# Patient Health Alert System

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***Abstract***

*Among the variety of uses empowered by the net of Things (IoT), a sensible and associated human service is notably necessary. Network sensors, either worn on the body or installed in our living setting; modify the social event of wealthy info demonstrative of our physical and mental state. Caught consistently, amassed, and viably strip-mined, such information will create a positive transformation amendment within the health care landscape. . In this paper, monitor patient's heart rate, body temperature, Respiration rate and body movements using Raspberry Pi. After connecting Internet to the Raspberry Pi board it act as a server. Then the server is automatically sends data to the webserver .Then these parameters are monitor using webpage anywhere in the world using laptops, smart phone etc. If these parameters are goes to abnormal, it will automatically send an alert message to the doctor.*

**Keyword -** *Internet of things, Network Sensors and web server.*

## I. INTRODUCTION

In today's world, technology plays an important role in every industry as well as in our personal lives. Out of all of the industries that technology plays a crucial role in, healthcare is definitely one of the most important. This merger is responsible for improving and saving countless lives all around the world.

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In the healthcare industry, the dependence on medical technology cannot be overstated, and as a result of the development of these brilliant innovations, healthcare practitioners can continue to find ways to improve their practice – from better diagnosis, surgical procedures, and improved patient care.

Information technology has made significant contributions to our world, namely in the medical industry. With the increased use of electronic medical records (EMR), Telehealth services, and mobile technologies like tablets and smart phones, physicians and patients are both seeing the benefits that these new medical technologies are bringing.

Medical technology has evolved from introducing doctors to new equipment to use inside private practices and hospitals to connecting patients and doctors thousands of miles away through telecommunications. It is not uncommon in today's world for patients to hold video conferences with physicians to save time and money normally spent on traveling to another geographic location or send health information instantaneously to any specialist or doctor in the world.

Our project Patient Health Alert System continuously monitors and renders medical attributes of the patient. This system watches over the patient's vital readings and provide alert, if there is any abnormal change. We provide the immediate alert message to the doctor and guardian. Our system provide medical report with the recorded data by matching them with the predefined medical dataset .With the data, We can predict the possible diseases.

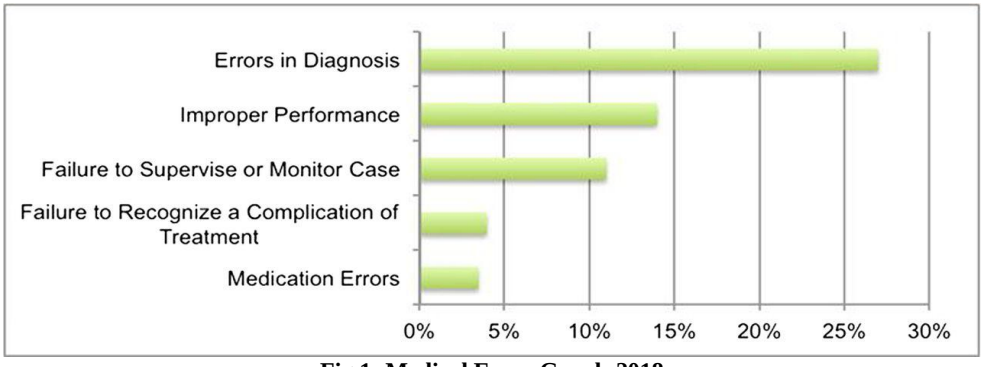


**Fig 1: Medical Error Graph-2018**

## II. LITERATURE SURVEY

**(**Anand Kubal, Chandrashekarappa K, 2017) In the recent development of Internet of Things (IoT) technology, it has made all objects interconnected. We can say that IoT has been recognized as the next technical revolution. To quote few of the applications of Internet of Things, smart parking, smart home, smart city, smart environment in the industrial places and in the irrigation and health monitoring process.[1]

(Kartikee Uplenchwar, Aditi Vedalankar, 2017) The current healthcare model is mostly in-hospital based and includes periodic visits, that has turned as a tedious job for the patients. A set of five parameters has been identified i.e. Electrocardiogram(ECG), Pulse rate, Weight, Temperature and Position detection by using wearable sensors. These sensors are connected to an Arduino and Raspberry Pi. Once the Raspberry Pi is connected to internet, it acts as a server and sends data on a specific URL. The vital parameters can be visualized and monitored on any mobile device including laptops or smartphones which are connected under same network. [2]

