REMOTE SURVEILLANCE SYSTEM FOR IOT-DRIVEN PATIENTS MEDICAL ADVICE

[1]Amita Singh, [2]Hari Om Sharan

[1]Master of Technology , [2]Faculty & Head of Department,
[1]Computer Science & Engineering, Rama University,
[1]Rama University , Kanpur, India.

Abstract : In today‟s e-life we generally need to manage data which assumes a huge job in our lives. One of the significant wellsprings of data is clearly the monster web. At the point when we move our heads around, we can see things that are acting savvy, and are therefore making the human lives progressively shrewd and e-driven. These things demonstration savvy just as they are associated with the web, and are thus called as the „Internet of Things (IoT)‟. In Internet of Things (IoT), gadgets assemble and share data straightforwardly with one another and the cloud, making it conceivable to gather, record and investigate new information streams quicker and all the more precisely. IoT offers an incredible guarantee in the field of e-medicinal services, where its standards are as of now being applied to build the nature of care, improve access to mind and in particular diminish the expense of care. Implanted advancements are being utilized in applications like e-wellbeing frameworks that convey care to individuals in remote areas and observing frameworks that give a consistent stream of precise information for better consideration choices. Here we study wearable gadgets for observing patients who in one manner or the other might be inclined to different dangers like hypertension, which can be because of extraordinary pressure, overweight conditions, and family ancestry of hypertension.

***IndexTerms* - "Internet of Things (IoT)", "E-Health", "RFID", "EMR", "Sensors".**

I. INTRODUCTION

To increase patients' access to reliable health care in the local health centres, we must take advantage of the increasingly increasing technologies and innovation today. Health care services are managed and delivered to comprehensive preventive and curative services based on people's needs over time and across the different levels of the health care system.Quality healthcare facilities are important in order to improve the quality of all patients, to achieve quick access to healthcare networks, to prevent disease and impairment, to diagnose and cure symptoms of infection and therefore to prevent death due to negligence. Access to health services includes coverage, services, timeliness and staff. The paper concentrates on the medical care of patients to improve patients ' health and well-being by using IoT and e-health solutions. The IoT was one of the recent breakthroughs in information technology and communication, and is having a major impact in connection with health services, in particular e-health. In order to improve our way of interacting with our environment, IoT technology links the internet with various objects in everyday lives such as daily sensors and devices (medical equipment, home appliances etc). They foresee the use of heterogeneous communication networks, such as RF-ID, wireless sensor networks, built-in sensing, real-time and semantin Web services, in the link to Internet for billions of sensors and drives. In the areas such as smart cities, home control and security, infrastructure, engineering, electricity and utilities, smart grids, smart transport systems and traffic management, IoT is implemented. The IoT in medical care uses this revolutionary technology to provide support for patients and physicians across a wide variety of applications including in-home monitoring, patient information and the health management system. For remote monitoring, real-time surveillance and online medical consultation, medical devices and wearable devices can be associated with IoT technology in eHealth. The Internet of Things is meant to empower anyone, anywhere at any time and in any position to interconnect. Ideally, any device over any channel, road or network should be able to connect with that. The IoT Connectivity Theory has been commonly referred to an adaptive and self-configuring framework comprising sensor networks and intelligent objects, the aim of which is to link all things, including every day and industrial things, so that they are intelligent, programmed, and able to interact with people

II. OBJECTIVE

Build a user interface to achieve the following goals:

- To improve the compilation and distribution of patient data information for people for whom treatment has not historically been accessible for review.
- Develop IoT-driven systems to radically reduce costs and increase the quality of the care by improving health.
- Develop and produce embedded technologies for use in all IoT-driven healthcare systems, including:
  - ✓ Patient data gathering sensors.
  - ✓ The processing, analysis and wireless communications of data by microcontrollers.
  - ✓ Microprocessors to allow rich user interfaces in graphics
- Establish healthcare-specific gateways to further study and transfer sensor data to the cloud.

