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An Advanced Approach for Patient Health Monitoring System

[1] Shital A. Gaikwad
Dept.of Electronics and Telecommunication Engineering
K.K.Wagh Institute Of Engineering Education And Research
(Savitribai Phule Pune University)
Nashik, India

[2] Dr..S .P. Ugale
Dept.of Electronics and Telecommunication Engineering
K.K.Wagh Institute Of Engineering Education And Research
(Savitribai Phule Pune University)
Nashik, India

[3] Dr..D M Chandwadkar
Dept.of Electronics and Telecommunication Engineering
K.K.Wagh Institute Of Engineering Education And Research
(Savitribai Phule Pune University)
Nashik, India

Abstract-IoT devices are used in many fields that make the daily life of the user comfortable. These smart sensors are used to collect heart rate, blood pressure, temperature, oxygen level. Used to assess a patient's health status. Transferring information to a physician, making a definite decision on the data collected and informing the patient is a challenging task for IoT. This paper will provide you with a comparative study of health diagnosis and patient monitoring.

Keywords—IOT, Rasberry Pi, PMS,

I. INTRODUCTION

Patient health is one of the global challenges to humanity. According to the constitution of the World Health Organization (WHO) the highest standard of health care available is a basic human right. Healthy people protect their patient income for the rest of their lives leading to increased home productivity and reducing stress in hospitals, clinics, and medical professionals who are already frustrated and reducing the workload on social security networks, charities and government (or non-governmental organizations).) organizations. Keeping people healthy is a modern, effective and accessible health care system that is raining. An improved health care system should provide better health care services to people at any time and anywhere in an economically and patient-friendly environment.

At present, the health care system is changing traditionally from the traditional to modern patient. Traditionally health professionals play a major role. They need to visit patients for diagnosis and counseling. There are two basic problems associated with this approach. Firstly, health care professionals should be in the patient's place continuously and secondly, the patient is constantly admitted to the hospital, connected to a bedside biomedical device, for a long time, to solve these two problems the patient-directed approach has become pregnant. In this way patients are equipped with the knowledge and experience to play an active role in the diagnosis, and prevention. An important feature of this second approach is a reliable and easily accessible patient monitoring system (PMS)

The need for real-time recording and notification of important patient symptoms is critical to active PMS. Utilizing the benefits of modern bio-instrumentation, computers, and communication technologies, PMS must receive, record, display, and transmit patient body composition data from a patient's body to a remote location at any time. For effective, timely, and emergency medical care PMS must also be integrated into the alarm system. In order to inform the patient and health service providers PMS should not only monitor and read sensitive patient data but should also send out warning messages in the event that the monitored data goes out of its normal range. Therefore, the active data system should be linked to PMS. Most of the proposed PMS are grouped in the sense that all patient information is stored on a single server. By using the required firmware and software the server can be connected to an open communication network with the TCP / IP protocol. The patient can therefore be monitored from a distance. Existing and widespread mobile networks can support this. With the demand for the global market and the use of mobile phones the healthcare system (mHealth) is a growing trend now. By using a mobile health care system it can be made available to people, living in rural areas without much access to other forms of health care.communications. Even a simple cell

phone can be a powerful tool right now. Text messages and calls can quickly bring real-time information and patient information to a rural area. So patients, who live in remote areas, can reduce the need for round-trip and exit unnecessary travel to remote health care facilities. However, mobile devices are now "smart" to do more than simply pass on medical information and advice.

II. OBJECTIVE

The major design objectives of this project are given below:

1.Getting real-time information about a person's life with an IoT device.

2.Preliminary analysis of human-derived data (if necessary).

3. Deliver IoT-based health monitoring systems, anywhere, anytime.

II. LITERATURE SURVEY

S. Siva [1] et al.S has shown to monitor the patient's health status through an intelligent hospital system. The patient's health can be monitored using a spark kit. Gathers information about the patient's temperature and heart rate and sends a notification if any parameters obtained exceed the predefined limit.

T. Sarfraz Fayaz Khan [2] demonstrated an effective patient health monitoring system with the help of IoT and RFID tags. In this program, the patient's health status is monitored by improving IoT capacity and using a combination of microcontroller and sensors. However, it does not contain preventive measures regarding the patient's health status by controlling electronic devices and providing prescribed medication to the patient included in our paper.

U. Boyi Xu et al. [3] U. discussed the challenge of data collection and storage in the IoT environment and provided solutions to the problem. . Due to the various data collections and common data entry it becomes very difficult to analyze and store data in the correct order. So this paper provides a way to do that

V. . Ananda Mohan Ghosh et al. [4] . it does not send any notification such as email and SMS alert to the appropriate family members and doctors.

