

# International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

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Vol. 6, Issue 3, March 2017

## Patients Monitoring System using Internet of Things (IoT)

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**ABSTRACT:** Due to population increasing in the world, pervasive healthcare has become more important social needs, lot of innovation and improvement in pervasive health care has been made due to advancing tech, still there is lot of scope for improvement, hence an important requirement for medical field is improvement of doctor- patient's interaction system. In this paper, the technology that use to monitor the health parameters of a patient and a doctor application. IOT technology is used it will able to see the patients details with the help of IOT tags and take according action in this model will use a web server for storing the entire patients data, serves that allow only client "Embedded C" technology to interfaced, this web server is used to know full current data of patient and also allow clients various different technologies to be interfaced

**KEYWORDS:** IOT tag, web server, Pressure sensor, Heart beat sensor, Temperature sensor Accelerometer.

### I. INTRODUCTION

M-Health also known as mobile health is a term used for the practice of medicine and public health which is supported by the mobile devices. This term is most commonly used in reference to using mobile communication devices, such as mobile phones, tablets, computers, etc, for health services and information, but also to affect emotional states. The e-Health field has helped to emerge a sub-segment as of m-Health, the use of information and communication technology (ICT), such as communications satellite, computers, mobile phones, patient monitors, etc., for health services and information. The applications of m-Health include the use of mobile devices in collecting community and clinical health data, delivery of researchers, healthcare information to practitioners, and patients, real-time monitoring of patient vital signs. A recent technology emerging now-a-days is Near Field Communication (IOT) which is known to be a wireless technology used for communication in a short range of five to ten cms. Based on RFID technology, that can be used to read information from a tag with the help of a reading device such as mobile phones. The IOT is available in the form of IOT tag. IOT tag is a device that is a small passive with no battery and which contains a tiny microchip attached to a small loop antenna. When scanned by an IOT reader such as a mobile phone, this tag powers up and wirelessly transfers information such as a web address, text, or a command for an App. The IOT tag can be secured with authentication so that the data on the tag cannot be altered or left unlocked so the data can be altered again and again. IOT tags are basically either printed stickers or plain stickers, but they can be also enclosed in IOT products. IOT

### II. DESCRIPTION AND IMPLEMENTATION

In the field of patient monitoring "A wireless ECG monitoring system" [2] was implemented which integrated novel capacitive ECG sensors. "Design and Implementation of Doctor-Patient system based on android" [3] introduced m- health

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and Android platform which was designed to achieve a set of doctor-patient interaction system based on android. Jelenamirkovic, Haakon bryhni and Cornelia M. rulant in “A framework for the development of ubiquitous patient support systems” [4] have described a framework for the implementation of content adaptation and session and mobility management in ubiquitous patient support systems. Also a generic and modular architecture has been described and a design framework that provides support for seamless application mobility across any terminals.

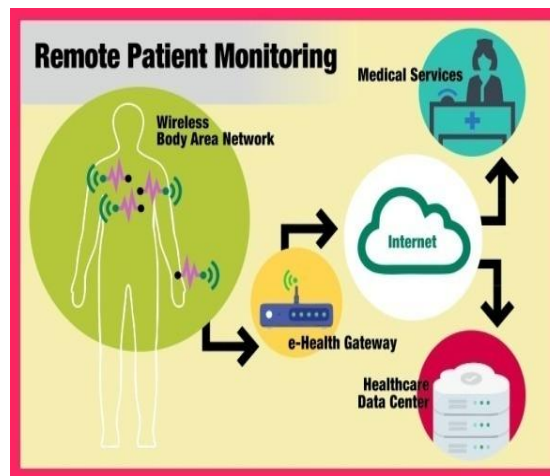


Fig.1. Remote Patient Monitoring

Radio Frequency transceiver based heart beat and pressure monitoring .In these separate RF is used for communication it is Limited Range communication within hospital only if need long range communication need more RF signal. Low output efficiency Old version method of tracing data's.

Lab on a Chip include multiple integrate parameter it control the Glucose level of patient is measured. Once the level of glucose is down in the bottle the valve is closed. This Chip monitoring Patient health condition monitoring parameters like temperature is measured in hospital or patient in outside of hospital. No need of separate RF spectrum for transferring the patient information to doctor. Mems are used and it will monitor the movement of the patient. Fall detection and blood pressure level is accurately measured.

- All the sensors are integrated in a single chip. It can be reduce the parameter
- The patients in the ICU need a constant monitoring of their Temperature and heart beat. The patient can be analyzed by doctors in any part of the hospital wherever they are.
- Even when the patient is in an unconscious condition, the Chip will be sense all the parameter and doctor will be cautioned,
- Thus it reduces doctors work load and also gives more accurate results,
- We transmit the patient health condition to server via internet.

