difficult and challenging in the healthcare side and to maintain patient database. In this paper, a more efficient machine to machine communication is achieved for health care data. To a proactive framework for prognosis of diseases at an incipient stage, coupled with prevention, cure, and overall management of health instead of disease, enable personalization of treatment and management targeted particularly to the specific circumstances and needs of the individual, and help reduce the cost of health care while simultaneously improving outcomes. In this paper, we highlight the opportunities and challenges for IoT in realizing this vision and transfer to patient reports of the security purpose in using IoT technologies in future of health care.
Keyword: IoT, Healthcare, smart technology

I.Introduction:

The IoT process in the last decade, a number of researches have been conducted towards using IoT technology to acquire data ubiquitously, process data timely, and distribute data wirelessly in the healthcare field. Ambient Assisted Living (AAL) is designed to support daily activities of elderly people independently as long as possible. IoT technology is used to support medical consultations among rural patients, health workers, and urban city specialists. With the use of IoT, M-health concept, which is defined as mobile computing, medical sensors, and communication technologies for healthcare, attracts more and more researchers applying fourth-generation (4G) in mobile communication technology and IoT in healthcare service. The above-mentioned uses of IoT technology brings both opportunity and challenges in ubiquitous data accessing medical services. More attentions have been paid in developing ubiquitous data accessing solutions to acquire and process data in decentralized data sources. The software adaptation approaches are surveyed in ubiquitous computing for resource constrained devices to react to the changes of user requirements actively and transparently. Control functionalities are designed to coordinate hybrid wireless networks in cloud computing.A metro system based on data-centric middleware is simulated to publish/subscribe message remotely. Researchers use publish/subscribe-based middleware to disseminate sensor data in cyber-physical systems. A cloud platform is developed to handle heterogeneous physiological signal data to provide personalized healthcare services. In the related research, clinical data heterogeneity is still the main obstacle that hinders the clinic data integration and interoperation. Recently, RESTful (Representational State Transfer) resource oriented model has been extended from a kind of software architecture originated from Web service research mainly for Web service interoperation for Web resources management. In this research, an efficient interoperability of medical data through Internet of things is explained and successfully shown about how it is helpful to patients and doctors. The rest parts of the paper are organized as follows.
In Section II, interfacing of components of different parameters to be measured is discussed. In Section III, the details of how to implement proposed system is shown. In Section IV, protocols used for

Machine to Machine Communication is shown. Finally, Section V concludes the paper.

II. Internet of Things

The term internet of things was first proposed by Kevin Ashton in 1982 . IoT is a combination of hardware and software technologies along with embedded devices which enables us to provide services and facilities to anyone, anytime and anywhere by any network.

II.a). Healthcare using wireless sensor networks

The health care applications using IoT are increasing day by day because of sensor devices. The IoT has the potential to give rise to many medical
applications such as remote health monitoring, physical fitness programs, diseases, and elderly care. The IoT healthcare system mainly tries to work on the existing wireless sensor networks, embedded device technologies and ubiquitous computing.The IoT systems need to provide the services to any one at anytime and anywhere. So we need architecture to implement the health care systems more efficiently and with less cost. Here, we briefly explain the wireless health care system which can be enabled to use along with IoT systems. It consists of health sensors, smart phone devices and server system to control and manage the information. The sensors will take the input values and will send to the server using the smart phone. The server processes the data and informs patients. These health care systems help the patients to take the decisions suggested by the application.

II.b) Efficient of healthcare and internet process:

Hospital Data aggregated by the concentrator needs to be transferred to the cloud for long term storage. Offloading data storage to the cloud offers benefits of scalability and accessibility on demand, both by patients and clinical institutions. Also, utilized with analytics and visualization (described in subsequent sections), cloud hosting and processing can reduce costs at Healthcare and provide better diagnostic information. In this section, we outline such architectures and discuss issues that have impact on the long term medical data storage in the database.

i) Hybrid Cloud/Cloudlet Architecture:

Cloudlet is a limited resource computing and storage platform that eliminates the need to outsource resource intensive tasks to the enterprise cloud. Cloudlet computing has been introduced as a potential solution to deliver low latency to time critical tasks for health monitoring applications via body area networks. Communication between concentrator and cloudlet is realized through WiFi interface. Direct connection between these two entities reduces data transfer latency for time critical tasks on aggregated data. LTE access provided in the concentrator can in turn be used for direct data transfer from the concentrator to the cloud bypassing the cloudlet.

ii) Context-Aware Concentration via Smart Devices:

As previously indicated, smart phones can act as concentrators in IoT infrastructure as today's smart phones can use both LTE and WiFi as the backhaul network. Data aggregation can be carried on either by cloudlet (thorough the WiFi connection between concentrator and the cloudlet) or the cloud (LTE). In studies, the former compared with the latter, has been shown to provide ten times the throughput and to require only a tenth of the access time, and also half the power. Aggregated data, however needs to be finally stored in the cloud to allow distributed access and reliable storage. To effectively partition data aggregation tasks between cloud and cloudlet, context aware concentration may be utilized. Context can account for the current and expected status of the patient.

