

Smart Healthcare Based on IoT

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Abstract— Technology plays a major role in healthcare not only in sensory devices but also in communication, recording and display device. In this project the application of IoT in the field of healthcare is explained. There are many uses of IoT in this field such as medical fridges, RFID technology for healthcare. However, the diversity of the objects in IoT causes the heterogeneity problem of the data format in IoT platform. 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 this paper applications of IoT based on healthcare is shown.

Key words: Internet of Things; Medical fridges; Machine to Machine communication (M2M); RFID; Chronic Disease Management

I. INTRODUCTION

Today Internet has an effect on each and every aspect of our daily life. How people live, work, play and learn has been changed with the advent of internet. Educations, finance, Business, Industries, Entertainment, Social Networking, Shopping, E-Commerce etc. are some of the fields that internet serves. Internet is Internet of Things (IOT) is the next new mega trend. IOT is a concept which visualizes a world where Private Internet Protocols or public Networks can be used by several objects can sense, communicate and share information. Data at regular intervals is collected by the interconnected objects, which is analysed and used to initiate the required action. It results in intelligent network for analysing, planning and decision making. In other words we can consider IOT as connecting internet with object and using connection for remote sensing and control of those objects. Sensors, gateways and wireless networks which enable user to communicate and gives access to the application /information, is what IOT is all about. One of the field where IOT can be widely applied, is in the field of health awareness. IOT framework gives secure health awareness checking. System Provides people with various types of emergency assistance systems. Automated timers and security features such as timers.in Medical services framework the user will be taken to the sensor, the information is send to the cloud via Wi-Fi, and then the information is permitted to be viewed by the approved clients. This is a great advantage to the patients as well as the

II. TECHNICAL FRAMEWORK

Diverse architectures constitute the mutually no interoperable Application specific solutions shapes the market requirement of the health monitoring system.

Application in health monitoring system in connected by:

- The process of gathering data from the wireless sensor networks
- Support for standard user interface and display
- Network connectivity for access to infrastructural services

- In use requirement like low power robustness, durability, incurability and reliability.

III. HEALTH CARE APPLICATIONS

A. Home automation for elderly people:

Two basic forms of home automation Systems for the elderly: Embedded health systems and private health networks. In embedded health system sensors and microprocessors are integrated in various appliances, furnishing and clothing to collect data which is used to analyzed data and diagnose diseases and recognize risk patterns. Wireless technology is implemented by various private health networks to connect various portable devices and store data in a household healthcare database. Various emergency assistance systems, security features, fall prevention, automated timers and alerts are provided by this system.

B. Medical fridges:

The medical fridges is another application in smart healthcare to monitor the Aged patients continued usage of medications on time. Smart medical dispenser is used. The microcontroller monitors the patient usage of the Smart Medical fridge which is connected to a standard telephone line and can alert a physician, healthcare provider or family member if required. Patient is located to field test and provide critical feedback after reviewing a prototype fridge. Active sensor require patient interaction to set out an alarm To address the broader societal need of remote, automatic well-being monitoring. At-risk patients could be monitored using the same device attached to a standard household refrigerator, a pressure sensor on a carpet, a monitor sensor in the kitchen, or even a tilt sensor on a toilet seat.

C. Patient Surveillance:

These health checks may be required mainly for employees who are exposed to noise or vibration, pollution, radiation, solvents, fumes, dusts, biological agents and other substances those are extremely hazardous to health, or work. Health surveillance is a system of frequent health checks of children, students, elderly people and patients. Public health surveillance is a type of survey that continuously collects systematic analysis and collection of public health-related data that is needed for the planning, implementing, and evaluating public health practice. Such type of surveillance can: help the public health organizations to get an early warning for most of public health emergencies; document the impact of any health problem, or can easily track progress towards specific goals; so they can check and clarify the epidemiology of health problems, to set priorities and to inform public health policy and strategies. The use of this new technology, IoT, in healthcare services will bring comfort to patients and physicians because of its vast applications such as real-time monitoring, patient information management system, and health Management system. In E-Health, medical devices such as wearable devices such as smart bands or

smart chains can be connected to IoT technology for remote monitoring, real-time monitoring and on-line medical consultations.

D. m-Health:

By introducing the 4G based health applications for non-invasive glucose level sensing with advanced opto-physiological assessment technique and diabetes management. An amalgamated concept of Internet of m-health Things is provided. As the burden of chronic diseases continues to grow globally, so does the impact of non-adherence. Adherence to chronic disease management is critical to achieving improved health outcomes, quality of life, and cost-effective health care. mHealth devices can improve service delivery and impact patient outcomes. Sensors and context-awareness features allow for individualization and real-time information submission delivery. Mobile technologies are increasingly being used in health care and public health practice(m-health) for patient communication, monitoring, and education and to facilitate adherence to chronic diseases management

IV. ADVANTAGES

A. Decreased Costs:

When healthcare providers take advantage of the connectivity of the healthcare solutions, patient monitoring can be done on a real time basis, thus significantly cutting down on unnecessary visitors by doctors. In particular, home care facilities that are advanced are guaranteed to cut down on hospital stays and re-admissions.

B. Improved Outcomes of Treatment:

Connectivity of healthcare solutions through cloud computing or other virtual infrastructure gives caregivers the ability to access real time information that enables them to make informed decision as well as offer treatment that is evidence based.

C. Improved Disease Management:

When patients are monitored on a continuous basis and healthcare providers are able to access real time data, diseases are treated before they get out of hand.

D. Reduced Errors:

Accurate collection of data, automated workflows combined with data driven decisions are an excellent way of cutting down on waste, reducing system costs and more importantly minimizing errors.

E. Enhanced Patient Experience:

The connectivity of the healthcare system through the internet of things, laces emphasis on the needs of the patient. That is, proactive treatments, improved accuracy when it comes to diagnosis, timely intervention by physicians and enhanced treatment outcomes result in accountable care that is highly trusted among patients.

V. CONCLUSION

In this paper I have given some basic introduction of Internet of Things its applications, uses, integrating both IoT and Public Health surveillance and Future developments in the IoT devices in medical field. Internet of Things have wide

applications now a day in all fields and coming to the public health surveillance system it becomes more advantageous in saving lives of the people. There are very few medical IoT devices used now a day's compared to other field of the IoT. IoT has a great future in every field.

REFERENCES

- [1] Dave Evans. April 2011. The Internet of Things: How the Next Evolution of the Internet Is Changing Everything, Cisco.
- [2] G. Kortuem, F. Kawsar, D. Fitton, and V. Sundramoorthy, "Smart objects as building blocks for the internet of things, "Internet Computing, IEEE, vol. 14, pp. 44-51, 2010.
- [3] Mikhail Simonov, Riccardo Zich, Flavia Mazzitelli. Personalised healthcare communication in Internet of Things.
- [4] O. Vermesan and P. Friess, "Internet of Things Strategic Research and Innovation Agenda," Internet of Things-Converging technologies for smart environment and Integrated Ecosystems: River Publishers, 2013, pp. 54.
- [5] www.internet-of-things-research.eu
- [6] <https://en.m.wikipedia.org>
- [7] <https://www.ncbi.nlm.nih.gov>
- [8] readwrite.com