

## Effective Ways to Use Internet of Things in the Field of Medical and Smart Health Care

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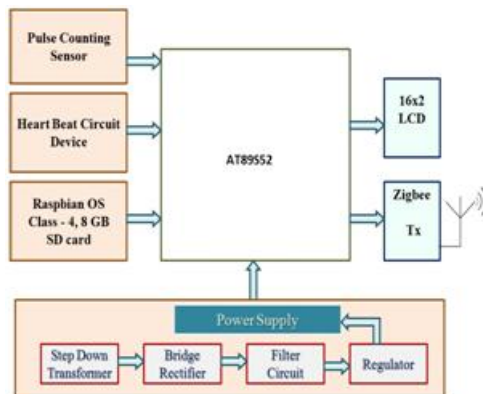
### ABSTRACT:

This project describes the design of a simple, low-cost controller based patient health monitoring system. Heart rate of the subject is measured from the thumb finger using IRD (Infra Red Device sensors) and the rate is then averaged and generates reading. This instrument employs a simple Opto electronic sensor, conveniently strapped on the finger, to give continuous indication of the pulse digits. This information is required to telemeter to doctor away from the patient. This being carried out using IoT based wireless system.

### Existing System:

Here we are using Zigbee communication to transmit all the details of the patient. This project uses AT89S52 as its controller in the transmitter section. By reading all the values of heart rate, those will be sent to the receiver. At the receiver all the details will be received through Zigbee and displayed on PC. This project uses regulated 3.3V, 500mA power supply.

### Transmitter:



### Receiver:

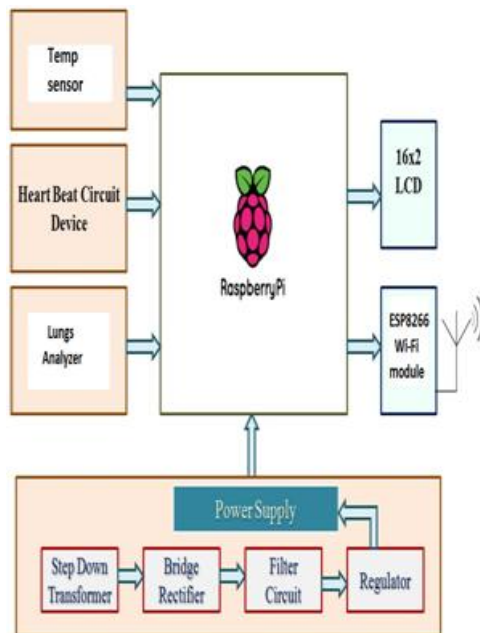


### Draw Back:

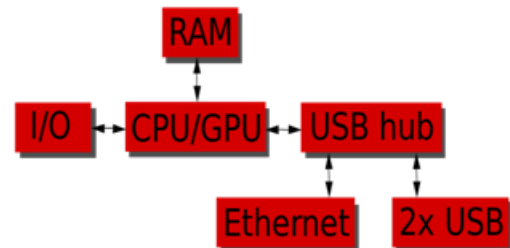
Lungs analyzer is not available and zigbee can be implemented within shorter range.

### Proposed System:

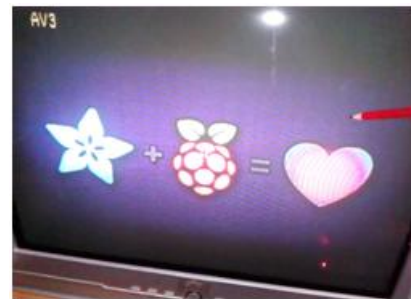
This project uses Raspberry pi as heart of the project. We are using switch array to select the age of human being. It starts from children to elders. Firstly we need to select the age by using switches. Then we need to inhale the air, by using the IR sensors we can know the person is healthy or unhealthy. If the person is unhealthy then the buzzer will be activated. A temperature sensor and also a heart beat monitoring device is also interfaced to the controller to monitor all these things. The LCD is used to display the health condition of the person. Here an IoT module is connected to make this information available in the web server which can be viewed in any place using internet.



