

# Low Cost Health Monitoring System

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**Abstract**—A busy lifestyle leaves people with very little for regular health check-ups or visits to the doctor. At the same time, people wish that they would be able to monitor their own as well as the health of children, dependents, old parents alone at home, with the help of some basic health parameters. Certain conditions such as Artrial fibrillation that involves an irregular heartbeat, many a times go unnoticed leading later on to blood clots, stroke, heart failure and other heart-related complications. The RELY-AF registry reported that amongst the AF patients, valvular heart disease was most common in India (46.7%) and Africa (32.6%) and much less common in Eastern Europe (10.7%) and Western Europe (8.8%). An increase in body temperature (fever) which tends to get ignored at times or in case of children alone at home, goes unnoticed could actually require timely intervention as it could be indicative of a minor or major infection that needs to be treated. This paper proposes an Embedded solution that includes a light weight, portable wearable device to check heart rate and body temperature. The wearable device would continuously collect this data and send it with the help of a mobile app to the parents / caretakers. It would help parents to immediately contact the doctor or even admit to the hospital, their children / old parents. The mobile app additionally can then be used to track the person's heart rate and body temperature over a period of time.

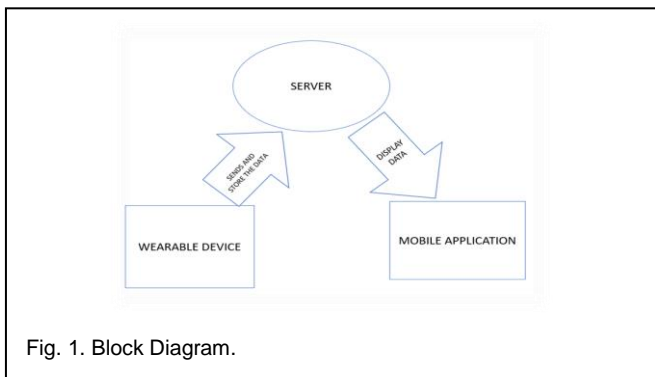
**Index Terms** Heart rate, body temperature, health monitoring, low cost.

## 1 INTRODUCTION

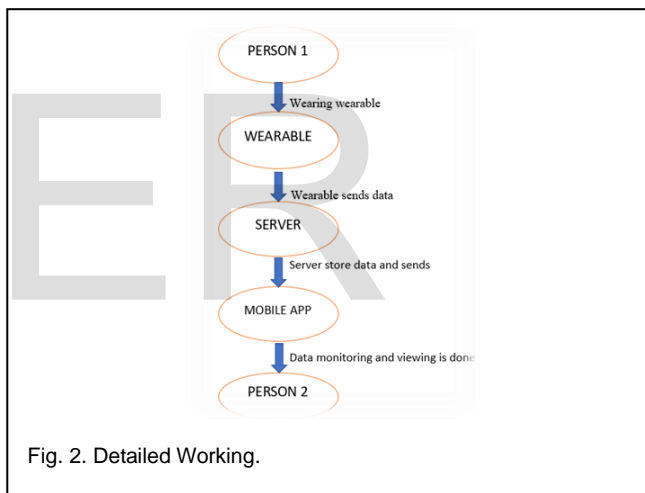
A busy and hectic lifestyle leaves people with very little or no time for regular health check-ups. At the same time, people wish that they are able to monitor their own health as well as the health of children, dependents, old parents at home. Our system offers a very easy to use, user friendly mechanism to monitor health.

## 2 BLOCK DIAGRAM

Fig 1 shows the overall working of the system. The system is made up of three components namely Hardware, Server, and Mobile App. The hardware is the wearable device that is worn by the user. The data from the wearable device is sent to the server over the Internet. The server then pushes the data to the mobile app. The data in the mobile app can be checked by the user of the wearable device himself or any other authorized user who wishes to remotely monitor the health of the user of wearable device.



the server will store the data and send it to the mobile app when requested.



## 3.1 Working of Wearable Device

The wearable device as shown in Fig 3, consists of ESP8266 NodeMcu 12E Development Board with sensors APDS9008—Pulse Sensor Module and Temperature Sensor connected to it and a small sized power bank is been used for the power supply. The coding for the hardware is done through Arduino IDE. The sensors sense the data every fifteen seconds and send it to the server. The design of the device makes it light weight, portable and handy.

## 3 WORKING

As shown in Fig 2. the person who wants to check his health readings needs to wear this device. The device is equipped with sensors which will read the values of the two parameters namely heart rate and body temperature. Using Internet connectivity, the device sends the data to the server on the cloud,