(Pooja Navdeti, Sumita Parte, Prachi Talashilkar, Jagruti Patil, Dr. Vaishali Khairnar), Sometimes it becomes difficult for hospitals to frequently check patients' conditions. Also continuous monitoring of ICU patients is not possible. To deal with these types of situations, our system is beneficial. Our system is designed to be used in hospitals for measuring and monitoring various parameters like temperature, ECG, heart beat etc. The results can be recorded using Raspberry Pi displayed on a LCD display. Also the results can be sent to server using GSM module. Doctors can login to a website and view those results.[3]

(Khan Adil Parvez, Prof. J.D. Bhosale , 2018) In the recent development of Technology Internet of Things(IOT) makes all Devices connected to each other and the it can be monitored via internet via internet Devices can be controlled. In latest technologies IOT gives a platform where the user can access anything from anywhere. Some of the applications of Internet of Things are Smart Home, Smart Grids and Health monitoring System. Health monitoring is the process in which the Patent Data (Temp of body, Heartbeat, E.C.G, Respiration etc.) is continuously updated on the internet website/App via the sensors connected to patient's [4].

(Ravi M S, K V Muralidhar, 2015) In these days automation using wireless communication has made the systems more smart and automated.The use of wireless communication has made the monitoring remote parameters easy.The server updates the information using local area network.Alert sms is send if a parameter crosses the threshold [5].

(R.Kumar, Dr.M.Pallikonda Rajasekaran, 201) In the advancement of Internet technologies all machineries are inter related. Using the technology improvement, we can make many things in high effective and simple for human life. There are several places of Internet of Things (IOT) is used. Such as smart environment, smart home, smart city, smart parking, agriculture fields and medical fields. In medical field also, there are several process are used internet . In this paper, monitor patient's heart rate, body temperature, Respiration rate and body movements using Raspberry Pi . After connecting Internet to the Raspberry Pi board it act as a server[6].

(C. Selvarathi, R.Sujatha, 2018) In the advancement of Internet technologies all machineries are inter related. Using the technology improvement, we can make many things in high effective and simple for human life. There are several places of Internet of Things (IOT) is used. Such as smart environment, smart home, smart city, smart parking, agriculture fields and medical fields.. In this paper, monitor patient's heart rate, body temperature, Respiration rate and body movements using Raspberry Pi . After connecting Internet to the Raspberry Pi board it act as a server.. If these parameters are goes to abnormal, it will automatically send alert message to the doctor [7].

(Mrs.G.Mohana Prabha, 2018) In the advancement of Internet technologies all machineries are inter related. Using the technology improvement, we can make many things in high effective and simple for human life. The website can be accessible from anywhere only for patients, it also useful for normal people to check the health status by using wearable devices with sensors. Wireless Sensor Network (WSN) for monitoring patient‟s physiological conditions continuously using Raspberry Pi for acquiring the observed patient‟s physiological signal[8].

(Marati Ramakrishna, Dr. Harikrishna kamatham, 2018) Health is one of the global challenges for humanity. In the last decade the healthcare has drawn considerable amount of attention. The prime goal was to develop a reliable patient monitoring system so that the healthcare professionals can monitor the patients, who are either hospitalized or executing their normal daily life activities. Recently, the patient monitoring systems is one of the major advancements because of its improved technology. Currently, there is need for a modernized approach. In the traditional

approach the healthcare professionals play the major role.[9]

## III. SUMMARY OF LITERATURE SURVEY

i. Most common sensors used in these above papers are temperature sensor and heart rate sensor.

ii. All the papers completely focus on the continuous monitoring of the vital parameters of the patients.

iii. Some of the papers does not provide proper alert message to the doctor or the guardian.

## IV. MOTIVATION OF THE CONSTRUCTION SYSTEM

(1)Most of the medical errors happen in the absence of the chief doctor.

(2)Beyond the attending doctor, the hospital authority should know the condition of each and every patient in the premises.

(3)During night time, the patients should be monitored carefully; proper attention is not given to the patients at night.

## V. PROPOSED WORK

Our project Patient Health Alert System continuously monitors and renders medical attributes of the patient.

This system watches over the patient's vital readings and provide alert, if there is any abnormal change.

Unlike the survey papers, we provide the immediate alert message to the doctor and guardian.

