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IoT Cardiale Monitoring System

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ABSTRACT

The aim is to track the heartbeat of a particular patient and monitor it accurately to furnish the emergency message when there is an increase or decrease in the particular level of heartbeat. Life is exquisite. Many people lose their life due to heart attack. This is because of their diet, age, less physical activity and many other factors. Today, the leading cause of death in the world is heart attack. Heart attack is not easy to detect and symptoms of heart attack varies from male to female. To overcome and help the society from heart diseases and attack, Cardiale monitoring system is developed which help to decrease the death rate and early detection a heart attack.

I. INTRODUCTION

These days we have an increased number of heart diseases including increased risk of heart attacks. Our proposed system users sensors that allow to detect heart rate of a person using heartbeat sensing even if the person is at home. The sensor is then interfaced to a microcontroller that allows checking heart rate readings and transmitting them over internet. The user may set the high as well as low levels of heart beat limit. After setting these limits, the system starts monitoring and as soon as patient heart beat goes above a certain limit, the system sends an alert to the controller which then transmits this over the internet and alerts the doctors as well as concerned users. Also the system alerts for lower heartbeats. Whenever the user logs on for monitoring, the system also displays the live heart rate of the patient. Thus concerned ones may monitor heart rate as well get an alert of heart attack to the patient immediately from anywhere and the person can be saved on time. Mobile phones are one of the most common devices available with each and every individual in this world. The recent mobile phones have enough available memory, energy, and processing power. So these advantages of mobile phone technology can be utilized to overcome the constraints of wireless sensor network technology for transmission, processing, and buffering of the sensed data. This work proposes a wireless sensor network design for real-time monitoring and detection cardiovascular disease. This system incorporates wireless sensor network technology with other wireless technologies such as cellular network, wireless LAN, and broadband network, for efficient and fast delivery of health alerts. This proposed system consists of a wearable wireless sensor system, control system, heterogeneous wireless network system, two phase real-time data analysis and visualization system, and the warning system. All these together will provide the ECG signal analysis of a cardiac patient, remote monitoring, delivery of warning to a doctor, relative, and the hospital, and an extended service of transferring the ECG signals and previous records of the patient to his doctor in a remote location. This system can be used for providing enhanced healthcare services to the rural areas of the developing countries that are facing shortage of efficient specialized doctors. Thus the

cardiovascular disease causing the death of patient can be reduced immensely by the implementation of this proposed system, in both rural and urban areas.

II. METHODS AND MATERIAL

A. EXISTING SYSTEM

The existing system describes home-based mobile cardiac monitoring solution, which incorporates a design of an integrated ElectroCardioGram (ECG) beat detector, supported by the PDA version of Personal Health Information management System (PHIMS) and Facilitated Accurate Referral Management System (FARMS) through wireless network .A wearable cardiac monitor for continuous and real time monitoring of patient's cardiac condition is introduced and ECG signal is recorded according to the surface Laplacian of the body potential. WHAM shows enough feasibility and has advantages as a wearable ambulatory monitoring device ,the hardware is miniaturized to integrate on a small region, it will reduce the complexity of wired connection. This system is developed to monitor the ECG of the patient if the patient is not mobile. Whereas the proposed system is capable to continuously monitor patients in all states such as mobile or immobile.

B. PROPOSED SYSTEM

The proposed system is capable to be used for continuous monitoring of the patients at different environments such as home, hospital, work place and the rest. WWSS consists of lead chest electrodes, blood pressure sensors, respiratory sensors, interfacing and signal processing circuit, and the transmitter. Electrical signals initiated from the heart are captured by the lead chest electrodes, amplified and filtered using the interfacing and signal processing circuit. The sensor system is used to continuously sense the ECG of a patient. The ECG signals are transmitted to the mobile phone using Bluetooth technology. The blood pressure and respiratory sensors will also be incorporated with the system. The data from these sensors will be monitored when an ECG variation is noted. Correlation between a disposable electrode, a controller and personal gateway data will be used to produce an alarm and a emergency message will be sent to **Nurse practitioner** and the **Doctor**.