III. RFID TECHNOLOGY

Incorporation of IoT technologies with e-solutions is fundamental to this, that is, to demonstrate how Electronic Medical Records (EMR) integrated the IoT key technology (RFID) to enable any patient to have access to its medical records in several health centers in a safe and easy manner. The EMR is an eHealth system used to monitor patients ' health information. A radio frequency identification tag (RFID) is given to each individual with access to medical documents that are stored on the health center's database server.

Through IoT data exploration the data base or web-addresses of a specific RFID tag with sensing capabilities can be performed on a tagged or tagged entity. RFID is a non-contact wireless device which stores sensitive data and uses radio frequency waves to automatically identify and monitor information from an RFID tag attached to a individual. As RFID provides read and write functionality, no sightline impairment with RFID readers and many RFID tags is simultaneously readable as the conventional bar-code device. The IoT uses RFID technology for e-health to monitor patient and property medical records, classifying newborns and physicians, tracking and controlling the diagnosis and conducting the operating processes.

The RFID system consists of the following three major components:

RFID Tag: It has a microchip, an antenna and encryption equipment. In the case of bits, the tag information is stored electronically and communicates with the RFID reader. The tag is also referred to as a transponder, which is read as soon as it is in the user coverage area and is specified in the computer system. The RFID tag can be passive tag or active tag, depending on the form and application specifications. When they are inside the reader sector, passive tags derive their strength. They are cheaper than RFID tags work. A small battery and a radio transceiver have an active tag, and it can be read at distances of few hundred feet based on the type of antenna and the environment.

RFID Reader: The encoded radio signal is transmissioned to question and enable the RFID tag. A radio transmitter, a radio receiver, a controller and a memory unit form part of the reader. The principal role of the reader is to allow an RFID tag and server to communicate and to authenticate each other.

Server: It is a secure organization used for shared authentication purposes. In its database the server stores all information about the RFID tags and uses the stored data to determine the validity of the tags.

3.1 Patients' EMR:

EMR is a digital version of a person's records of paper medical files. EMR systems help make IoT technology available quickly accessible on the distance, anytime and anywhere to health care information. EMR removes the structured or unstructured paper form process that could be cumbersome on a glance to access. The medical details of a patient is first entered in an EMR health center network. During his or her stay in the health center, the patient's EMR is updated continuously and associated with an RFID label. Mentioned in the original patient's EMR bio details of the patient also includes, diagnosis records , medical histories, instructions, test tests, blood pressure reports, vital signs and medical bills. This records can be used as follows. Whenever a patient receives medical treatment at the health center, doctors procure the patient's health records from the EMR network using RFID technology. The information collected would then assist in analyzing and diagnosing the disease of the patient. Doctors may take advice from experts by sharing information with consultants if necessary. The system ensures consistency, efficiency and safety, because no other patient can use another patient's medical.

IV. ARCHITECTURE OF THE SYSTEM

By visualizing the life cycle of the various entities and their interactions the Architecture Framework for IoT enables e-health to be better understood. It is essential to understand and summarize the life cycle of the device data as:

Connection: The focus of this function is the connection between the device and the ecosystem.
Collection: The focus of this function is on how the sensor collects data. You can push the data from the sensor.
Correlation: The focus is on the mapping of the data into a context and makes links to the creation of meaningful and concisely processed data for decision-making.
Collaboration: The focus of this role is to enable patient-care team collaboration.