Our system provides medical report with the recorded data by matching them with the predefined medical dataset.

With the data, we can predict the possible diseases of the patient's earlier and save the patient's.

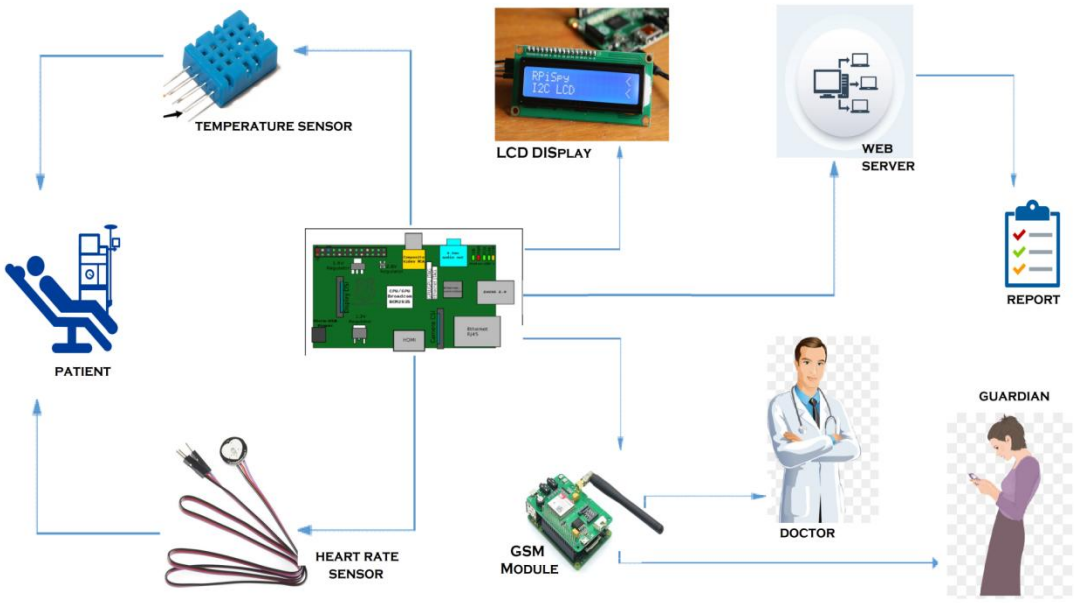


**Fig 2: Patient Health Alert System Architecture**

### *A. Temperature sensor*

To continuously monitor the body temperature of the patient.

### *B. Heart rate sensor*

To record the heart rate (BPM) of the patient.

### *C. GSM module*

To send alert message to the guardian and the hospital authority. When the values reach beyond the threshold limit.

### *D. LCD display*

To continuously display the measured temperature and heart beat of the patient.

### *E. Raspberry Pi 3Kit*

To be used as central unit connecting to the sensors and the GSM module for processing data from the sensors.

### *F. Web sensor*

To store the collected data and match them with a pre – set data to generate reports.

## VI. APPLICATION AND IMPLEMENTATION

The temperature sensor and the heart rate sensor are attached to the patient's body and the vital parameters like temperature and the heart beat are monitored. This data from the patient is collected from the sensors using Raspberry pi kit. A LCD display is connected to the pi, continuously displaying the heart rate and temperature sensor. If any of the parameter goes abnormally high or low, the alert message is provided form the GSM Module which is connected to the Raspberry kit. The GSM Module sends an alert message to the doctor, guardian and the hospital authority. These data are stored continuously in the server. The data of the patient is compared with the preset values. This preset value contains data about the temperature range and heart beat rate for a set of possible diseases. By matching the data of the patient with data in the preset, the disease from which the patient is susceptible to can be detected. With all the medical data of the patient a complete report of the patient is generated in the end of the treatment.

## VII. CONCLUSION

Nowadays, Smartphone's have reached every hand and every home. As a result, people are making use of the beneficial mobile application to make their everyday life easier. This paper conducted survey for last 3 years on development of a mobile application to help providing an effective in the information of intelligent suggestion on choosing suitable hospital and finding doctor. Now people are facing the problem in not properly monitoring patient's health activities in the hospital. So we have suggested using the patient health alert system to monitor the health of the patients continuously and providing alert to the guardian, doctor and the hospital authority for immediate taking care of the patient's treatment by using Raspberry pi kit and generating report in the end of the treatment.

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