(iii)Privacy of the Data Concentrator:

Although personally identifiable information can be removed before transmitting sensed data information, the system is still prone to aggregate disclosure attacks that can infer information via pattern recognition approaches. Context aware data concentration, while offering some benefits, may also make sensed information vulnerable to aggregate disclosure attacks by allowing intruder to infer a patient's health information through network traffic analysis from concentrator to mobile back haul. Standard encryption techniques can be employed to ensure security in such settings.

iv) Secure Data Storage in the |IoT:

Privacy is of tremendous importance when storing individual's electronic medical records on the cloud. According to the terms defined by Health Insurance Portability and Accountability Act (HIPAA), the confidential part of medical records has to be protected from disclosure. When the medical records are outsourced to the cloud for storage, appropriate privacy preserving measures need to be taken to

prevent unauthorized parties from accessing the information. Secure cloud storage frameworks have therefore been proposed for use with sensitive medical records Secure medical data processing on the cloud remains a challenge.

II.c) Function of IoT System using smart technology:

This IoT process in smart health system includes the following functions:

- Smart lab
- Patient monitoring
- Helps chronicle condition
- Reduce paperwork
- Electronic Medical Record (EMR)

Everyday, the devices used to communicate with humans and allows the object to sense and control is often referred to as the Internet of Things (IoT). It is a highly dynamic and radically distributed networked system, composed of a very large number of smart objects.

Three main system-level characteristics of IoT in healthcare side are:

I. Anything communication
II. Anything identified
III. Anything interacts

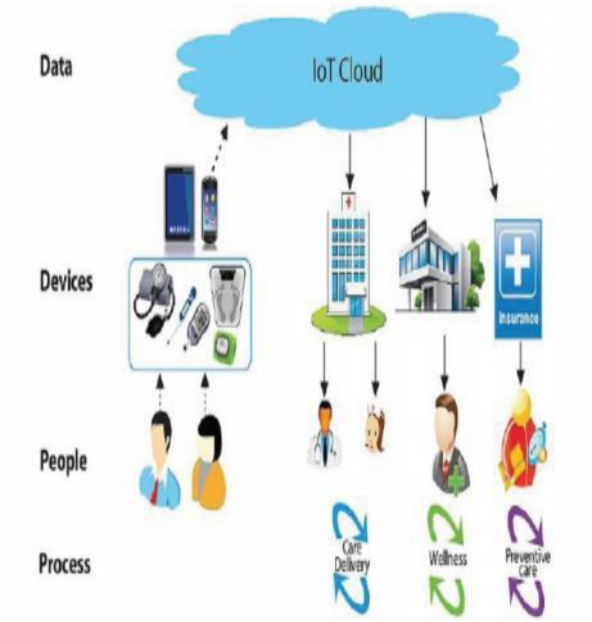

Figure 1.1. IoT with Cloud III.Implementation idea in future process

Congregation, storage and access, medical data analysis and visualization are critical components of remote health monitoring systems. Accurate diagnoses and monitoring of patient's medical condition relies on analysis of medical records containing various physiological characteristics over a long period of time. Dealing with data of high dimensionality in both time and quantity makes data analysis task quite frustrating and error prone for clinicians. Although the use of data mining and visualization techniques had been previously addressed as a solution to the aforementioned challenge, these methods have only recently gained attention in remote health monitoring systems. While the advent of electronic remote health monitoring systems has promised to revolutionize the conventional health care methods, integrating the IoT paradigm into these systems can further increase intelligence, flexibility and interoperability A device utilizing the IoT scheme is uniquely addressed and identifiable at anytime and anywhere through the Internet.

IoT based devices in remote health monitoring systems are not only capable of the conventional sensing tasks but can also exchange information with each other, automatically connect to and exchange information with health institutes through the Internet, significantly simplifying set up and administration tasks. As exemplified in such systems are able to provide services such as automatic alarm to the nearest healthcare institute in the event of a critical accident for a supervised patient.

