

## PERSONAL HEALTH TRACKER

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### ABSTRACT

*In this Review, we speak the fundamental idea of handy and compact healthcare tool for recording of body fitness. First, we describe rising multifunctional materials important to the arrival of next-technology implantable and wearable photonic healthcare devices and speak the route for his or her scientific translation. Then, we have a look at implantable photonic healthcare gadgets in terms of their properties and measuring capabilities. We next describe exemplary cases of noninvasive, wearable photonic healthcare devices across one-of-a-kind anatomical applications. Finally, we discuss the future research guidelines for the sphere, specially.*

**KEYWORDS:** *Healthcare, Monitoring, Pulse Rate, Temperature Sensor, Global System for Mobile Communication (GSM), Global Positioning System (GPS), Arduino*

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### INTRODUCTION

Health is a prime hassle specifically in a few far flung areas of India. Technology plays an exquisite role to fight this hassle. The purpose is to increase a reliable monitoring device which video display units the affected person's numerous parameters that are crucial for healthcare machine without the want of operating specialists. In the traditional method the healthcare experts need to go to the affected person's ward for vital prognosis and advising.

In this tool, Health Monitoring System has been designed. In order to monitor temperature of a frame and activity of the coronary heart, temperature sensors [1], pulse-charge sensor are used. The affected person's health monitoring gadget is useful for those who live in remote places wherein no scientific centers are to be had. Designing such kind of machine with SMS alert modules can help patient with the aid of permitting medical doctors to diagnose the patient on line and imparting the prescription on line.

Temperature sensor and pulse fee sensor are connected to Arduino UNO model [2] to monitor the temperature of a frame and the pulses of heart. GSM module is attached with Arduino which will ship affected person's records to the doctor.

As we continue in advance, we will go through the following subjects: First Literature Survey is mentioned. Then the proposed system is discussed. And finally the paper carries the realization of the paper together with the in addition studies and references.

## LITERATURE REVIEW

### Related Work

This phase outlines what has been thus far carried out or researched by using others in this undertaking.

Much has been accomplished on this subject. Among the researches and suggestions in this area encompass the subsequent.

Wan seribahiyah [3] does a task wherein he uses Zigbee, Arduino Uno, and ECG circuit and temperature sensor. He uses Lab View to manner the alerts. The trouble is that this does not cover a huge are as compared to GSM.

Lauren Akoth [4] introduces processing and simulation of ECG information using Matlab. This one is a superb studies on how to simulate heart rate.

Purnima, Puneet Singh [5], makes use of both Zigbee and GSM to transmit the facts acquired from a patient. GSM is used for purpose of cellular telephones at the same time as zigbee is for PCs in which the transmitted alerts are processed.

Bandana Mallick and Ajit Kumar [6] proposed the usage of fingertip to degree the coronary heart price and method it the usage of Arduino.

Shrenik Suresh Saradeet. Al[7] proposed a venture having a easy, microcontroller primarily based heart beat fee & body temperature measuring device with display the information on LCD display. Heart fee of the concern/frame is measured from the index finger using IRD (Infra-Red Device) sensors. Also Saline Level is measured constantly for different tiers. The device alarms while the coronary heart beat & the frame temperature exceed the provided threshold price. This threshold value is described through the programmer on the time of programming of microcontroller. The threshold cost is as 20 to a hundred and twenty pulses in line with minute for coronary heart beat indication & 18°C to 38°C for temperature.

These records transmitted wirelessly to the medical doctor which isn't inside the location of the patient thru GSM approach [8]. The hassle with using infrared Device is that the LED mild needs to be very vibrant or it'll now not be sensed through the photodiode.

### Requirement

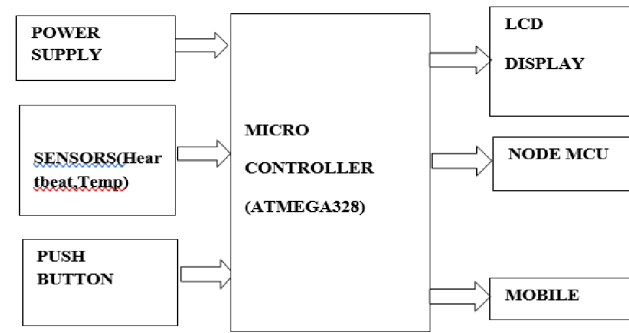
The requirements inside the discipline of health care tracking are the production of the handy devices the ones will be effortlessly carried via the patient. The connectivity and the networking part have to be extra progressed so that the problem of distance may be eliminated. Focus have to be basically at the implementation and deployment of such structures. There is lots of room for upgrades. Logging coronary heart rate measurements and temperature samples along with the time-stamp information to be had from the PC ---Beeping sound alarm for coronary heart fees beneath or above threshold Heart rate fashion over time, and many others.

