Lifesaver-A Heartattack Detection Device

D.Prabhu[1], Anushtup Muley[2], Rohit Gupta[3], Deepak Verma[4], Prayank Shah[5]
Assistant Professor[1], B. Tech Student[2, 3, 4, 5]
Department of Computer Science and Engineering
SRM Institute of Science and Technology Chennai, India

Abstract:
The human death due to heart attack is increasing day by day. Due to days human life style, eating habits, irregular daily routines the heart attack problem is becoming predominant. The heart attack is more prone to elders means the people having age more than 60 - means mostly to senior citizens. Today most of the senior citizens are living alone in entire home with no any person nearby for taking care of them. Or maybe they are left alone in the home during entire day because all the other persons are doing job from morning to evening. So what will happen if they get heart attack while they are alone and nobody is nearby to give him/her (or to take him/her) emergency medical help? Is there any answer to this question? Is there any solution to this problem? Does the current technology able enough to solve this problem? The answer is yes and the answer is with the help of electronics and communication a device can be made that gives solution to this problem. The device is such that it continuously monitors persons heart beat. Whenever it finds any abnormality (irregularity) in heart beat it detects it as a heart attack and immediately within 2-3 second it calls to any medical emergency (or any concern person) automatically. 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.

Keywords: Heart beat detection, Heart beat sensing, electronic devices, heart beat monitoring.

I.INTRODUCTION

This system Heart Attack Detection by Heart Rate Monitoring Project helps to inform if a person is about to have a heart attack. This system does this by detecting the heart beat level and informs as soon as the heart beat level does not fall within the permissible limit. Thus this system can be used to save life of many people as this system alerts the doctor about the patient's heart beat level. For this the system uses two circuits. One is the transmitting circuit which is with the patient and the other is the receiver circuit which is being supervised by the doctor or nurse.

The system makes use of heart beat sensor to find out the current heart beat level and display it on the LCD screen. The transmitting circuit includes AVR family micro controller interfaced to LCD screen and this transmitting circuit is powered by 12V transformer. Similarly, the receiving circuit includes AVR family micro controller and RF receiver and also has a 12V transformer. The receiver circuit also includes LED light and a buzzer which are used to alert the person supervising the heartbeat rate of the patient and turns on the LED light and buzzer as soon as the heartbeat level of the patient does not fall within the normal heart beat level set.

A. Internet of Things

The Internet of things (stylised Internet of Things or IoT) is the internetworking of physical devices, vehicles (also referred to as "connected devices" and "smart devices"), buildings and other items embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to collect and exchange data.

In 2013 the Global Standards Initiative on Internet of Things (IoT-GSI) defined the IoT as"the infrastructure of the information society." The IoT allows objects to be sensed and/or controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer- based systems, and resulting in improved efficiency, accuracy and economic Benet.

When IoT is augmented with sensors and actuators, the technology becomes an instance of the more general class of cyber-physical systems, which also encompasses technologies such as smart grids, smart homes, intelligent transportation and smart cities. Each thing is uniquely identifiable through its embedded computing system but is able to interoperate within the existing Internet infrastructure. Experts estimate that the IoT will consist of almost 50 billion objects by 2020. Typically, IoT is expected to offer advanced connectivity of devices, systems, and services that goes beyond machine-to-machine (M2M) communications and covers a variety of protocols, domains, and applications.

II.SYSTEM ARCHITECTURE

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The receiver circuit also includes LED light and a buzzer which are used to alert the person supervising the heartbeat rate of the patient and turns on the LED light and buzzer as soon as the heartbeat level of the patient does not fall within the normal heart beat level set. Both the circuits
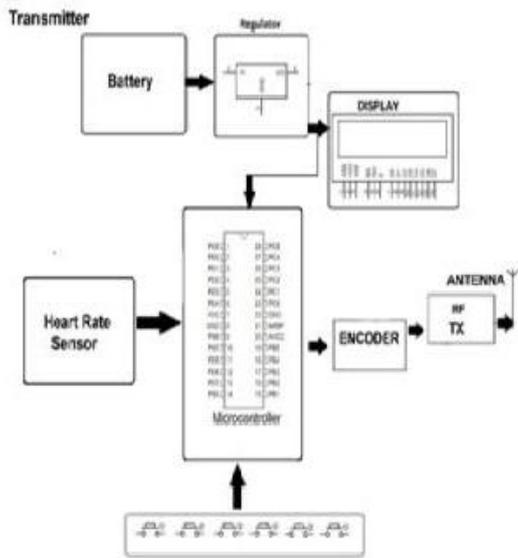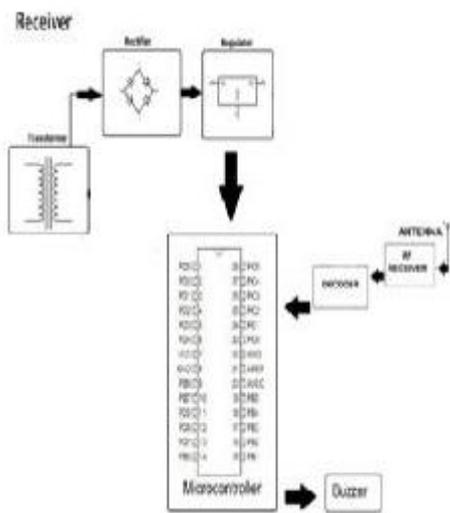
Figure.1. Transmitting Circuit

Figure. 2. Receiving Circuit

Play an efficient role and help in monitoring the heart beat of the patient without any loss of signals.

III.PROPOSED SYSTEM

As the number of heart attack patients increases day by day, the proposed system aimed at minimizing the number of heart attack deaths and also with the help of electronics and software development develop devices which could check the heart beat of the patient and Whenever it finds any abnormality (irregularity) in heart beat it detects it as a heart attack

Figure.3. HeartAttack detection device

And immediately within 2-3 second it calls to any medical emergency (or any concern person) automatically. Detection of heart attack using heart beat sensing. It has a buzzer which sounds when heart beat level is greater than the manual limit set .Manual setting of minimum and maximum limit of heart beat. Two circuits have been used, one is the transmitting circuit which is connected to the patient and other one is receiving circuit which is supervised by the doctor or nurse

A. Advantages of Proposed System

The advantages of proposed system is that manual heart beat monitoring limit ,Quick signal response to the doctor in case of emergency situation of patient ,Ease of use of machine , Will reduce the rate of patients undergoing Heart attack. The LCD display which is present will set the limit of heart beat. One of the major advantages over other heart attack detection devices is that quick sending of signals at receiving end so that in case of any emergency medical services can be provided as soon as possible.

IV. ALGORITHM

- The system consists of microcontroller which is inter faced with LCD display, wifi module for wifi network.
- The heart beat sensor is used to monitor the heartbeat of patient.
- The wifi module is connected to the internet.
- 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.

V.SYSTEM REQUIREMENTS

The system requirements consist of hardware and software specifications listed below:

A. Hardware Specification

- At mega micro controller
- LED
- Resistors
- Capacitors
- Buzzer
- Heart Beat Sensor
- RF Transmitter
- RF receiver
- LCD Screen
- Push Buttons

B. Software specification

- Arduino compiler
- MC Programming language: Embedded C

VI. CONCLUSION

This Heart Attack Detection device helps to inform if a person is about to have a heart attack. This system does this by detecting the heart beat level and informs as soon as the heart beat level does not fall within the permissible limit this system will help reduce the rate of deaths due to heart attack and also will increase the usage of such machines which will help in future. The project aims at more usage of such machines.

VII. REFERENCES

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