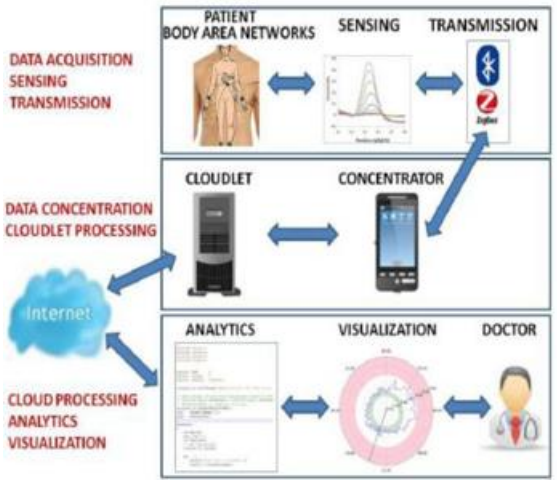

Figure 1.2.Components of a remote patient monitoring system that is based on an IoT health care

IV. All the related work that have been done by other researchers which are related to the current research problem are as follows:

1.A Health-IoT Platform Based on theIntegration of Intelligent Packaging, Unobtrusive Bio-Sensor, and Intelligent Medicine Box

2.healthcare Technology for IoT-Based Personal Healthcare in Smart Spaces

The home healthcare services based on the Internet-of-Things (IoT) have great business potential; however, a comprehensive platform is still missing. In this paper, an intelligent home-based platform, the iHome Health-IoT is proposed and implemented.

In particular, the platform involves an open-platform based intelligent medicine box (iMedBox) with enhanced connectivity and interchangeability for the integration of devices and services, intelligent pharmaceutical packaging (iMedPack) with communication capability enabled by passive radio-frequency identification (RFID) , actuation capability enabled by functional materials and a flexible and wearable bio-medical sensor device (Bio-Patch) enabled by the state-of-the-art inkjet printing technology and system-on-chip. The proposed platform seamlessly fuses the IoT devices (e.g., wearable sensors and intelligent medicine packages) with in-home healthcare services (e.g., telemedicine) for an improved user experience and service efficiency. The feasibility of the implemented iHome Health- IoT platform has been proven in field trials.

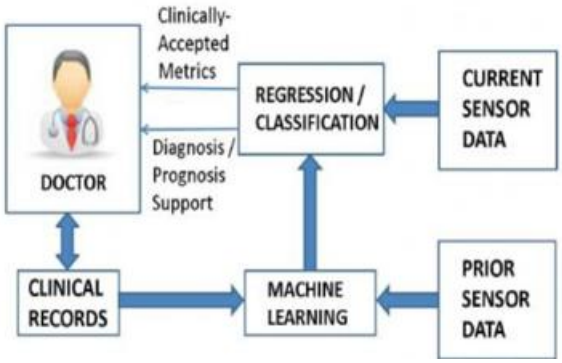

Figure 1.3.Analytics workflow for systems integrating wearable sensor technology

V. Conclusion and future enhancements

In this paper, we have reviewed the current status and future directions for the integration of remote health monitoring technologies into the clinical practice of medicine. Wearable IoT sensors, particularly those equipped with IoT intelligence, done at office and healthcare laboratory visits provide many opportunities for functioning of data in home and work environments must participated to healthcare side, over much longer durations than are currently.This treatment of data, when analyzed and presented to physicians in easy-to-assimilate visualizations has the potential for radically improving healthcare and reducing costs. We have highlighted several challenges in sensing, analytics, and visualization that need to be addressed before systems can be designed for seamless

integration into clinical practice to be security activities to consume to how to send patient data information about receiver side, that time we are allocate some other devices connect automatically disconnect option get IoT access we will implement to that any one particular security process of healthcare side in future.

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[5] A Survey Paper on Internet of Things based Healthcare System Ms. Shinde Sayali P.1, Ms. Phalle Vaibhavi N.2 Assistant Professor, Computer Science and Engg Department, AGTI"s DACOE, Karad, India1 Student, Computer Science and Engg Department, AGTI"s DACOE, Karad, India2 [6]Health Monitoring and Management Using Internet-of-Things (IoT) Sensing with Cloud-based Processing: Opportunities and Challenges Moeen Hassanalieragh, Alex Page, Tolga Soyata, Gaurav Sharma, Mehmet Aktas, Gonzalo Mateos,Burak Kantarci.