### Basic Hardware of Raspberry-PI



### OS used in Raspberry pi is Linux (Raspbian)



### Coding will be done in python/C language



### Pulse counting sensor



**Heart rate** is the speed of people's emotional state, exercise intensity and objective indicator of cardiac function. But most people are very difficult to

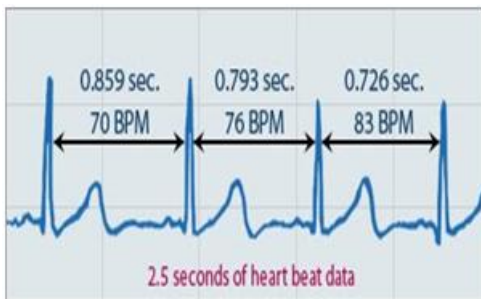
### Hardware Requirement: Raspberry-pi:



### Features:

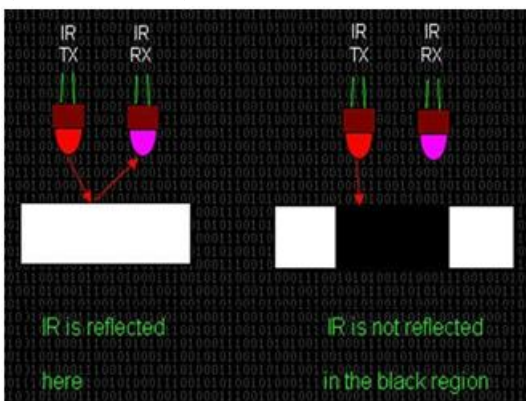
- System Memory – 1GB LPDDR2
- Storage – micro SD card slot (push release type)
- Video & Audio Output – HDMI and AV via 3.5mm jack.
- Connectivity – 10/100M Ethernet
- USB – 4x USB 2.0 ports, 1x micro USB for power
- Expansion
  - 2x20 pin header for GPIOs
  - Camera header
  - Display header
- Power – 5V via micro USB port.
- Dimensions – 85 x 56 mm

accurately measure the time and his heart rate values. If the heart rate monitor with me, heart ECG electrodes will be detected by monitoring the signal processing device, the user can at any time that your heart rate changes, changes in heart rate, self monitoring system. Heart rate monitor for heart rate range (60 ~ 160) / min. Circuit by adjusting the relevant components, in the (60 ~ 160) / min within the audible alarm can change the heart rate range. This heart rate range the width of the design center values  $\pm 20\%$  range. If central values such as emphasis on the 100 / exceptionally, the heart rate signal range (80 ~ 120) / min, if the heart rate exceeds this range, the lower limit, the instrument does not sound, if the heart rate in the range of the instrument ECG is the sound issue.



### IR sensor:

IR reflectance sensors contain a matched infrared transmitter and infrared receiver pair. These devices work by measuring the amount of light that is reflected into the receiver. Because the receiver also responds to ambient light, the device works best when well shielded from ambient light, and when the distance between the sensor and the reflective surface is small (less than 5mm).



### Internet of things:

Internet is helping people to communicate each other using different applications



Internet of things helps the things to communicate each other using IoT module

### ESP8266EX

- The Internet of Things (IoT) is the network of physical objects or "things" embedded with electronics, software, sensors, and network connectivity, which enables these objects to collect and exchange data.

Worldwide Internet of Things Revenue Opportunity



### Advantages:

- Ease of operation and understanding.
- Low maintenance cost and handling.
- Fit and forget device

- No wastage of time
- Durability
- Accuracy

**Applications:**

- 2 Hospitals
- 2 Remote heart rate monitoring applications
- 2 Local monitoring applications
- 2 Designed for Home and Clinical Applications

**Result of our project displaying normal heart rate**



**Conclusion:**

This project was successfully implemented and the output displayed was on LCD and Heart rate is counted by microcontroller for one minute and displayed at distant place through IoT. This device and technology can be used by a doctor from any remote place. A normal person can also operate this device. So this heart rate measurement device is cheap and easier to understand.

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