Finger Print Based Patient Information System

KAVIYA R¹, KARTHICK M², KARTHIKEYAN S³, MANOJ D R⁴

1, 2, 3 Final Year / ECE**,** Muthayammal Engineering College,Rasipuram

⁴ Associate Professor/ECE Muthayammal Engineering College, Rasipuram

---***---

Abstract: For Emergency Patients, medical test results took more time. This is the biggest problem in this medical test approach. The alternate and better solution for that problem is the Finger Print Based Patient Information System. In this system we can store the patient's past medical records electronically and we can also retrieve it also using a finger print anytime. It takes less time, and the results will be accurate. This system replaces the paper-based medical records with an electronic record system.

*Key Words***:** Medical Test Result, Finger Print Based Patient Information System, Past Medical Records, Less Time and Accurate, Electronic Record System etc.
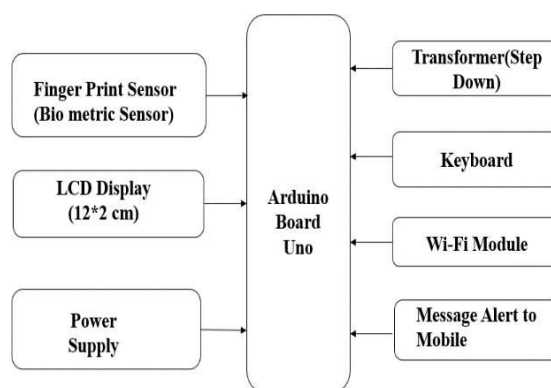
1. INTRODUCTION

Medical Information consists of all information related to the Patient information. Biometric identification is a method of recognizing a person's unique details. Biometric techniques include the face, iris, retina, fingerprint, voice, and so on. In this project, we used Fingerprint recognition to store and retrieve the patient's details. Every fingerprint has a unique pattern. So, it is the most reliable. It is used in emergency medical situations also. The Internet of Things (IoT) concepts have been widely used to interconnect the available medical resources and offer smart, reliable, and effective healthcare services to patients. Hence the proposed architecture collects the Biometric sensor data through the Arduino microcontroller where it is processed and analyzed for remote viewing.

2. EXISITING SYSTEM

The health information system that will enables patients' medical records to be shared electronically with hospitals, nursing homes and doctors' offices. There are many disadvantages in usage of Patients medical record system which includes the Barcode system, smart cards and Id cards. They are:

- ➢ Chances of Identity fraud
- ➢ Not Applicable for Emergency Patients
- ➢ Need for the Patient to carry the ID Card
- ➢ Possibility of Medical Errors

3. PROPOSED SYSTEM

The hospitals are committed in maintaining patient privacy while sharing data to improve the diagnosis and treatment of patients, by introducing the technique of Fingerprint in medical Information system. Since Fingerprints cannot be lost or forgotten like passwords, fingerprints offer high security. It is more difficult to copy, share. Large fingerprint data need not be memorized.The emergency data set such as

his/her blood type and contact person information. It can be accessed using his/her finger in the emergency medical situation when the patient is unconscious. The patient's information is sent to the doctors and nurses through the App which we created. This Application shows the Persons details while the doctors and Nurses are connected with Wi-Fi module.

A. Proposed System Architecture

Fig. 1. Block Diagram

First, we need to switch on the device using the power supply. The Step-down transformer is used to regulate the power supply and avoid the power fluctuations. Then the Patient Fingerprint is scanned with the help of the fingerprint sensor and their details are stored in the Arduino Microcontroller. In the Patients' Emergency Situations, we can retrieve the patient's information with the help of the Fingerprint sensor. If the Patients' fingerprint is scanned in the fingerprint sensor, it shows the Patients' details in the LCD display attached in the microcontroller. If the doctors or nurses are connected to the Wi-Fi module of the Kit, the App notification or App messages are sent to them.

A. System Requirements

a) Arduino Micro Controller (UNO)

The Arduino Uno is an open-source microcontroller board based on the Microchip ATmega328P (8-bit) microcontroller. It is an open-source electronic platform based easy-to- use hardware and software. It is able to read inputs-lights on a sensor, a finger on a button, turning on LCD, etc. IS operating voltage is 5v. The input voltage ranges from 6v to 20v. Itsflash memory is 32KB.

b) Fingerprint Sensor

In the fingerprint sensor the light sensitive microchip makes the digital image by looking at the ridges and valleys of the fingerprint, turning them into 1's and 0's, and creating its own personal code.

c) Transformer (Step Down)

A Step-down transformer, the Primary coil has more windings than the secondary coil. This reduces the induced voltage running through the secondary coil, which ultimately reduces the output voltage.

d) Wi-Fi Module

The ESP8266 Wi-Fi Module is a self-contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your Wi-Fi network. The is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor.

e) LCD Display

A liquid-crystal display is a flat-panel display or other electronically modulated optical device that uses the light-modulating properties of liquid crystals combined with polarizer's. It does not emit lights directly, instead using a backlight to produce images in color or monochrome.

f) Keyboard

A Keyboard is small and palm sized. It has Set and Selector buttons. These buttons are used to choose the options in the system. This keyboard is connected to the microcontroller.

