# BIOMETRIC WIRELESS PEN DRIVE

## Kaustubh Gaikwad[1], Sneha Ojha[2], Shreyas Surlikar[3], Supriya Zende[4]

[1]Professor, Electronics and Telecommunication Dept., Sinhgad Academy of Engineering, Savitribai Phule Pune University, Pune, India

[2,3,4]Students,Electronics and Telecommunication Dept., Sinhgad Academy of Engineering, Savitribai Phule Pune University, Pune, India

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**Abstract -** *Generally, we used to transfer data wirelessly between two devices by using controller and PC But it is not always possible to carry such a large size device to the particular location. So to overcome this problem, we are designing a hardware which is more compact to carry anywhere. With the help of this project we can not only transfer the data but also we can see secure the data.*

*This station is connected to a PC over USB, and using our application-layer software on PC, allows the user to read and store data on the device. 20 fingerprints can be stored on the device, and each fingerprint has a separate logical volume that the corresponding user can utilize as their own private storage space.*

**Key Words: Fingerprint, Biometric sensor, Pen drive, Wi-Fi, Security.**

## 1. INTRODUCTION

Till date transmission of data is carried out using different protocols like- USB cables, pen drives etc. These are efficient wired data transfer techniques but data can also be transferred wirelessly. And this will help us to reduce the hardware requirement which will reduce the complexity too. Also, another major concern is data security and privacy.

Our main motive is to construct a fingerprint-authenticated wireless pen drive. Only authorized person can be able to access the data stored on the SD card. To use the SD card, a user simply authenticates by placing his/her thumb on the fingerprint sensor, which causes fingerprint enrollment and fingerprint matching. The desired data to be transmitted is selected from the SD card using a keypad and LCD which are interfaced with Arduino module. LCD is interfaced to display the data present in the device. The Keypad is interfaced for selecting the contents present on the SD card so that data can be transferred. Arduino provides an interface between the input devices and Wi-Fi module. On the receiver end the PC or laptop is connected to the Wi-Fi and thus data is received and displayed.

## 2. LITERATURE SURVEY

A Pen drive or SD card is used to store important data in an unencrypted binary format. This device is very popular due to its size, large storage capacity and relatively high data transfer speed. But, if the device is lost or stolen all the information can be easily accessible so biometric systems are used to identify, verify and gives authenticated access control to human by comparing their behavioral and physiological characteristics with the enrolled data [2].The Biometric Wireless Pen drive is almost same as that of normal USB Flash Devices but some additional features are added to support the Wireless data transmission and reception[4]. Wireless USB enables PC peripherals and point-to-point or multipoint-to-point applications with the ability to replace the USB wire with a low-cost, 2.4-GHz wireless solution [4].

## 3. TRANSMITTER BLOCK DIAGRAM
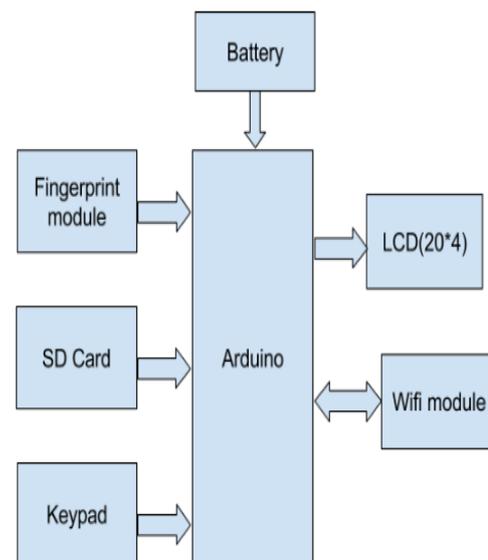


**Fig. 1:Transmitter block diagram**

## 3.1 Fingerprint Module

The surface of a human finger has a series of furrows and ridges and it has a core which is surrounded by unique patterns of swirls, loops, and arches which make the fingerprint of every human being unique. Using this characteristic of a human finger the fingerprint modules operate.
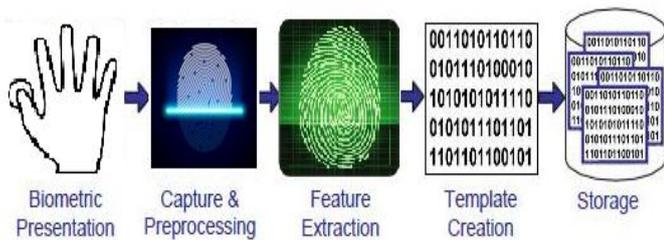


**Fig. 2:** Scanning Process

There are five stages involved in the scanning process are:
1-Biometric Presentation
2-Capture & Preprocessing
3-Feature Extraction
4-Template Creation
5-Storage

The fingerprint scanner takes a snapshot of the user's fingerprint. The captured fingerprint is preprocessed and a code is generated based on the features extracted from the finger which are different for every user. The code generated is stored in the Arduino. Every time the user accesses the SD card the fingerprint authentication is required and the access is granted only when the scanned fingerprint matches with the enrolled fingerprint code.

