



Health Monitoring System

Gauri Ashok Badhe¹, Sushmita Jayprakash Bahadurkar², Apeksha Balaso. Mane³,

Dr. Shubhangi Chaudhary⁴

Student, Electronics And Telecommunication, MKSSS's Cummins College Of Engineering For Women Pune, India¹⁻³

Guide, Electronics And Telecommunication, MKSSS's Cummins College Of Engineering For Women Pune, India⁴

Abstract: Our paper is to focus on the implementation of an effective health monitoring system and as we know security plays an important role in every industry which also has fingerprint sensor for authentication of right person. Portable devices become an interesting topic in the field of technological research and gain lot of attraction due to its small size. It allows us to take it to any location where we want with each other over the internet. The proposed system monitors the vital health parameters and transmits the data through a wireless communication through Wi-Fi module. The data can be accessed any time using mobile app.

Keywords: Microcontroller STM32F103, Finger print sensor, Pulse oximeter, Temperature sensor, GPS module, Wi-Fi module.

I. INTRODUCTION

There are some issues regarding the lack of continuous communication with the hospitals, lack of immediate medical attention, safety of people like information about their current location. There is a necessity to develop a technology which is small in size and dissipates very less power so that the location and the health parameters of the person can be tracked in real time. The device is designed in which number of the sensors and other components are mounted and which is fitted inside the stick. With help of fingerprint sensor, it is possible to identify the respected person. After that, health parameters will be continuously monitored.

The system is GPS based to get the current location of the soldier, along with it LM35 temperature sensor, pulse sensor and oxygen level detector present there to continuously monitor the soldier's health are interfaced to Arduino ATMEGA328P microcontroller and data is transmitted via Wi-Fi module. This data is again stored on the cloud so that PC in the control room can access it easily.[1]

In this system, the smartphone application is used where user needs to login, After submission of data the application will provide the individual risk factor according to the details provided while logging in. Smartphone application doing two most important tasks one is to provide that data stream to the server located there in hospital or Govt. site. And another one is to send the data to cloud where fuzzy server available, tests data and acknowledge back to application with risk factor of that respected user.[2]

The fingerprint sensor is included for the detection of the accurate finger and negligence report of the wrong finger. This paper actually tells how the finger is read, matched and then provides the result. The fingerprint has some of the features like ridge orientation-map, frequency-map, pores, dots, singular points. an automated latent fingerprint matching system should be able to provide better, quick and deterministic results compared to manual matching.[3]

Next paper was referred, from that, the working of fingerprint sensor was studied [4]. In the next paper, another sensor is added i.e. pulse oximeter, which measures the oxygen level of the person which is most important factor in this COVID situation [5].

II. PROPOSED SYSTEM

The proposed system performs the health monitoring along with the current location. The system actually includes with various sensors like temperature sensor, oximeter sensor, GPS and the fingerprint sensor. All the sensors except fingerprint sensor will sense the data continuously and send it via Wi-Fi module ESP8266 to destination. The fingerprint sensor will sense the finger and displays the message accordingly like if fingerprint entry is valid then system further works otherwise displays message of unauthorized person detection. The heart of the system is its processor STM32F103 series, the main reason to select is it has multiple serial communication ports along with other analog-digital.

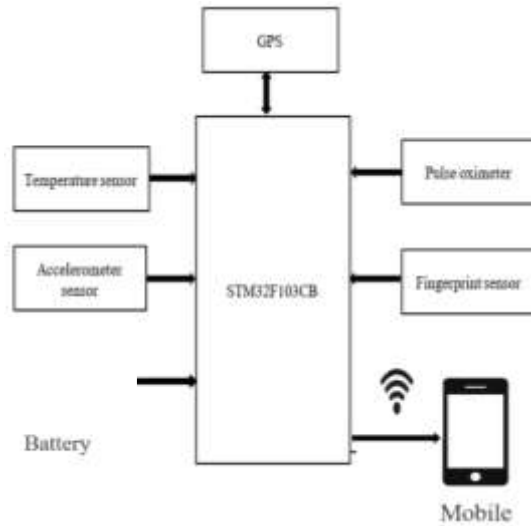


Fig. 1 Block diagram of Health Monitoring Stick.

