



REALTIME HEART ATTACK DETECTION SYSTEM WITH AED DEVICE ALERT SYSTEM

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Abstract: To the existence and influence, health related parameters and issues are at most importance to man. Various systems have been developed that are able to capture and monitor changes in health parameters. A real time remote monitoring of heart rate is presented in this paper. This system uses an alert and LCD display that are capable of monitoring the heart rate. A low cost, efficient and flexible heart rate detection and alert system using wireless module has been implemented in this paper. The sensors sense and measure the heart rate and detected signals are sent to control unit for further processing. The controller displays the heart rate on LCD which is then preceded to alert system. If there is a large difference between the normal and measured heart rates, then an alert will be provided by the system. This system is continuous, real time, safe and accurate in monitoring the heart rates. In this system the further application is attached for preventing system that name was AED (Automatic External Defibrillator). In case any low level beat is detects the defibrillator will give the shock on external body of the patients. After the shock the notification is send to the corresponding doctor. And voices also speak at the ICU unit if the patient is admitted in hospital.

INTRODUCTION

We are developing a system which will help to decrease the death rate due to heart attack by early detection of heart attack. In our system we will be using smart bands/ health bands which are easily available in market. These smart bands will continuously monitor heart rate of a user. When the heart rate of a user goes below a danger value, the near smart phone will get notified and the application installed in the smartphone will notify to concerned people of the user and will also notify to ambulance service. The smart band and the application will be connected by the Bluetooth.

LITERATURE SURVEY

- 1) India will soon bear the largest burden of heart disease globally [1].
- 2) Heart attacks are five to six times more common during the hours of one to five A.M [2].
- 3) The leading cause of death worldwide is heart disease [3].
- 4) Every 20 seconds a heart attack occurs and a heart attack fatality occurs about every minute [4].
- 5) Congestive heart failure is a major chronic disease for older adults, accounting for about 260,000 deaths a year[5]

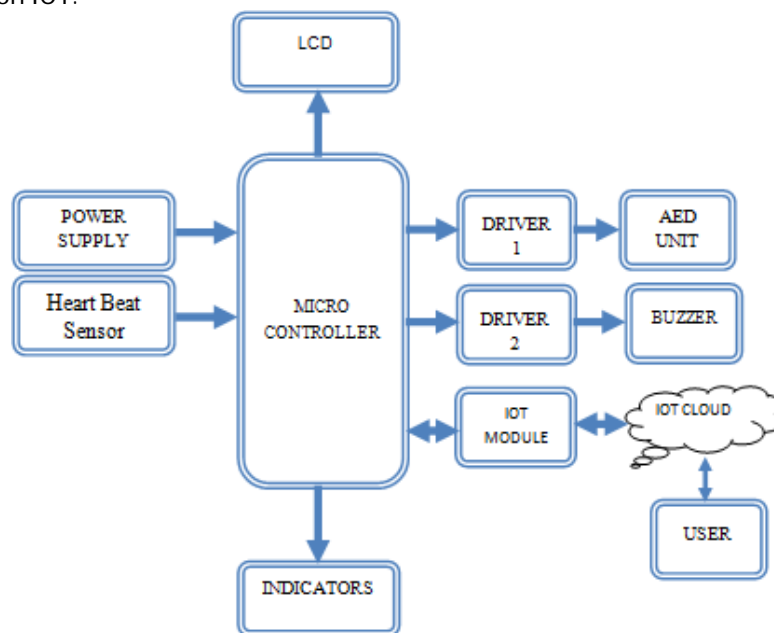
EXISTING SYSTEM:

The system will contain three main units. The wearable device will worn by the user. This device will monitor the user heart beat and will keep a record of the user. The second unit will be a android mobile, this unit will be connected to the wearable device by Bluetooth. The third unit is about broadcasting the alert message by SMS from android mobile. The signal Propagation through various units as shown in Fig1 block diagram.



PROPOSED SYSTEM

- We attached the AED (automatic external defibrillator) with heart beat sensing system.
- Data are monitored on IOT.



COMPONENTS USED: 1.HARDWARE USED

Microcontroller - a control device which incorporates a microprocessor.

Power supply - a component that supplies power to at least one electric load.

Automatic external defibrillator - used to help those experiencing sudden cardiac arrest. It's a sophisticated, yet easy-to-use, medical device that can analyze the heart's rhythm and, if necessary, deliver an electrical shock, or defibrillation, to help the heart re- establish an effective rhythm.