### III. METHODOLOGY

The use of M2M technology can bring to life a wide range of Health applications, with considerable benefits for both patients and healthcare provide

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### A. Problem Statement

“The main goal of this paper is to develop a system which is automated by using a smart phone which will automatically monitor the patient’s status and generate alerts and also maintain logs on cloud server and also to introduce the concept of IOT to tag the patient and also reduce paper work”

### B. Proposed architecture and implementation

The proposed system consists of three modules: 1. The Admin application, 2. The Android Application, 3. The Doctor Application, 4. The Web Server. Also we will be using IOT tags, IOT enabled phones and an android phone.

175s module, when a patient is being admitted in the hospital, the admin will register the patient and assign a tag to the patient. The details of the patient are filled in the IOT tag and assigned to the patient

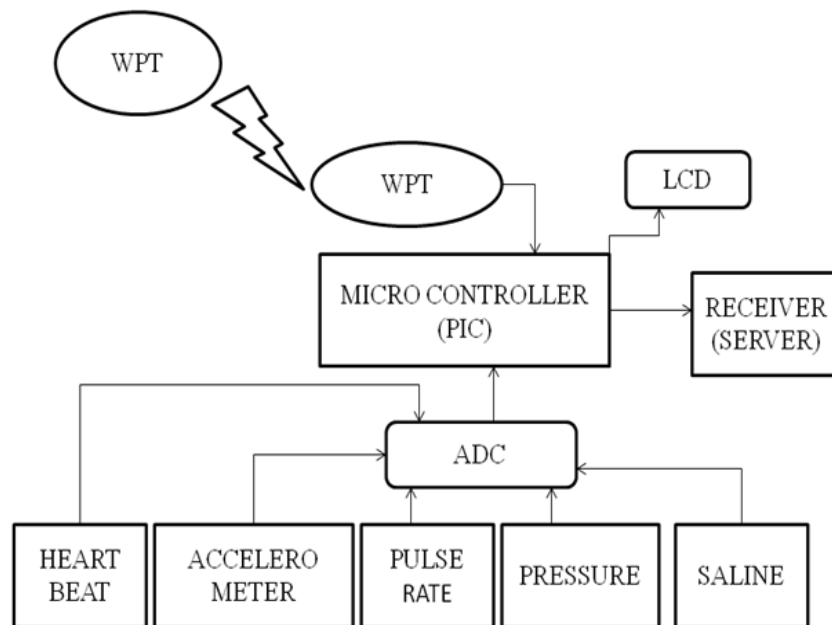


Fig.2. Block Diagram of Transmitter

### 2. The Android

In this module, firstly the android phone is connected to the hardware via Bluetooth. Then the hardware is tested, the threshold values are set for sensors and the server is activated. The other functions performed by this module are generate alert through SMS/Email, send SMS/Email, transmit graphs remotely via web services, view real time graphs.

### 3. Doctor

In this module, the doctor first login into the system. Whenever the doctor wants to view the patient’s data, he/she swaps the IOT tag and views the data. The doctor can also view the patient details and logs and also the graphs

### 4. Web server:

This is a centralized cloud server which stores all the data of the patient, the values of the sensors, the graphical view of the values of sensor, manages the updates of the patients data, also manages sending of alerts to the doctor through SMS/Email. shows the architecture diagram of the proposed system.

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Fig.3. Receiver Model

## IV. RESULT AND PERFORMANCE ANALYSIS

It consists of sensors that are connected to the hardware. In this work using three types of sensors, and it can be increased up to twelve sensors. For this system, Heart rate sensor (for checking the heart beat), temperature sensor are used. Motion of the patient will be captured with the help of the phone camera and accelerometer that is inbuilt in the phone will send the movement or motion of the patient to the cloud server in between specific time intervals and also alerts will be generated in case the patient doesn't respond. When a patient is admitted in hospital for the first time, he is registered and assigned a unique id. This data is stored in the cloud server and can be altered only by authorized person. IOT tag will be associated with every patient and that patient will be equipped with android enabled smart phones and Doctors will have to have an IOT enabled phone. There will be an IOT issue app which will be used by the doctor to read the content from mobile to IOT tag whenever he wants to view the patient's data. Auto alerts will be generated in case there is an emergency or the sensor values show high variations. After a specific time interval through Bluetooth the data will be transmitted to the android phone which will further be saved on the cloud server through Wi-Fi and stored there. The doctor can view the data any time by just swapping the IOT tag and also can view in graphs and logs. This proposed system will help reducing the gap in between the doctor and patient and also their interaction will be much easier.

## V. CONCLUSION

The proposed system, has overcome the disadvantages of using RFID system by using IOT tags. The architecture has been replaced by the web service architecture which opens a space for other technologies to be implemented rather than being only java. Also the patient's status is automatically generated and stored in the cloud server and also alerts are generated if the patient is in a serious condition or unconscious state. Currently it is possible to conclude that for providing a better solution to the field of m-healthcare in many hospitals, IOT promises appear to be credible. It is two way communication methods we are added in this technique to overcome the exiting system

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ISSN(Online): 2319-8753  
ISSN (Print): 2347-6710

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