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QUARANTINED PATIENTS MONITOR

N. Divya Deepika[1] , Dr. Uttam Mande[2], N. Sahithi[3] , V. Vineetha[4] ,V. Vinay Varma[5]

[1,3,4,5]Student Department of Computer Science Engineering

[2]Assistant Professor Department of Computer Science Engineering

[1,2,3,4,5]*Centurion University of Technology and Management, Vizianagaram, India*

***Abstract*—** The latest technology continues to face a great difficulty when it comes to managing and monitoring potentially contaminated patients. This project uses an IoT-based wearable monitor to track several vital indicators that are related to disease. Additionally, the system promptly alerts concerned medical authorities about any breaches of quarantine for potentially infected patients by tracking real-time GPS data. The wearable sensor is linked to an edge node in the IoT cloud, which processes and analyses the data to identify the patient's current state of health. The proposed system consists of three layers: an Android web layer for mobile phones, a wearable Internet of Things sensor layer, and a cloud layer with Application Peripheral Interface (API). Every layer has a specific function; for instance, information from the IoT sensor layer is used to define health symptoms. In the following tier, the data is kept in a cloud database for quick decisions, alerts, and precautionary steps. Notifications and alarms will be sent to impacted patients' families using the Android mobile application layer. For forecasting and warning items, the integrated system has both an API and a mobile application that are synchronised. For monitoring, therapy, and analytical purposes, the design must specify the measured readings of the patient's condition. The investigation also shows how digital remote platforms and wearable technology are frequently utilised as a monitor to track a patient's health and recovery.

Keywords: Patient monitor, Tracking, Alarms and Alerts.

1. Introduction

The number of scenarios in which we use the Internet has been growing in recent years, expanding from static to social, transactional, and mobile. This progression has spawned a new concept: The Internet of Things (IoT) is described as any everyday device (or group of devices) connecting to the Internet from anywhere and at any time. Wearable technology, such as watches and phones running the Android operating system, is used in this project. The goal is to collect and interpret data from sensors put in individuals with medical disorders to detect or, in the best-case scenario, forecast episodes. A suggestion for a smart health support system for monitoring isolated patients from a far. Implementation of an Internet of Things-based smart home healthcare support architecture capable of decreasing avoidable hospital loads caused by disease outbreaks. [10] Specifically, the new system, which can also supply vital comforts using only IoT-enabled household appliances, encourages people with severe and chronic illnesses.

Internet of Things-enabled devices make remote monitoring in the healthcare industry possible. These devices have the potential to keep patients safe and healthy while also enabling physicians to deliver excellent care. Patient engagement and satisfaction have increased as interactions with doctors have become simpler and more effective. Additionally, the amount of time spent in the hospital is cut down, and readmissions are prevented. IoT has a significant impact on reducing healthcare costs and improving treatment results. Without a doubt, IoT is revolutionising the healthcare sector by changing how devices and people interact while providing healthcare solutions. Applications of the internet of things in healthcare can benefit patients, families, hospitals, and insurance providers. This will be the project's future architecture. In this project the real-time scenario is taken into

consideration. The patient is monitored time to time through an android application. In this application the caretaker can visualize the readings of the patient irrespective of age can notice the changes shown in the app and can act accordingly. Everything is displayed in graph formats, mentioning the condition of the patient and their seriousness.

2. Scope of the Work

IoT describes a scenario in which every element of our immediate surroundings is made capable of autonomously connecting with one another without the need for human to human or machine to machine communication. In addition to being a ground-breaking discovery, it has the potential to significantly improve our quality of life. The scope of this project includes researching an IoT application and related hardware. With the aid of this application, patients in hospitals are continuously checked for health conditions. When any patient's health is in an abnormal condition, the doctor and nurse are promptly notified via alarm or message. Due of this, they frequently react fast and cater to patients.

3. Existing System

There are currently systems that fall under the category of non-IoT technologies, such as BPM metres and thermometers, where we must use human labour to examine a person's results and there is no specific alert mechanism to notify a doctor when the doctor is located remotely. Before choosing one over the other, you should be informed of the specific advantages and disadvantages that each has to offer. The patient's heart rate and blood pressure measurements are shown on the bpm metre itself. Values cannot be checked when we are in a remote place. The thermometer is the same. But in this case, using sensors and smart health care, anyone with authorised access can view the patient's values. The current technologies are too complicated for typical use, without any prior knowledge of them.