### Health Care Monitoring Systems

- **Patient Monitoring System Using Wireless Sensor Network**

The predominant goal of this venture is to improve the patient monitoring machine and to decorate portability of health facts. This is executed through gathering a patient's parameter using a controller and transmitting it to a pc through a wireless link. Herethe computer acts as a web gateway. Through our laptop we replace it to a far off server from which the

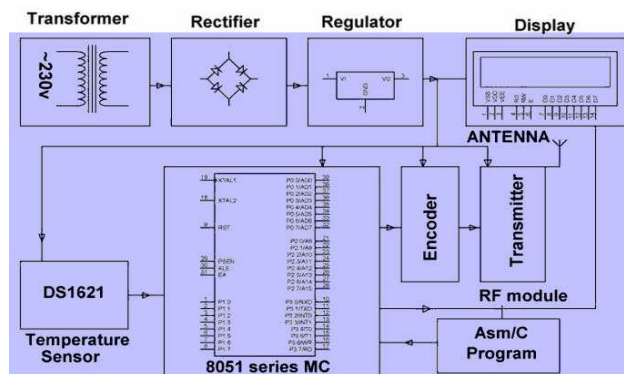
statistics are made to be had through a web site to restrained users. In our project we enforce this through a version. We accumulate two essential affected person parameters, body temperature and heart pulse. The sensed analog values are digitized using the ADC inbuilt in a PIC microcontroller. The microcontroller then forwards those values to its serial port to which a zigbee is attached. At the receiver cease a receiver zigbee is used to get hold of the values and transmit to the pc. Using VB an software is created, which shows acquired values and records are up to date to the server the use of the equal. Information is made to be had to the clients thru a browser in secured way.



**Figure 1: Architecture of Patient Monitoring Using Wireless Network.**

• **Home Patient Monitoring Based on Gprs**

Arduino and gsm primarily based affected person health monitoring gadget. Real time plant tracking machine to view temperature light publicity and moisture. In iot primarily based machine info of the affected person fitness may be seen by way of many users. Here in this text we have protected the patient monitoring device and a mission associated with this device has also protected a remote affected person monitoring device the use of gsm era. Patient monitoring via gsm modem. A fall detection system primarily based on arduino home windows 10 and microsoft azure. Patil journal2017 worldwide convention on intelligent computing and manipulate structures iciccs year2017. An arduino uno primarily based alarm with movement sensor three led outputs and a keypad with password input. User friendly and bridges hole between doctor and sufferers. The reason behind this is that the information desires to be monitored by using visiting a internet site or url. Iot based totally affected person health monitoring applied the use of arduino uno is an advanced model of sms based affected person monitoring gadget. Gsm based totally affected person health tracking task specially works for allowing docs or loved ones of affected person to test the fame of affected person fitness remotely. Whereas in gsm primarily based patient tracking the fitness parameters.



**Figure 2 : Home Patient Monitoring Based on Gprs.**

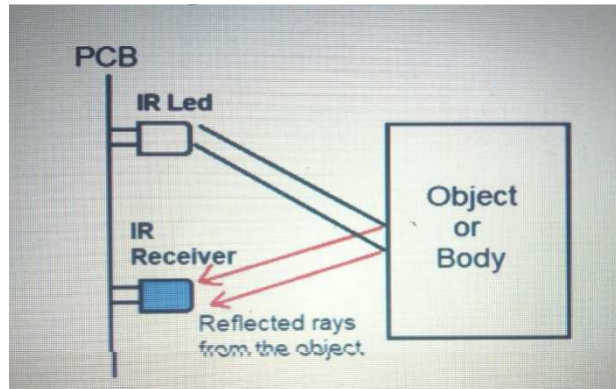
- **Zigbee and GSM Based Patient Health Monitoring System**

