

## Intelligent Patients Monitoring System Using IOT

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**Abstract**—The “internet of things” is technology where every single device is connected with every other device by internet. Those devices can communicate and transfer knowledge among each other. Now a day's actually its need to connect devices and with the help of internet make our own life easier and reliable. we can apply iot in transport, education, industry as well in medical field too, so with the help of doctor application which is depends on android can measure the real time conditions of patients so that's why it will become easy to take decision as early as possible about treatment also simultaneously it will minimise manpower as well minimise time too. in medical field we are trying to develop connection which can describe how the patient and doctor can get connected without 24\*7!

**Keywords**—Real Time Environment, NFC-near field communication, simple object access(SOA) protocol, Android application, Wireless sensor network(WSN), Microcontroller

### Introduction

*In the past, the definition of iot having the wide range of applications like transport, utilities, healthcare, etc. Nowadays in hospital number of ward boys allocated is lesser than the number of rooms and they can't give equal attention to every patient at the same time. to reduce the frequent checkups of the patients and to transfer the data of patient to the respective doctor, patients monitoring system will be developed. By doing so, firstly the patient can get seamless healthcare quickly. The iot having ability to make connection between device and people for use of respective applications and make integrated communication. Innovation process is held under iot. The iot is evolving from the single application to multiple applications. Basic focus is to develop a device which will reduce the manpower with the help of iot to make healthcare applications. Our desirable device could monitor the patient's temperature, blood pressure and Heartbeat level by using sensors. These sensors will be directly connected to the microcontroller. We are about to develop an android application for doctor. And through a Wi-Fi connection doctor can get the data of patient easily. Basic architecture will give a brief idea regarding our project. The goal of such systems is to provide preventative clinical action may be taken to improve patient health result. As per the wearable device is consult NFC technique can be provide extraction of real time patients health information. In a system with the help of microcontroller which having ability to collect the information from the various sensors which can sense in the form of digits from that information step up towards the better health treatment. Precaution can be taken before patient's health get unconscious. We can provide buzzer system at extreme critical condition. It can be helpful with many areas like reduce manpower, time and proper use of devices which connected through IOT technology. We have to study about the heuristic information of patients which we have already at the time of registration of patients and at the same time the tag for every Individual patient. This all process is done by admin.*

### Vision and Scope

*The purpose of the Patient monitoring system is to create convenient and easy-to-use online system for doctor, which tries to take good care of patient and get every single information of that patient with their android application. The system is based on a heuristic data and also present data of the patients. We will have an application server which will work on any platform supporting multiple departments and it sections present in hospital major important areas where all the emergency is require. This will help to maintain a ratio like a doctor can get records of multiple patients which will reduce the manpower. We are also going to use an advanced technology such as NFC or we can use a buzzer in case of emergency. The system can undergo 24/7 under*

observation and it is basically used to overcome the careless healthcare system. Above all, we hope to provide a comfortable hospital experience along with the best sources. Basic architecture will give a brief detail about the system.

**LITERATURE SURVEY**

Sr.No	Paper Title	Paper theme/Idea	Advantages	Disadvantages
1.	Design and Implementation of an Embedded Monitor System for detection of a patient's breath by Double Webcams	The idea behind this paper is to use both an embedded system and a Double Webcams to design an embedded monitor system for breath detection which monitors and record patient's information and sends to the server through internet.	The Embedded Monitor System for Detection of Patient's breath by double webcams uses double webcams, a embedded board and temporal differencing method to monitor the breath of patient without any contact with the body of the patient.	The temporal differencing method which is used has a disadvantage that it is enable to discover the outline of the moving object completely.
2.	Predictive Monitoring of Mobile Patient's by combining clinical observations with data from wearable sensors	The basic idea of this paper is to provide a physiological determination, such that the degree of predictive care may be provided.	Machine learning approach is adopted to cope with the large quantity of vital data for monitoring ambulatory patients in real time.	Early warning score system which is used is assigned to each vital sign, and the thresholds are compared are heuristic.  A EWS systems are used with periodic observation of vital signs, which may be made a infrequently as 12h in some wards.
3.	Networking based patient monitoring system	The idea of this paper is to monitor certain parameters of the patient simultaneously and remotely. The networking system which is used is RS485.	Provides real time update of the patient.  Provides virtual supervision for doctors.	There should not be delays in between the data packets on the RS 485 bus because the RS485 drivers return to the high impedance tri-state within few micro-seconds after the data has been sent.
4.	Effective Ways to Use Internet of Things in the Field of Medical and Smart Health Care	This paper proposed the semantic model for patients e-health named as k-healthcare .and it provide a platform for accessing patients heath data using smart phones using four layers these are sensor layer, network layer, internet layer and service layer.	To handle emergency situation efficiently.  To provide efficient storing, processing  And retrieving of valuable data.	There are some privacy and security issues of k-healthcare
5.	A Health-IoT Platform Based on the Integration of Intelligent Packaging, Unobtrusive bio-Sensor and Intelligent Medi Box.	Future forth healthcare industry to develop advanced and practical health-related technologies and services by leveraging information and communication technology, and apply them directly in the home environment	Use of internet for health care system using the medical box aspect, as well biological patching and biometrical conditions get checked and verified.	It cant offers multiple opportunities to adapt a wide variety of e-health applications with minimum changes. New device requirements.

**MATHEMATICAL MODEL**

Let 'S' be the solution set of the problem statement of the project.

