

# **Wireless Mobile Electrocardiogram System**

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## **Abstract:**

The main objective of this invention is to obtain the electrocardiogram pulses continuously, display the ECG recordings wirelessly and gives alerts to doctors and relatives with an improved button interface alerting system. This design is having many advantages and improvements in today's world when we compare to the existing technologies. The advantage of this design is that it avoids the problems with the wired connection everywhere. Continuous regular monitoring of ECG happens with this process even the patient discharges from hospital. Transmits the data continuously without any interruptions. Immediate instructions and responses are received from the doctors and an improved calling functionality is implemented in this device and that makes a call to the doctors by pressing a simple button. In current existing systems there are many health care devices available for all category patients, but here this device is having lots of improvements with respect to existing works. This device sends emergency and safe alerts to know the status and condition of person when there is no one around the patients. This helps the people to record their heart pulses with small device attached to their body without any wires and provide this device at an affordable price and to include as many parameters as possible required for heart monitoring.

## **Introduction:**

From the research work of "Healthcare Management and Monitoring System using Internet-of-Things" Here the cloud services is been used store the parameter data of all the sensors. By using a Wi-Fi module, the sensor data sent to the think speak cloud channel. In this system the working process is time consuming and it lacks improvement.

To overcome the problems with the existing system a mobile electrocardiogram is developed for the patients when there is no one around them. There is no use of any services in our system to store data because it monitors the patient continuously.

### **Is that possible to alert the doctor when the patient gets heart attack?**

In some research papers there is a mobile application which can connect with the Bluetooth (HC05) so that the doctor can view the heart pulse live on mobile phone. To send the SMS to the doctor we can use GSM module we can use one of the telecommunication carriers on attaching the sim to the GSM module. The doctor's mobile number will be saved into the program (code) so that the SMS will be directly send to the doctor's mobile phone.

### **Is that possible to send the persons heart pulse wirelessly?**

In many research papers they have considered Bluetooth module to send the data from one place to another place so that I have chosen the Bluetooth as a medium for communication.

## **Is that possible to monitor different persons heart pulse at a time?**

Using the personal details of the patient the system will intimate the patients name and bed number to the doctor so that the doctor can know that who is in the critical situation.

## **Background:**

Initially I have started the research on medical field and secure elaborated knowledge on the field that how the human heart beat or pulse fluctuate according to the situation and what is the heart pulse rate when a person is affected by heart attack. Then I have moved to research on IoT sensors I have read many research papers to find the accurate and cost free sensors to assemble for the project the main thing in this project is to gather heart pulse from the patient there is a sensor called AD8232 Heartrate monitor to collect the persons heart pulse this pulse can be seen in the computer display.

In this project the main part is the transmission of collected heart pulse wirelessly there are many methods available to transfer the heart pulse wirelessly. Most of the research papers I have searched follows the Bluetooth and Wi-Fi to send the heart pulse wirelessly I have chosen the Bluetooth transmission research paper for my research in that paper they have shown that how the data will be processed using Bluetooth. Most of them have chosen the Bluetooth transmission technique because to reduce the project cost and accuracy. One of the research papers contains developing the SMS alerting system using SIM900 module which will be used to send the SMS alerts to the doctor when the patient is in critical situation. If there is any heart abnormality detected by the program, then the automated SMS alert will be sent to the doctors registered mobile number using SIM900 module.

## **Methods:**

Wireless Mobile Electrocardiogram System for biomedical application designed to check the hearts abnormal rhythms. This model intends to monitor an ECG activity wirelessly using android mobile phone. This device monitors the voltage pulses continuously in better quality for patient's care.

Now a day's continuous monitoring of ECG is difficult in some places like ambulance, home, and some hospitals. Considering a situation when there is no one around the patient in the hospital or at home and if he/she is alone at home suffering from any heart problem, in that situation the people don't know what is happening to patients. For this kind of situation, we found a portable ECG device which is very small device and that can be attached to our hand and monitors a person continuously. Here it has capability to measure different abnormality conditions of heart like

bradycardia, tachycardia, arrhythmia etc., if any of the condition occurs, we directly get immediate response from a person whose contacts are saved in the device. This device acts as mobile phone when the patient's condition is critical, that means he/she needs an immediate assistance from doctor. If the patient is critical then the device automatically sends the emergency alert to the doctors and nurses in hospitals. It has a new button interface in this portable ECG machine, which sends safe alert to the family members and relatives by pressing a button in the device after treating the patient, so that no one panics. If patient is in critical condition and suffering in the ambulance or at home, then there is another button in the device that makes a direct call to the doctor and receives immediate instructions. It has a microphone to speak with the doctor and a speaker to hear from the doctors.

Doctors can use this ECG device to treat the heart patients and checks daily how well the treatment is going on. With the new improved alerting system, the doctors can easily treat the patient without any delay. When a patient is breathing heavily, or any sudden heart attack happens then the doctor knows the condition of the patient and goes to treat them immediately. If there is a critical situation then an emergency alert is triggered and a message is sent to the nearby doctors stating every detail of the patient including room number, bed number, patient id, patient name, and patient emergency contact details. If the patient gets good treatment and safe, then a safe message is sent to the relatives. In ambulances and home purposes to get immediate instructions a call is made to the respective doctor.

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