III. ALGORITHM

- 1). Start.
- 2). Initialize and configure fingerprint sensor to detect the authorized person.
- 3). Initialize and configure pulse oximeter, temperature sensor to detect the health parameter.
- 4). Initialize and configure GPS.
- 5). Initialize and configure Wi-Fi for sending the information to the control room.
- 6). Check the condition if parameter not within the range of the standard value's then send information to relative.
- 7). Stop.

IV. RESULT

Our system monitors various health parameters:

- Fig.1 shows output of body Temperature and location of person.
- Fig.2 shows output of pulse rate of person.
- Fig.3 Display the output of various sensors on mobile phone.

```

COM3
-----
WiFi CONNECTED
AT version:1.2.0.0(Dal  3 2016 20:04:45)
GSM version:1.5.4.1(35cb3a32)
Ai-Thinker Technology Co. Ltd.
Dec  2 2016 16:21:16
OK
[12040] +CIFSR:STAIP,"192.168.43.143"
+CIFSR:STAGW,"94:83:ab:22:66:da"
[12040] Connected to WiFi
[23485] Ready (ping: 29ms)
Initializing Health Monitoring System..Initializing Health Monitoring System..SUCCESS

Temperature in DegreeC= 34.18
Data monitoring .....
LAT=18.131624 LON=74.619467
x=-32385      y=175      z=25000

Temperature in DegreeC= 34.61
Data monitoring .....
LAT=18.131630 LON=74.619467
x=-27385 y=-24872      z=-28432

Temperature in DegreeC= 34.23
    
```

Fig. 2 Temperature, Location

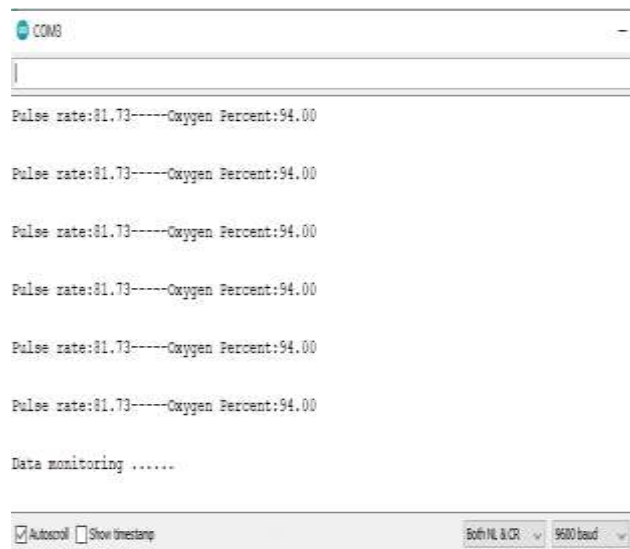


Fig.3 Pulse rate and oxygen level readings



Fig. 4 Data displayed on mobile phone of user

V. CONCLUSION

The proposed system collects the reading of various health parameter of the person. Also track the location of the person, send that to the mobile and central room. The system is also useful for elder person and in critical condition message can be given to relative to get help. Thus, we can conclude that the proposed system is acting like a lifeguard for user.

REFERENCES

- [1] Niket Patil, and Brijesh Iyer, "Health Monitoring and Tracking System for Soldiers Using Internet of Things (IoT)" International Conference on Computing, Communication and Automation - 2017.
- [2] S. S. Vedaei et al., "COVID-SAFE: An IoT-Based System for Automated Health Monitoring and Surveillance in Post-Pandemic Life" in IEEE Access, vol. 8, pp. 188538-188551, 2020, doi: 10.1109/ACCESS.2020.303019
- [3] Uttam U. Deshpande, Dr. V. S. Malenath, "A study of automatic latent fingerprint identification system" ResearchGate April 2019.
- [4] Fingerprint Matching using A Hybrid Shape and Orientation Descriptor 10.5772/19105
- [5] Richa, Anwasha Das, Ajeet Kumar Kushwaha, Mini Sreejeth, 2021, An IoT based Health Monitoring System using Arduino Uno, International Journal Of Engineering Research & Technology (IJERT) Volume 10, Issue 03 (March 2021).