W. Freddy Jimenez et al. [5] Consider only monitoring the patient's condition and sending the necessary information and notice to doctors, family members. In addition, it does not contain mechanical control, included in our project; focuses only on Monitoring and provides notification to the appropriate persons in a timely manner.

X. Felipe Fernandez et al. [6] Discuss the problem that will arise if we are already continuing to implement an IoT-based health care system. It also discussed the flexibility of IoT-based systems, which should be a concern in an emergency health care setting.

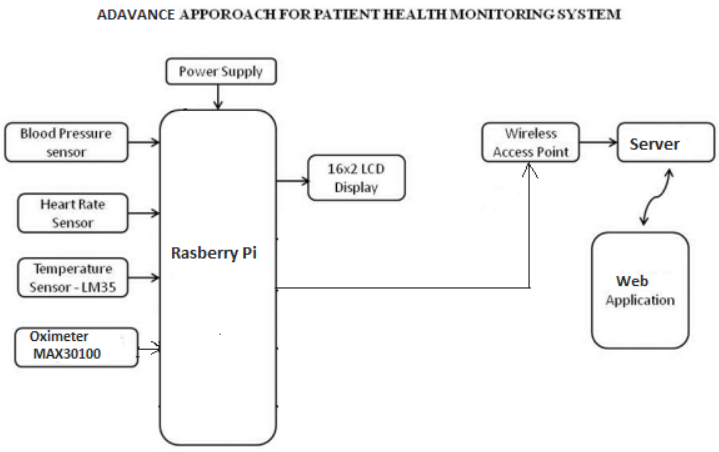
Y. P Kumar et al. [7] Y.Y. displayed on a patient-controlled patient health care system such as heart rate, respiratory rate, temperature and body movements are monitored and data is collected using sensors and displayed on screen using putty software. However, it does not provide alarm notifications for family members or doctors to provide our patient with prescription medication.

Z. Danilo F. S. Santos et al. [8] Ztell about the use of health devices This paper provides standard formats that really help to share data between applications such as our mobile phones and cloud information sites.

Identify applicable funding agency here. If none, delete this text box.

III. PROPOSED SYSTEM

IV. BLOCK DIAGRAM



The main idea of the proposed system is to monitor patient health remotely using android phone USING WEB APPLICATION and IoT technology. A special program to monitor bed rest patients who can stay in their home. In this app, doctors and relatives of patients can monitor a patient remotely with the Android system. It uses a remote sensor to monitor specific parameters such as heart rate, body temperature, patient movements, and patient blood pressure. All the nerves are attached to the patient's body. The sensors will be connected to the Rasberry Pi ZERO controller and this controller will be connected to the LCD display for offline monitoring of sensory reading locally on the LCD display. The output values of the sensor will be uploaded to the central server using the MQTT protocol and the IoT concept using the Internet provided. The threshold value is given to each sensor and in the event of any abnormalities, it immediately alerts relatives or doctors with a notification on his cell phone. For safety and security issues, a role-based user verification system is available in the system to access information.

The heartbeat is used to monitor the actual heart rate of the patient's body. Blood pressure sensor indicates Systolic, Diastolic blood pressure of the patient. The patient's body temperature was accurately measured using the LM35 sensor. Accuracy level is +/- 0.5c. An IR sensor is used to detect saline levels when they are lowered to a predefined limit.

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A. Abbreviations and Acronyms

RPM, PMS, BP,HR

B. Units

- Blood Pressure- mmHg.(milimeter of mercury
- Heart Bit- BPM (Bits per Minute
- body temperature Fahrenheit (°F) ,Celsius (°C).

IV. RESULT

Currently the nurse stays close to patients who can be replaced by this system. Our system monitors patient parameters such as heart rate, blood pressure, and temperature etc. accurately and provides relevant information to doctors with the help of this system. The program has reduced the number of staff needed to monitor patients on an ongoing basis.