C.METHODOLOGY

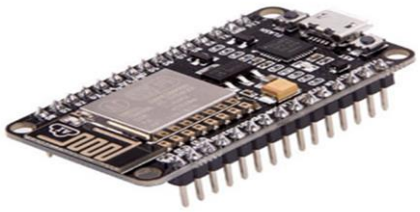

Figure 1. Ardino

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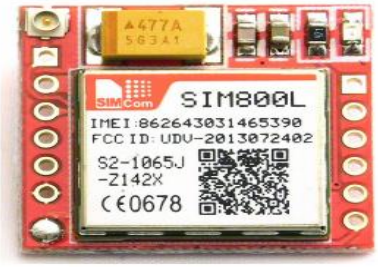
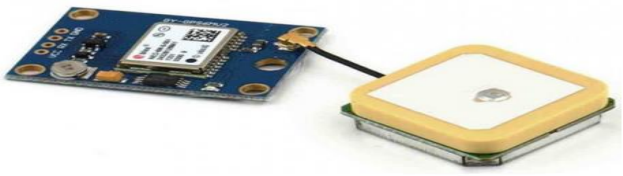
Figure 2



SIM 800L

Figure 3



Ublox Neo-6M GPS Module

Figure 4

The methodology of this project is we create a IoT based hardware device to read the heartbeat rate from the patient from the body and then data is captured from the IoT device and we use web services to send and stored the data into the database located in the cloud so that the real time data can be available for doctors and other associated with the patient with real time data. when there is a variation in the heartbeat, the web services invokes the SMS module to send message to the doctor and the patient guardian and share the current location of the patient.

III. RESULTS AND DISCUSSION

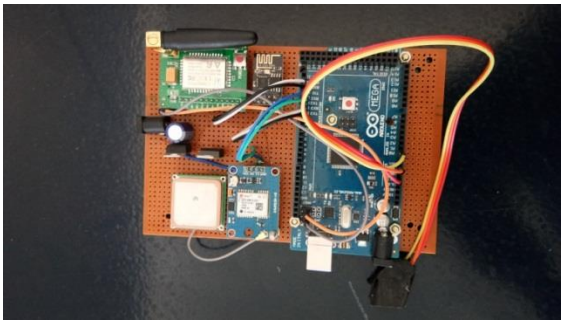


Figure 5

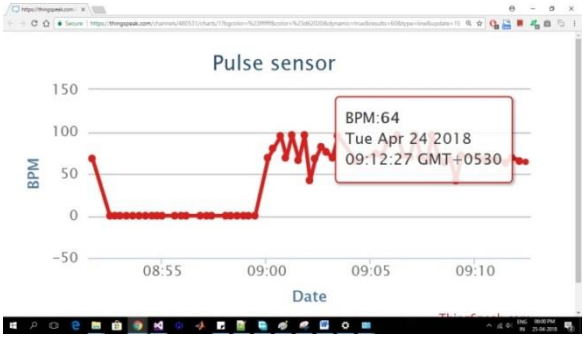


Figure 6

IV. CONCLUSION

The system is implemented successfully and in most of the cases the system behaves efficiently. Heart Rate Monitoring (HRM) system is a simple solution for real time heart rate status monitoring and abnormality alerting. The system can be used to determine and monitor the idle heart rate for each and every person which creates an emerging awareness in a secure way.

The system deals with the numeric data which is found from the experiment that helps to detect the patient's health condition as well as heart rate. It will co-relate the sensor data with the real patient's data which will help to compare the real scenario. In future some other features can be added to develop the system and make it easy to user through smart application. This system can be incorporated with cloud computing and enriched the prototype system. This noble system can be used for disabled or patient to aware about their present situation.Although a conclusion may review the main

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