4. Proposed System

Smart Health Care is the idea to calculate a person heartbeat and temperature levels with the use of sensors and analysing the results to alert the doctor about patient condition via message. To talk about the system, it's an smart health care using sensors. Here to make patient monitoring easier. This idea combines the internet of things (IoT) and medicine, allowing for extensive instrumentation of the healthcare experience regardless of the patient's and provider's locations. With the use of Data Science, the quality of care is increased. When necessary, timely and appropriate medical care can be obtained, and the services' content will be more individualized. Alarms assist in preventing patient harm by enabling quick notice of and response to life-threatening circumstances. And with these alarms and notifications from an application brings out the aim of this project including patient tracking.

5. Problem Analysis

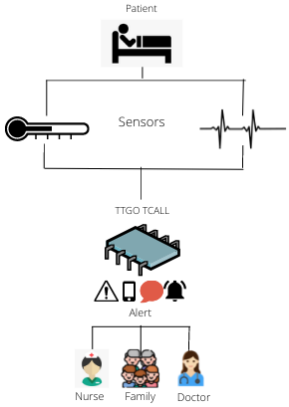
RPM (Remote patient monitoring) has the ability to significantly alter how patients are treated. If widely adopted, it will drastically alter the patient experience and make it possible for healthcare providers to manage their resources significantly more effectively than they presently are, reducing pressure on healthcare systems around the world.. The patients admitted in hospitals are monitored by the nurses and are timely noted and reported to the doctor. In order to reduce manpower we need specific devices that gives us an accurate measure of the patient's heart rate, temperature and etc. this brings out the idea of Quarantined patient monitor.

The patient's complete report in displayed in the cloud server where the data is stored and linked to the application. Anyone can access the application through an authorized access to check the patient reports and monitor them from any remote location. When the patient's condition is critical the person who wish to monitor can get a message to phone number which is set for sending the alert notifications and alarms. And even the patient's location is tracked using GPS. And also, the patient can communicate with the microphone, as and when required. Smart health care is advantageous as the include efficient time usage, improves communication and better extended care. Through apps and a health information platform, patients can manage their condition on their own. Smart healthcare can help individuals better manage their own health.

6. Architecture

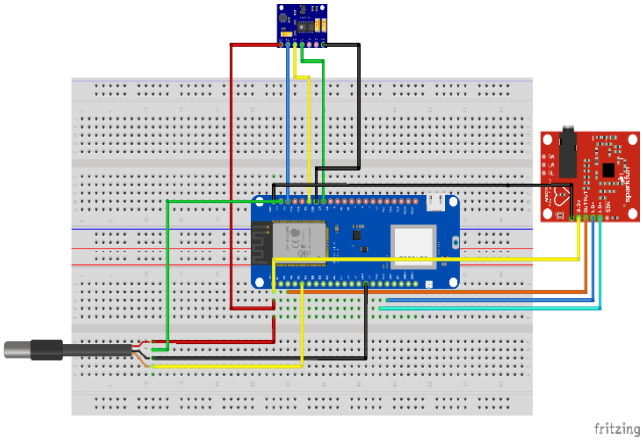
The medical industry and healthcare are heavily reliant on technology. Many technological tools and pieces of equipment have been developed for human health care. The patient monitoring system is portable, low cost, the user interface is so friendly anyone who wishes to monitor can access easily. The patient is monitored through the band which consists of the sensors and all the readings from the sensors are stored and displayed in the app. When the readings are out of the range then the doctor/nurse/the family member who wish to monitor is notified, if in case the readings are abnormal

then an alert is given. The patient's location is tracked and displayed.