Buzzer - an electrical device that makes a buzzing noise and is used for signaling.

IOT module - An IOT module is a small electronic device embedded in objects, machines and things that connect to wireless networks and sends and receives data.

Heart beat sensor – Heart beat sensor is designed to give digital output of heart beat when a finger is placed on it. When the heart beat detector is working, the beat LED flashes in unison with each heart beat.

Indicators - a thing that indicates the state or level of something.

SOFTWARE USED

MPLAB IDE - MPLAB IDE is a free, integrated toolset for the development on Microchip's PIC and dsPIC microcontrollers.

Hi tech compiler - HI-TECH C is a world class brand of compilers featuring Omniscient Code Generation™, whole-program compilation technology, for Microchip Technology's 8-, 16-, and 32-bit PIC® microcontroller and dsPIC® digital signal controller architectures.

Teraterm - an open-source, free, software implemented, terminal emulator (communications) program of embedded applications

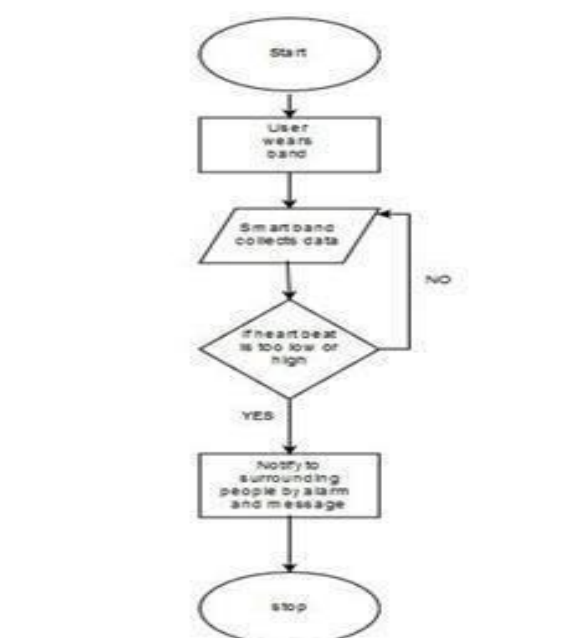
OPERATION:

Wearable devices

Every user will be wearing a device. The band will be monitoring the heartbeat of the user and will be processing it. If the heartbeat of the user is in critical condition then the band notify to the android smartphone. The heart rate monitoring sensor is built in the device. The device uses PPG method to detect the heartbeat. The device emits green light because the blood absorbs green light, so to determine the heartbeat the device flashes green light hundreds of times in one second. Because blood absorbs green light, and each pulse brings a spike in blood flow, determining heart rate is a matter of measuring the changes in green light absorption shown in Fig 2 Flow diagram

Android smartphone

The smart band will be connected to the android phone by Bluetooth. The band will be transmitting the data to the smartphone by the help of Bluetooth. In the android smartphone user has to install android application which will be collecting the data from the smart band. This application will monitoring the user activity and will keep a record of it. When the user's heartbeat will be under critical level. It will notify to the emergency contacts. The user has to enter the details of contact, in case of emergency. The application will also notify to the ambulance service. The smart band will be monitoring the heartbeat of the user and changes the critical level according to it or it can be manually entered by the user. As critical level varies from person to person.



ED (Automated External Defibrillator): A device that automatically analyzes the heart rhythm and that 'if it detects a problem that may respond to an electrical shock' delivers a shock to restore a normal heart rhythm. Thanks to their small size and ease of use, AEDs have been installed in many settings (such as schools and airports), and serve a role in expanding the number of opportunities for life-saving defibrillation. In this system the further application is attached for preventing system that name was AED (Automatic External Defibrillator).

In case any low level beat is detected the defibrillator will give the shock on external body of the patients. After the shock the notification is sent to the corresponding doctor. And voices also speak at the ICU unit if the patient is admitted in hospital shown in Fig 3



(Above Fig-AED)

CONCLUSION

In this way we are developing the system which is able to detect any heart anomalies and heart attack by tracking the heartbeat of a user. In the coming future, as the technology advances, more features will be added to the smart bands. This proposed system will help old-age people to track their heart rate, and in case of any heart anomalies, it will notify to emergency contact. It can also be used by users who have just undergone heart surgery.

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