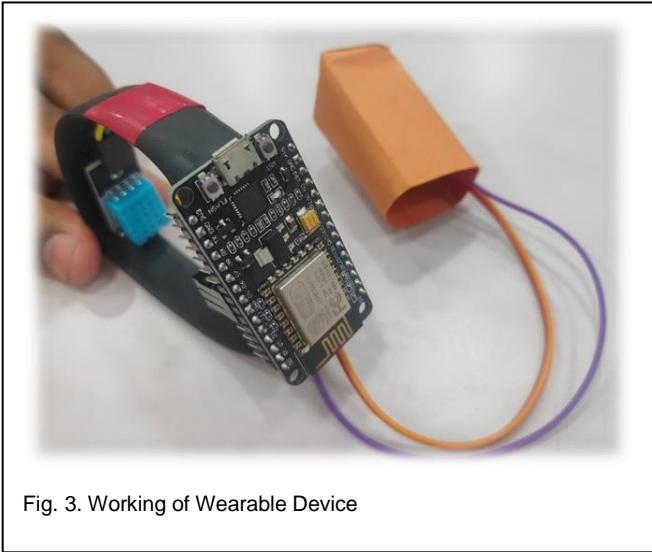


Fig. 3. Working of Wearable Device

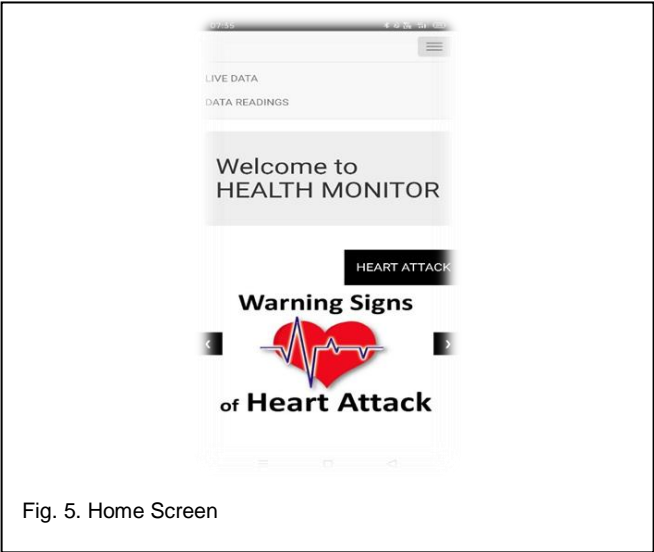


Fig. 5. Home Screen

Fig 4 shows that only authorized users will be able to use the mobile app. The users will be the persons wearing the device by themselves or they will be someone in the family who wish to monitor the health of the person wearing the device.

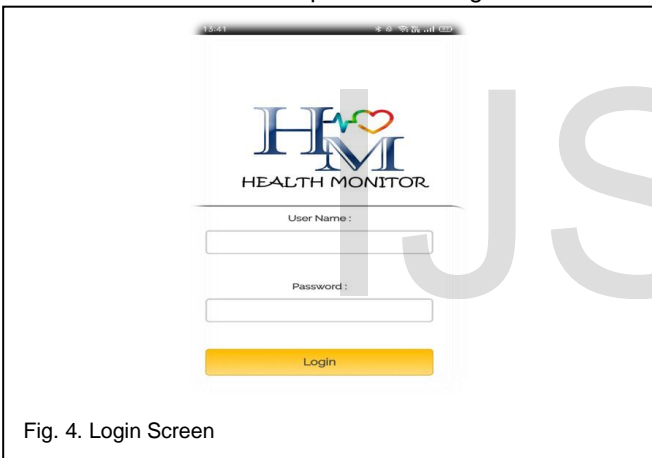


Fig. 4. Login Screen

Fig 5 shows the home screen in which two options are available namely Live Data and Data Readings. Live Data (Fig 6) shows the current readings whereas Data Readings (Fig 7) fetches the previous readings from the server and displays them.

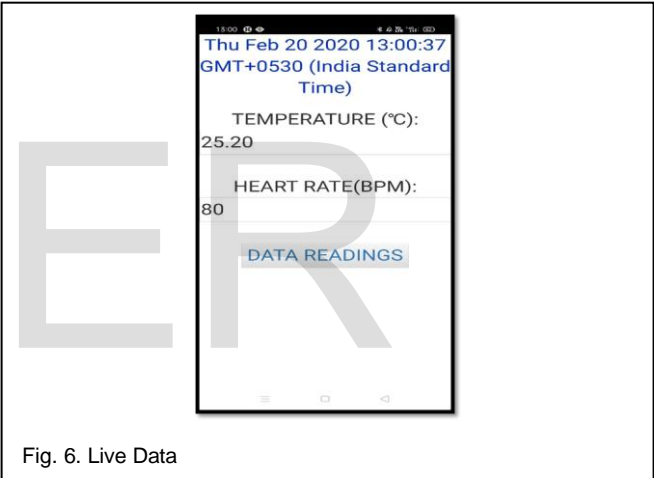


Fig. 6. Live Data

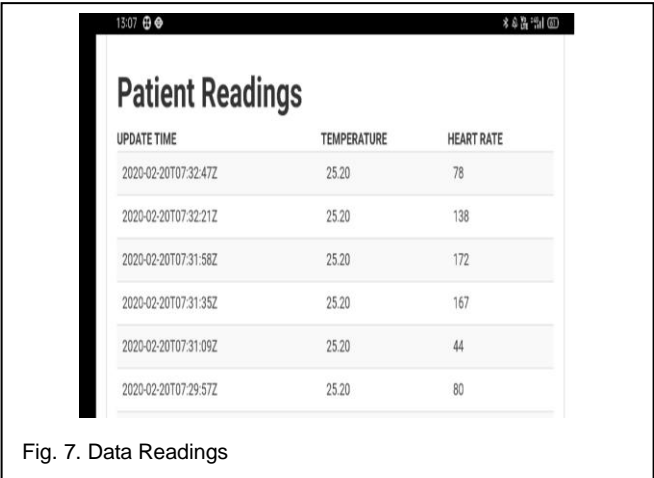


Fig. 7. Data Readings

## 5 CONCLUSION

The system provides a real time solution of monitoring health of self or any family member with reliability. The previous data readings also facilitate tracking and monitoring health.

## 6 FUTURE SCOPE

The system can be made to track more parameters in addition to the current ones. Additionally, the GPS module can be used to identify the exact location of the person and if necessary timely help can be provided to the person.

## 7 REFERENCES

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