7. Methodology

Patient monitor band is a clinically accurate, wearable device. This keeps the track of heart, temperature, pulse data. The way the physicians can access that data is once a month, when the patient brings the gadget, which links to the physician's computer and transfers the recorded information. After conducting preliminary research on the many types of devices accessible and their programmability for usage with a custom app, the lack of an intuitive technological answer became the driving force behind this project. The band is designed



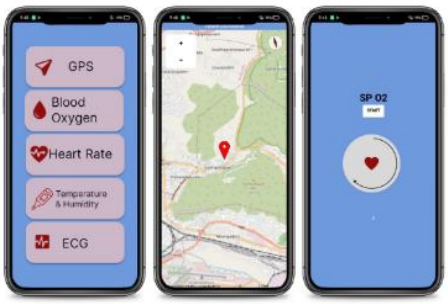
in such a way that the patient doesn't find it uncomfortable to wear it. In this the temperature, heart rate, pulse is displayed and the patients live location is tracked. The google fire base is used as a data base hosting and integrating is done in fire base. To create an interface android studio is used. The react JS is used for creating the dashboard. All the predictions whether the condition is normal or abnormal everything is displayed in the app created using the android studio.

8. Results and Discussion

The data is monitored through loT in Thingspeak.com The various sensor data are displayed in the form of field charts Each sensor data is displayed in a separate field clart. Thom are totally four field charts.

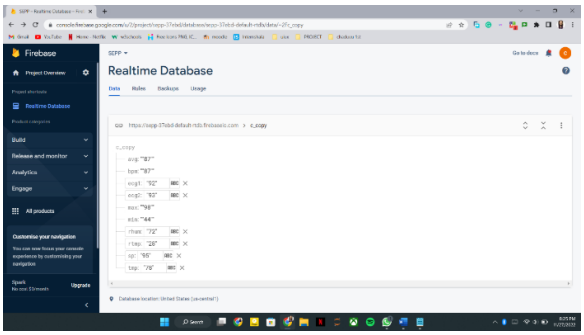
The normal human body temperature would range between 92.7-99.5 ºF in an average.

The temperature is normal and updated in the log continuously.



The normal heart rate of a person varies from 50-90 bpm as in case of adults it may vary from 60-100 bpm.

If the values are abnormal, the alarm buzzes as a way of alerting the caretaker.



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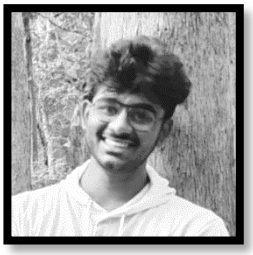
AUTHOR BIBLOGRAPHY:

[1] **Divya Deepika Nammi** is in her third year of bachelor's degree in computer science and Engineering at Centurion University of Technology, Visakhapatnam, India. She is enamored with the concepts of web, user interface designing, Internet of things and android application. She worked on a machine learning project for pets and also on a web development project named Library Management System. She is presently working on a robotics project.

[2] **Dr. Uttam Mande** received the Bachelor of Computer Applications from Andhra University, Visakhapatnam and proceeded to do his Master of Science in Information Science and Master's in technology of Computer Science and Technology department in Andhra University. He has received his PhD degree in Computer Science and Engineering from CSE department of JNT University, Kakinada, India for his work in the field of. Expert Crime Investigation Systems. He is a member of IEEE and IEEE CS and has organized many workshops and was involved in Research Projects. He has also published several international journals on the subject of Expert Crime Investigation Systems. He is currently the Assistant Professor at Centurion University, Visakhapatnam and his main field of research includes Data Mining and Rule-based Reasoning.

[3] **Sahithi Nalla** is in her third year of bachelor's degree in Computer Science and Engineering at Centurion University of Technology, Visakhapatnam, India. She is interested in web designing. And she worked on Contactless vital signs detection and worked on a web development project named online tips provider. She is presently working on a robotics project.

[4] **Vineetha Vavilapalli** is in her third year of bachelor's degree in computer science and engineering at Centurion University of Technology, and Visakhapatnam, India. Her interests lies in web designing. And she worked on Contactless vital signs detection and worked on a web development project named online donation portal. She is presently working on a robotics project.



[5] **Vinay Varma Vatsavai** is in his third year of bachelor's degree in Electronics and Communication Engineering at Centurion University of Technology, and Visakhapatnam, India. His interests lies in Internet of things, Embedded systems, etc. He worked on a home automation model using 5 different ways. And he is currently working on a robotics project named Pet Robot.