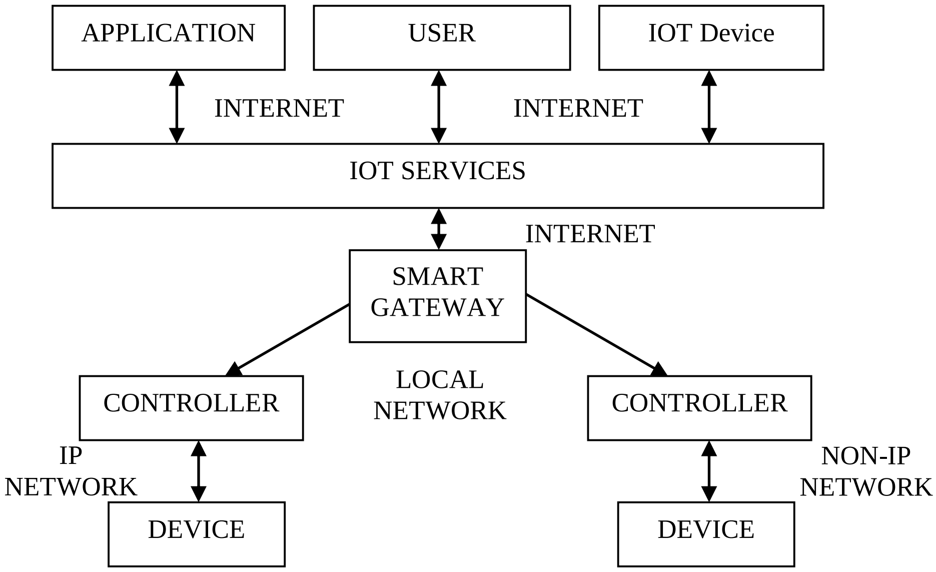

Figure 1: E-Health IoT Architecture

E-Health architecture needs to address the needs of each phase in this life cycle and ensure that every task is carried out efficiently and effectively. The secret to e-health architecture is the development of an interoperable network of computers, applications and back-end systems for the accurate and timely decision-making of free-flowing information. Data flow focuses on the data source, the destination of the data and the path of the data. Usually, the data source is a sensor. Data can be either stored locally or transmitted without being stored in the sensor on upstream systems. The route followed by the data includes a gateway which can also store some of the data.

V. RESEARCH METHODOLOGY

Some methodology was followed and it is given below to achieve the above-mentioned objectives:

In particular we aim at communicating between layers and supporting multiple protocols through the information service bus. A versatile registry-based model must form the application layer that enables system plug-in and playback. Due to the number of devices and the data generated, it is essential to filter the information. The challenge with filtering is to identify and delete false alarms, but critical information is not missing. To process this information, the systems of clinical decision support are used to draw conclusions and actions that The information obtained from these devices is expected to be performed. Co-relationships need multi-system data and the architecture must therefore support a seamless interoperability between the information systems. The data includes both historical data and data stored in the system in real time. The architecture of the data flow concentrates on the data source, the data destination and the data path. The sensor is usually the source of the data. Normally, the sensor is the data source. The data can either be cached locally or transmitted without saving them in the sensor to upstream systems. The data path includes a portal, which also enables some data to be cached and distributed. Intermediate hubs can also store and process data to filter them out. The distributed rule engine is used at the nearest point of concern to make distributed decisions. This allows data traffic to be filtered and easily processed without the cloud provider storing all data. In the cloud it is finally saved, processed and archived into the data storage. The conclusion may be that a member of the healthcare team should contact the patient to understand why the measurements from the device are not expected. This method is crucial in finding issues early in the process, raising substantial costs and difficulty of coping with medical conditions in an emergency room. The health team should interact with the patient once the conclusion is reached. Various methods can be used to enable collaboration ranging from basic text messages to enabled collaboration with real-time video.

VI. CONCLUSION

There is already a growing IoT movement in healthcare. The paper examined the need to integrate IoT technology with e-health solutions and wearable devices to improve health care for patients. Provides fast and safe access to EMR for patients. The IoT automation and machine-to - machine communication blocks are being developed and the infrastructure has been completed by the added service layer. In addition, the new e-Health program based on IoT would not only deliver a smarter approach to health care but intelligently guide decision-making. Within the whole network, many health issues can be treated as a pool. Because of the Internet basis for the proposed health model, transforming outputs to second screen and mobile devices would be more straightforward.

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