Care of seriously unwell patient, calls for spontaneous & accurate selections in order that life-defensive & lifesaving remedy can be properly applied. Statistics monitor that each minute a human is losing his/her existence across the globe. More close in India, normal many lives are suffering from heart attacks and more importantly due to the fact the sufferers did not get timely and proper help. This paper is based on tracking of sufferers. We have designed and advanced a dependable, strength efficient affected person monitoring machine. It is capable of ship parameters of patient in actual time. It enables the doctors to reveal affected person's fitness parameters (temp, heartbeat, ECG, role) in real time. Here the parameters of affected person are measured continuously (temp, heartbeat, ECG) and wirelessly transmitted the use of Zigbee. This mission provides a solution for reinforcing the reliability and versatility. With the aid of enhancing the overall performance and electricity management of the patient monitoring gadget. In the modern-day proposed device the affected person health is constantly monitored and the acquired information is analyzed at a centralized ARM microcontroller. If a particular affected person's health parameter falls below the edge cost, an automatic SMS is despatched to the pre-configured Doctor's mobile number the use of a preferred GSM module interfaced to the ARM microcontroller. Here, we're the use of Zigbee for wi-fi transmission. The Doctor can get a file of a specific patient's information with the aid of just getting access to the database of the patient on his PC that's constantly up to date via Zigbee receiver module.

- **Teart Rate Monitoring System Using Fingertip Through Arduino And Processing Software**

This paper describes a method of measuring the heart rate through a fingertip and Arduino. It is based at the important of photophelthysmography (PPG) which is non-invasive approach of measuring the variant in blood volume in tissue the use of a mild source and detector. While the heart is thrashing, it's far surely pumping blood at some point of the body, and that makes the blood extent inner the finger artery to trade too. This fluctuation of blood can be detected thru an optical sensing mechanism positioned across the fingertip. The signal can be amplified and is despatched to arduino with the help of serial port conversation. With the assist of processing software program coronary heart fee monitoring and counting is completed. The sensor unit consists of an infrared mild-emitting-diode (IR LED) and a picture diode. The IR LED transmits an infrared mild into the fingertip, a part of that is contemplated back from the blood in the finger arteries. The photograph diode senses the part of the light that is reflected returned. The intensity of meditated light depends upon the blood volume in the fingertip. So, whenever the heart beats the amount of pondered infrared light changes, which may be detected with the aid of the photograph diode. With a excessive benefit amplifier, this little alteration inside the amplitude of the pondered mild can be converted right into a pulse.

Such devices can deliver accurate measurements however their price is generally in extra of numerous hundred greenbacks, making them uneconomical. So this coronary heart fee screen with a temperature sensor is definitely a useful instrument in knowing the heartbeat and the temperature of the issue or the patient.



**Figure 3: Working of IR Sensor.**

**SUMMARY OF HEALTH MONITORING SYSTEMS**

Summary of health care monitoring systems in give Table 1.

**Table 1: Comparison of Healthcare Monitoring Systems**

Project Titles	Author	Technique	Parameter Measured	Method
Patient monitoring system using wireless sensor network	Wan Seri Bahiyah, Binti w Sudin	Monitoring system based on wireless sensor	Heart rate, tempersture	Using ATMEGA328 micro controller and node mcu
Home patient monitoring based on gprs	Banja Wendy, Lauren Akoth	Emphasis on patient’s location detection using gprs	Temperature	Using 8051 micro controller
Zigbee and GSM based patient monitoring system	Purnima, Puneet Singh	ARM coontrolled system capable of transmitting madical record via gsm	Temperature, heartbeat, ECG	Using ARM micro controller
Treat rate monitoring system using fingertip through Arduino and processing software	Bandana Mallick,Ajit Kumar Patro	Non invasive techique for measuring pulse using sensor	Heart rate	Using Arduino and IR LED based sensor
Patient monitoring and alerting system by using gsm	Shrenik Suresh Sarade	Interfacing controller and sensors and communication technology	Heart rate, temperature, glucose	Using 8051 micro controller

**CONCLUSIONS**

The advanced affected person fitness monitoring system in this work could be very useful to realize the simple physiological parameters of the patient in actual-time. This facts is useful to the medical doctor or caretaker to the display the affected person’s fitness reputation and take appropriate measures in case of any emergency. As this device is absolutely computerized, greater wide variety of patients may be dealt with in a quick span of time. With this gadget, comatose patients may be dealt with inside the affected person house itself by way of equipping the machine in the patient residence. In case of frequent fitness checkups of the patient, this system is more useful as affected person want now not go to the fitness care center on every occasion. This device reduces the nursing workload. As this gadget is primarily based on IoT idea, the status of patient may be discovered from the internet server by means of connecting to the net remotely any time after which may be identified as a consequence.

Further enhancement of current version can also be deployed as a cell application to be able to end up smooth to access the model round the sector. The cell software may be more desirable with the ambulance services, doctor's list, nearby hospitals. The sufferers who are recommended for the whole mattress rest and the paralyzed sufferers can also be monitored and given precautions with the aid of the doctors via visual and audio by using the use of the pi camera. The system is carried out for one-to-one access, which can be implemented for many by using giving precise identity for each member/affected person within the home or the medical institution.

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