$S = \{S, E, I, O, DD, NDD, Fs, Success, Failure\}$

Where,

S- {Start state}

E- {End state}

I- {Set of input to the system}

I1=Blood pressure

I2=Temperature

I3=Heart rate

O-Output of system

{Energy senses by sensor, Patient's situation}

DD-Deterministic data

{Sensor's signals, Patient's activity}

NDD-Non-Deterministic data

{Energy senses by sensors, Patient's situation retained by sensors, Patient is dead}

Fs-{Function used in the system}

F1: accept():accept the patients information

F2: analyse():analysis and study of received information

F3: store():store the information at back end for frequently access data

Functionalities:

SDB' = Register User (uid, password, full name, address, country, contact, email);

Password = SHA1 (input, password);

U = Authenticate User (uid, password, SDB');

LDB1 = Manage Products (pid, product name, cost);

LDB2 = Manage Billing (transactions, items);

LDB = LDB1 + LDB2

ED(Encoded data) = Encode Transactions (LDB2, Encoding Algorithm(EA));

UPLOAD(ED);

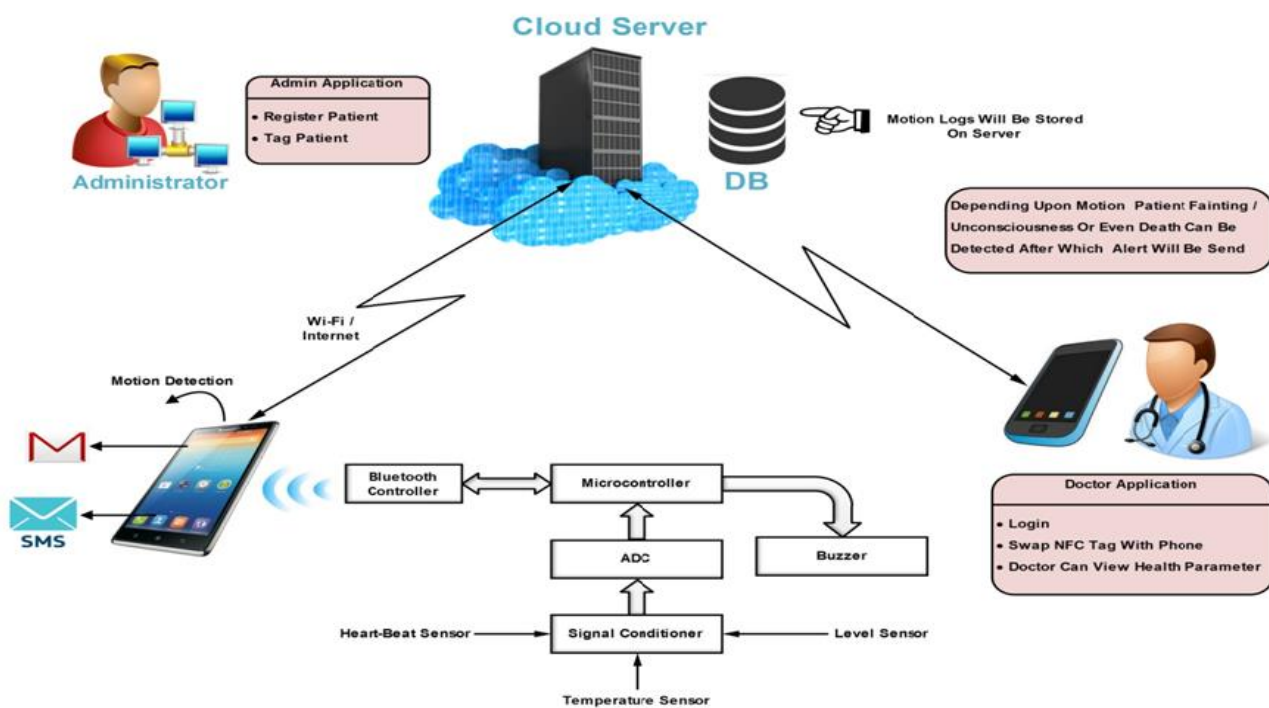
*AO = Apply Mining(ED);*

*Results = Decode (Download (AO));*

*Success-{Sensor signals are giving actual data which is used to improve quality of life}*

*Failure-{Failed to sense a situation or patient is dead}*

### Figure and Description



**Description about the diagram:**

*Our project will have a Glassfish server which will be connected to a database. The database will contain all the data related to the patient like name, id and history etc. A doctor app and a patient app will be connected to the server via internet or Wi-Fi. A doctor app will get every detail of the patient. He can have the past details of a particular patient. On the other hand, the patient's app can login with the NFC tag. And through a Bluetooth connection patient's app will be connected to a hardware kit. In that kit, a microcontroller will be attached to the device driver, ADC. ADC will be connected to a sensor controller, which will sense the patient's heartbeat level, temperature. A buzzer can also be attached to the device drivers, which will be used in the extreme condition of a patient.*

**Conclusion**

*Main focus about this development is for reduce manpower and time and it will surely minimize thousands of time that today's situation, also the proper use of internet and device communication can be possible from this application. Everyone have Smartphone now a day's having android as OS that can be use for such application which help to improve the quality of life type for sure.*

*Use of NFC technique will take a greater expose in coming future. Also rather than store of patient's info on cat log on daily bases it will better to store all info in NFC tag and simply using and scan tag we can grab all information which we want (doctor) so process of patient treatment and precaution speed in early step is become easier. And hence we finally conclude that this application will change face of medical field and life become easier than present.*

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