4.Advantages

a) Unique

Everyone has the different and unique fingerprint. Fingerprints have loops and arches which vary from person to person.

b) Accurate

The information obtained from the fingerprints is accurate as it different to every person and is easily comparable with the candidate fingerprint images stored in the database.

c) Small storage space

The memory required to store the fingerprint template is small and requires less memory space.

5. RESULTS

The Patient's Information System is created with the help of fingerprint sensor. The following details are included in the Patients Information System.
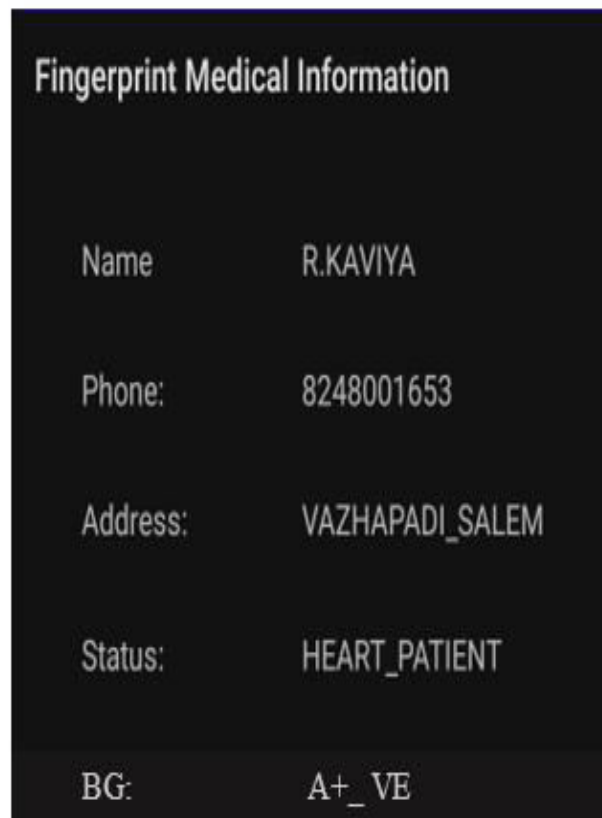
- ➢ Name
- ➢ Age
- ➢ Blood Group
- ➢ Address
- ➢ Emergency Contact Number
- ➢ Patients Past medical details

Fig. 2. Image of the APP

The patient's information is sent to the doctors and nurses through the App which we created. This Application shows the Persons details while the doctors and Nurses are connected with Wi-Fi module.

6. CONCLUSION

The Fingerprint based patient system was specifically developed for storing, monitoring and analyzing the patient medical reports. The system uses the fingerprint scanner for retrieving the patient details from the system. This

- a) Physiological data collection
  - ➢ Home Ultrasound
  - ➢ Brain signal monitoring
- b) Remote viewing of data
  - ➢ Problems associated with having data online. Tackle distributed denial of service. DDOS, and Data Privacy/security especially of medical systems.
- c) IOT based Remote Patient Monitoring System can be

enhanced to detect and collect data of several anomalies for monitoring purpose such as home ultra sound, Brain signal monitoring, Tumor detection etc.

d) More research on problems associated with having data online, data privacy as IOT is managed and run by multiple technologies and multiple vendors are involved in it. Security algorithms and certain precautions by the users will help avoid any security related threats in IOT network. The interface can be designed to control which sensors can be used by consumers according to their needs.

e) Web UI can be enhanced to perform several activities which include controlling the hardware, real-time graphs, history and analysis graphs to observe anomalies etc.

f) The Patients information can be modified with images like X-ray, CT, MRI and graphics such as ECG, EEG, EMG, etc.

7. REFERENCES

[1] Nikhil Patil, Girish Kulkarni and Dhiraj Patil "Fingerprint Recognization for Library Management" Ijcem International Journal of Computational Engineering & Management, Vol. 16 Issue 1, January 2013 ISSN (Online): 2230-7r.893.

[2] Aditya Shankar, P.R.K.Sastry, A. Vamsidhar "Finger Print Based Door Locking System" International Journal of Engineering and Computer Science ISSN: 2319-7242 Volume 4 Issue 3 March 2015, Page No. 10810-10814.

[3] Dhiraj Sunehra "Fingerprint Based Biometric ATM Authentication System" International Journal of Engineering Inventions e-ISSN: 2278-7416, p-ISSN:2319-6491 Volume 3, Issue 11(June 2014) PP: 22-28.

[4] Shivam Gupta, Shivam Kashaudhan, Devesh Chandra Pandey, Prakhar Pratap Singh Gaur "IOT based Patient Health Monitoring System" International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056 Volume: 04 Issue: 03 [March-2017].

[5] Edmund Spinella, "Biometric Scanning", SANS Institute, San Francisco, CA, 2003.

[6] Barber B. 1998, Patient data and Security: an overview, International Journal of Medical Informatics, 49(1), pp. 19-30.

[7] Peatman, John B., "Design with PIC Microcontrollers", Pearson Education, India, 1998.

[8] Microchip Technology Inc., "PIC16F87XA data sheet, DS39582C, 2013.