

Android Based Patient Health Monitoring System

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Abstract – Everyday many lives are affected by heart attacks and other diseases more importantly because the patients did not get timely and proper helps. In the future what if due to lack of urgent service we are not able to save the patient. The answer to such a problem is that the patient needs to be monitored constantly. Due to which we would be able attend the patient immediately. Hence, we introduce a system consisting of a wearable device that will monitor the patient health. The wearable device will consist of different sensors such as temperature sensors and pulse sensor BP and humidity. The device will send its data to the server through the android application of the patient. This data will be available to the doctor on his desktop and individual also. We have made a prototype of an automated electronic system comprising a Wi-Fi module and IC ATMEGHA 328 microcontroller which is capable of measuring the Body Temperature and Heart Beat of a moving Patient no matter where the patient is and in case of emergency sends wireless plea for the rescue/emergency help. The system that we have proposed give an advantage when compared to the wired system in the view that the doctor can get real time information about the parameters as well as location of the patient so that instant medication can be provided. In case of emergency the patient can be tracked using his latitudes and longitudes.

Key Words: Health Monitoring System; Android application; Patients; Arduino Uno;

1. INTRODUCTION

Day by day stress level of people is increasing due to competitive lifestyle and increasing pollution levels. These days maintaining a healthy life is thought. It is vital to keep track on body by regular check-up. Patient monitoring refers to the continuous observation of repeating events of physiologic function to guide therapy or to monitor the effectiveness of interventions and is used primarily in the intensive care unit and operating room. At least in India there is no system which continuously monitors the patient when patient is on move. Wireless sensors are standard measurement tools equipped with transmitters to convert signals from process control instruments into a radio transmission. The radio signal is interpreted by a receiver which then converts the wireless signal to a specific, desired output, such as an analog current or data analysis via computer software. Wireless Sensors are also used in diagnosis. One of the applications of Wireless Sensors in the

field of Medicine is Remote Patient Monitoring. Remote monitoring, also known as self-monitoring/testing, enables medical professionals to monitor a patient remotely using various technological devices. This method is primarily used for managing chronic diseases or specific conditions, such as heart disease, to check blood pressure, or asthma. These services can provide comparable health outcomes to traditional in-person patient encounters, supply greater satisfaction to patients, and may be cost-effective. In remote monitoring, sensors are used to capture and transmit biometric data. For example, a tele-EEG device monitors the electrical activity of a patient's brain and then transmits that data to a specialist. This could be done in either real time or the data could be stored and then forwarded. This paper focuses on how the android application is used to send the patient's parameters to the server. Also helps the patient in case of emergency by generating an alert when the threshold values are crossed.

2. EXISTING SYSTEM:

Currently the system used for patient monitoring is the fixed monitoring system which can be used only when the patient is on bed. The available systems are huge in size and only available in the hospitals in ICU.



Fig -1 Existing System

DRAWBACKS OF EXISTINGSYSTEM

Now-a-days many systems for continuous monitoring of the patient are available. But they have following drawbacks:

- 1) In existing system patient needs to be hospitalized.

- 2) Regular monitoring of patient is not possible once he/she is discharged from hospitals.
- 3) These systems cannot be used at individual level.
- 4) Existing systems are bulky in size and their maintenance and cost pose a hurdle.
- 5) Most of the Existing systems use wired communication which is too tedious for long distance communications.
- 6) They are not successfully implemented when patient is moving.

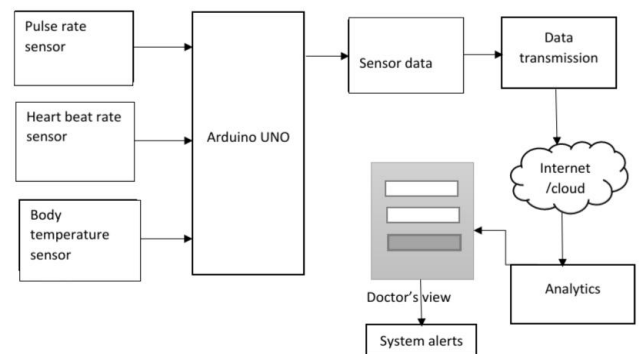


Fig -2. Block diagram for proposed system

3. SYSTEM ARCHITECTURE

The system architecture is explained. This System Mainly Contains Following Blocks:

1) Sensors

The sensors for Heart Beat and Body Temperature will be mounted on a board along with the other required things like AVR ATmega32 IC, Wi-Fi module crystal oscillator etc. which the patient will have to carry.

2) Wi-Fi link

The link will be established between the patient's Wi-Fi Enabled Mobile Phone and the Sensors circuit via a Bluetooth Module which will be mounted on the Sensor Circuit. This helps in continuous monitoring of the parameters which will be send across to the patient's mobile that will contain software that monitors parameters.

3)Arduino UNO

Arduino is an open-source computer hardware and software company, project and user community that designs and manufactures microcontroller-based kits for building digital devices and interactive objects that can sense and control objects in the physical world.

4)Website for Uploading Data from Mobile

Here we are creating new website for uploading data from mobile continuously using GPRS, on website we need do programming which will receive and store data. On request from server data will transmitted to the server on specific interval. New website will act like third party in GPRS Communication.