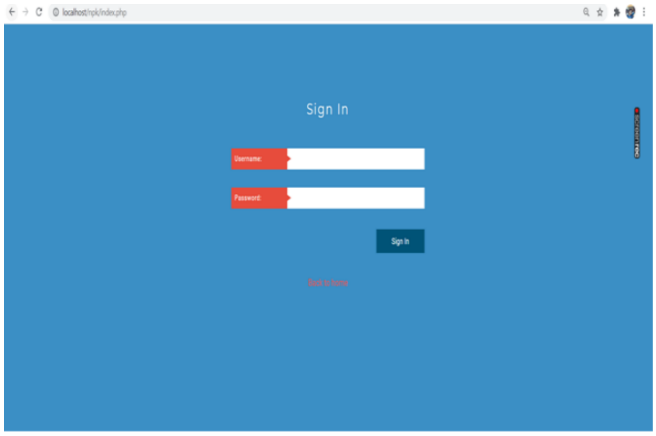

Fig 1: Log in screen

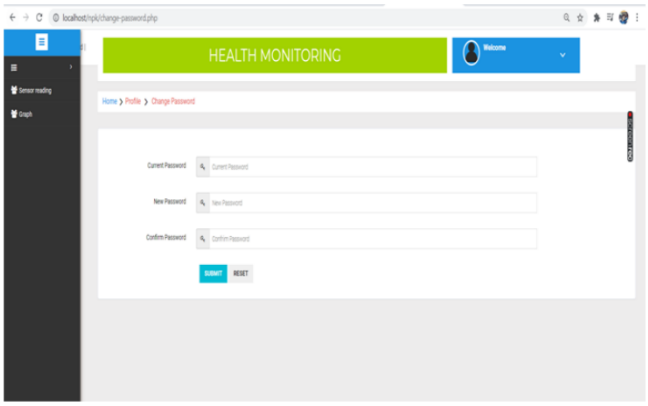

Fig 2: Change password screen

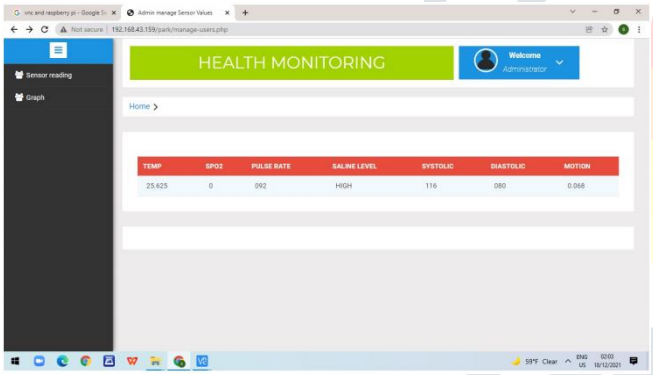

Fig 3: Patient Parameter Result

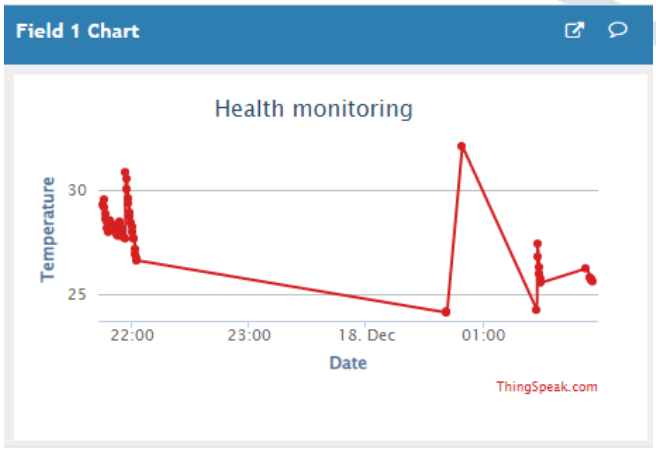

Fig 4: Temperature Graph

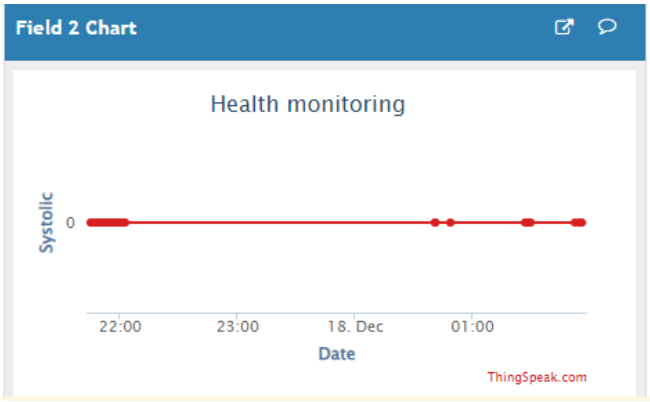

Fig 5: Systolic graph

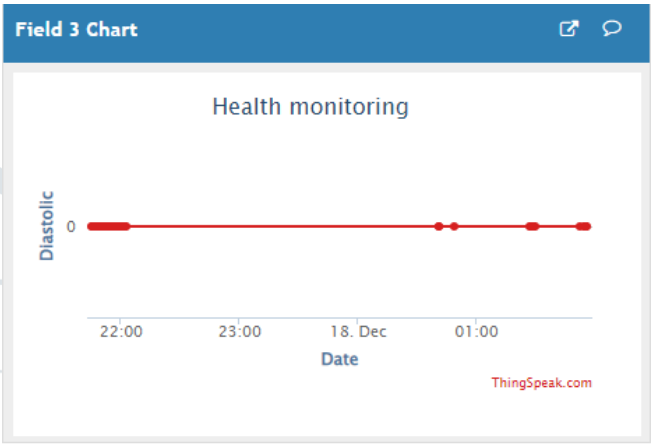

Fig 6: Diastolic Graph

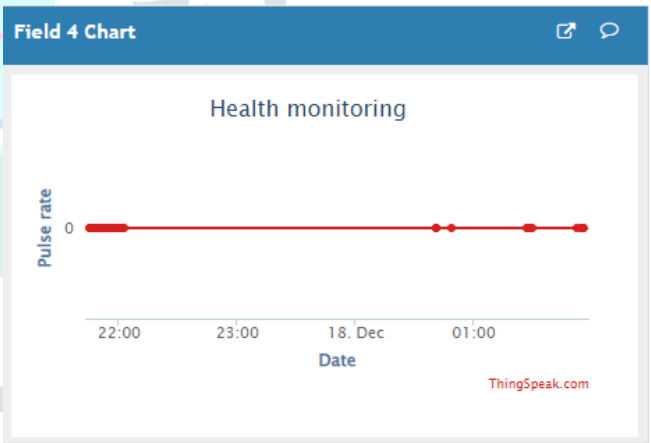

Fig 7: Pulse Rate Graph

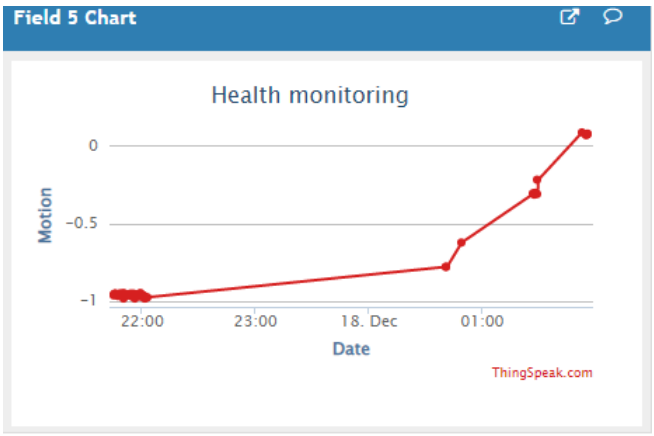

Fig 8: Motion Graph

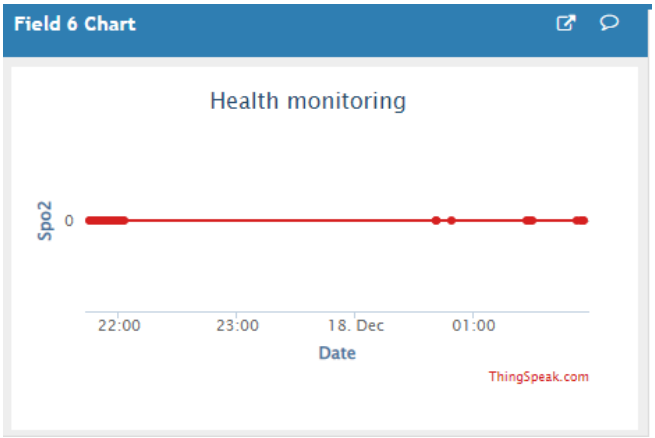

Fig 9: Spo2 Graph

In this application we use the Thitspeak tool as a server to transfer all sensory data to the server and collect and send it to a web page. Sign in to this page give it your all parameters of patient information. The figure below shows the Thitspeak server account used in this system to create a webpage and shows the parameters of a patient's information.

Fig 10. Hardware

V. CONCLUSION

In this work a smartphone based health monitoring system has been presented. By using this system the healthcare professionals can monitor, analyse and advice their patient's any time. The physical parameter are stored and published online. Hence, the healthcare professional can monitor their patients from a distant location at any time. Our system is simple and just few wires connected to a small kit with a smartphone. The system is power efficient. Only the smartphone or the tablet needs to be working enough to do the test. It is easy to use, fast, accurate, efficient, and safe (without any danger of electric shocks). Overall as compared to other conventional medical equipment this system has the ability to save data for future reference. Finally, the reliability and validity of our system have been verified by field tests. The field tests show that our system can produce medical data that are similar to those produced by the current medical equipment.

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