## 3.2 Wi-Fi Module

Data will be transferred from sd card to PC/Laptop via Wi-Fi module MSP8266.This module is based on the 802.11 b/g/n standard and operates at 2.4 GHz with WPA/WPA2 security. Standby power consumption of < 1.0mW (DTIM3) +20 dBm output power in 802.11b mode.

## 4. RECEIVER BLOCK DIAGRAM
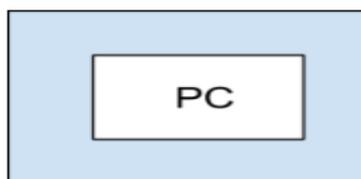


**Fig. 3:** Receiver block diagram

Inorder to receive the data on the PC/laptop Wi-Fi connectivity is the major requirement. Along with this

HTML coding is used to save and display the received data.This text is not only received but it can also be retrived back  into the SD card.There are no further hardware requirements or any changes required in the existing PC or laptop.

## 5. FLOW OF WORKING

Initially, a user places his/her thumb on the Fingerprint module which is used to verify the authenticated user. The module has an inbuilt ARM7 controller, which is further used to convert a fingerprint image into a corresponding code. This code will be compared with the previously enrolled user's code which is stored in Arduino. If both the codes match the user is given access to the SD card where the data to be transferred is stored. The file which is stored in the SD card will be displayed on the LCD, this enables the user to view the files and select the desired files using the keypad. Selected file can be sent through Wi-Fi module using the intranet. This sent file will be received on the PC/laptop as long as it is connected to the Wi-Fi

## 6. EXPERIMENTAL PART

In this section, we present our solution  in the form of a hardware device that meets the objective.
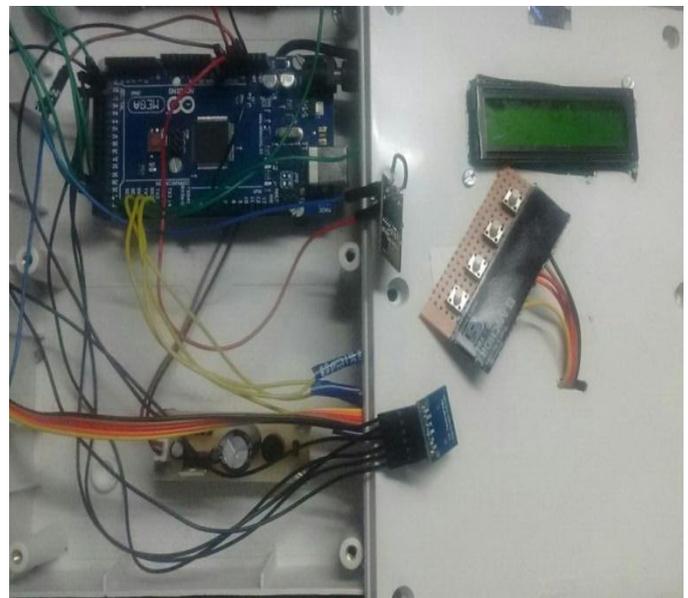


**Fig. 4:** Experimental Setup

## 7. FUTURE SCOPE

Along with the specified features the additional features that maybe added may include multiple user access, touchscreen in place of keypad, providing security to the Wi-Fi network.

### 7.1 Multiple User Access

We can increase the number of accessible users and provide them access to specific files. This will enable a user to access only his/her files stored in the pen drive even when multiple other files will be stored. This feature will further increase the level of security.

### 7.2 Use of Touchscreen

In this project we have used a keypad and LCD as a user interface. The keypad and LCD can be replaced by a touchscreen display which will serve the purpose of file selection and display.

### 7.1 Providing security to Wi-Fi.

Security can be provided to the Wi-Fi network by configuring it with WPA and WPA2 PSK.

## 8. SUMMARY

In this paper we have focused on creating a pen drive which is completely secure, reliable and is able to send data wirelessly via Wi-Fi. Adding few features like Biometric sensor, LCD display, keypad and controller will provide security, manage the contents of the pen drive and support the transmission respectively. The name Biometric Wireless Pen drive itself says the concept behind the proposal which describes how to send and receive data from a Pen drive to PC or laptop without using the USB ports of PC. The user can access the Pen drive by placing it at some distance from the PC or laptop.

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