4. PROPOSED ALGORITHM

- Step 1: Start.
- Step 2: Connect power supply.
- Step 3: Connect Bluetooth to patient's android device.
- Step 4: Insert your finger in the cavity.
- Step 5: Wait for some time for it to be displayed.
- Step 6: Hold the temperature sensor between your fingers/place under the tongue.
- Step 7: Wait for some time for the parameters to be displayed.
- Step 8: Open the app.
- Step 9: Login using user id and password.
- Step 10: Establish the connection between the Smart Phone and Hardware via. Wi-Fi.
- Step 11: Display the received data.
- Step 12: Calculate latitude and longitude.
- Step 13: Send the above data via. Internet to doctor's pc.
- Step 14: Launch the application.
- Step 15: Display the receiving data i.e., patient's parameters and location.
- Step 16: Record the data when doctor clicks on enable logging.
- Step 17: Display patient's history when doctor clicks on show history.
- Step 18: Show patients location on map when document clicks on "locate patient"
- Step 19: Doctor can adjust the threshold values for heart Beat and temperature.
- Step 20: An alert will be raised when the predefined threshold values are crossed.
- Step 21: End.

5. FEATURES

Features of our project as follows:

1. Highly compact portable.
2. Low power consumption
3. Real time monitoring of patient's vital parameters like

heartbeat, temperature and blood pressure.

6. RESULT

Here developed an android application for receiving the medical parameters and displayed on android mobile with the help of wi-fi module. Monitor can reduce hospitalization in the short term and prevent or delay complications from disease, such as temperature, blood pressure, humidity, pulse rate and heart related diseases.

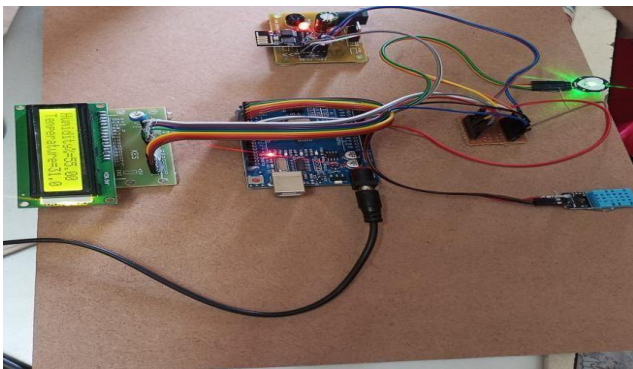


Fig -3 Initializing system

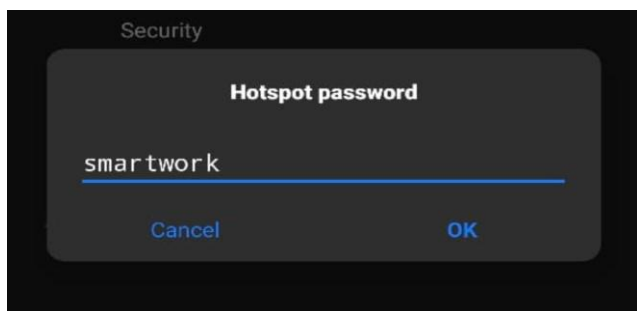


Fig -4 Logging in enter Password

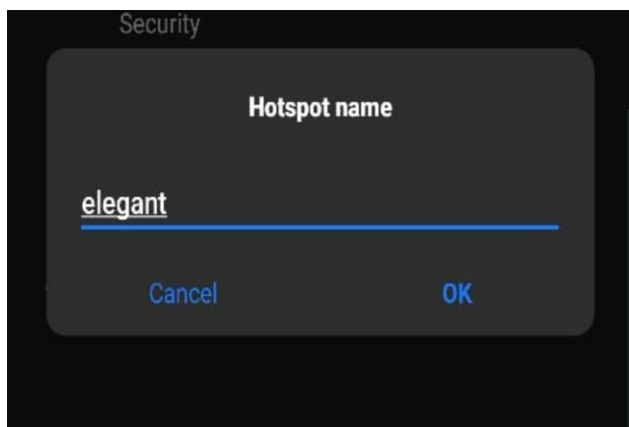


Fig -5 Logging in enter Hotspot name

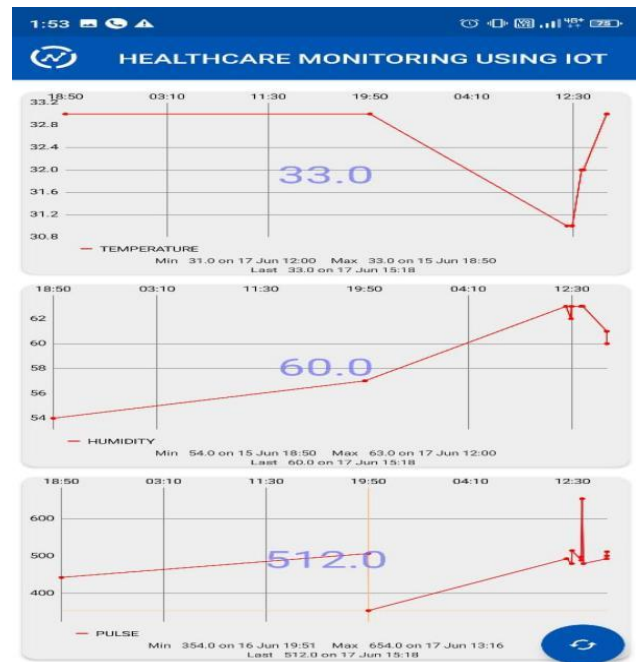


Fig- 6 Appearing on smart phone

7. FUTURE SCOPE

A smartphone-based health monitoring system has been presented in this paper. The proposed system, mainly consist of an Android application, Arduino Uno microcontroller, a LM35 temperature sensor as well as heartbeat sensor. The link is established between the patient's wi-fi enabled Mobile device and sensors via a wi-fi mode, this helps in continuous monitoring. Wirelessly data from hardware is transmitted to the server using Wi-Fi. By using this system, the healthcare professionals can monitor, diagnose, and suggest medication to their patients. The project can also be implemented in future.

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