



## Advance Safe Locker Security System using Dactylogram

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### ABSTRACT

In this paper focuses on affording a secured attestation and user-friendly mechanism to operate the closet. In spite of the availability of digital lockers hacking the lock code by an illegitimate person has become a plain-sailing task. Existing system electronic locks are available in the market based on password, RFID, wireless and IoT. Our proposed system, primary aim is towards to resolve the problems occurred in the safe locker security. We introduced more advanced and secure locker on multilevel attestation using Dactylogram, Passcode and OTP. (dactylogram used for human biometric more secure attestation then other attestation)

**Keywords:** *dactylogram, One Time Password (OTP), attestation, illegitimate, GSM technology.*

### 1. INTRODUCTION

In this paper is at the current age, security has become a crucial issue for most of the people using lockers and the people are concern about their security for their extravagant like money, jewels etc. and so we are implementing a new secured attestation using passcode, dactylogram, GSM technology (OTP). we use only single legitimate person to access the safe locker. In this paper we have invent safety system based on dactylogram and GSM technology. In this system legitimate person able to recover money from the closet.

### 2. RELATED WORK

Door knob hand recognition system, Xiao FengQu, student member, IEEE, David Zhang, Fellow, IEEE,

Guangming Lu, and Zhenhua Guo, 2017 in this paper fingerprint sensor used in knob of the door. Arduino Based Door Unlocking System with Real Time Control, Somjit Nath, Paramita Banerjee, Rathindranath Biswas, Swarup kumar mitra, mrinal kanti naskar, 2016 RFID tag and reader are used for accessing the door control. Robust Biometric Recognition from Palm Depth Images for Gloved Hands, P. Nguyen, Member, 2015 algorithm to recognition the fingerprint image.

### 3. PROPOSED WORK

In this paper focuses on affording a secured attestation and user-friendly mechanism to operate the closet. Our proposed system, primary aim is towards to resolve the problems occurred in the safe locker security. We introduced more advanced and secure locker on multilevel attestation using Dactylogram, Passcode and OTP. (dactylogram used for human biometric more secure attestation then other attestation)

The advantages of this proposed system hike the security for the closet. Because ordinary banks closet is not secured. The closet each have separate dactylogram module. If illegitimate person tries to check his finger print image, then an alert message will be send to the proprietor number. And we are using GSM modem to send the message on mobile of proprietor.

The following process involved in our proposed system:

- In the first stage of the system is entering the PIN number and verified by system, if its correct it initiate OTP sending process to registered mobile and give access to Continue next level of attestation.
- Biometric verification is the second stage of the system. (The dactylogram image is taken and checked with existing data stored in the system).
- The final stage of the system is verifying OTP (it checks the OTP send to the register number and its match).it initiate unlock process of the system safe locker.
- In unlocking of the closet green LED glow on the notification panel.
- To lock the closet, we just close the door and it automatically locked.

### BLOCK DIAGRAM

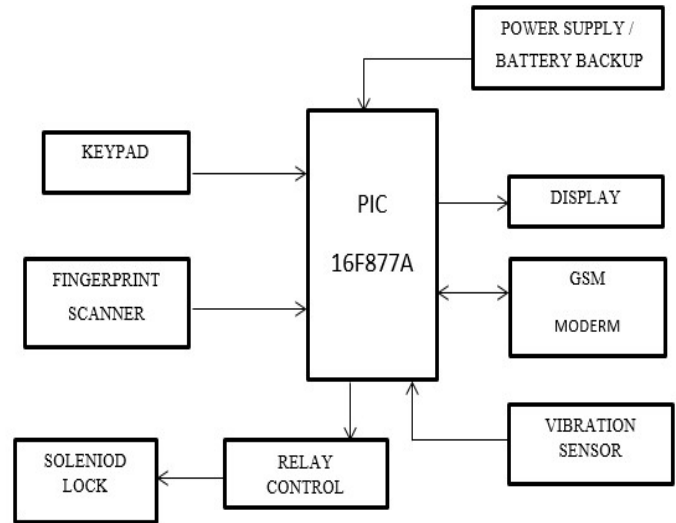


Fig-2: Block diagram of proposed system

### PIC 16F877A CONTROLLER

The 16F877A is a capable microcontroller that can do many tasks because it has a large enough programming memory (large in terms of sensor and control projects) 8k words and 368 Bytes of RAM. This is enough to do many different projects.

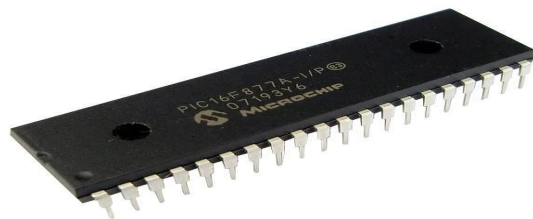


Fig-1.PIC 16F877A CONTROLLER

### SYSTEM HARDWARE

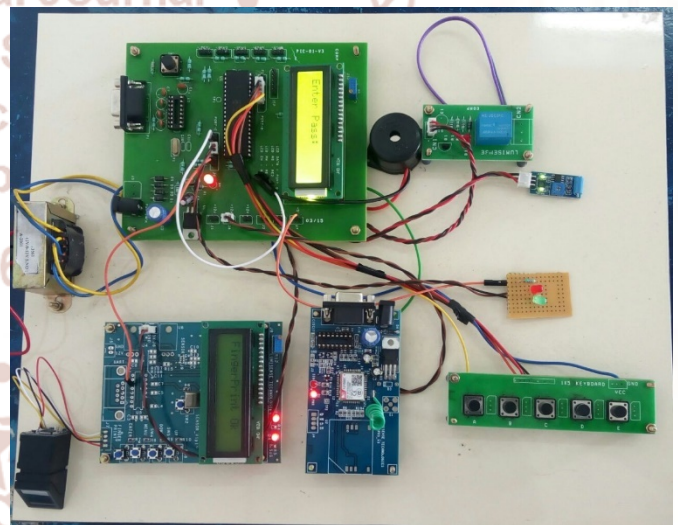


Fig-3: Proposed system

## ARCHITRUCTURE DIAGRAM

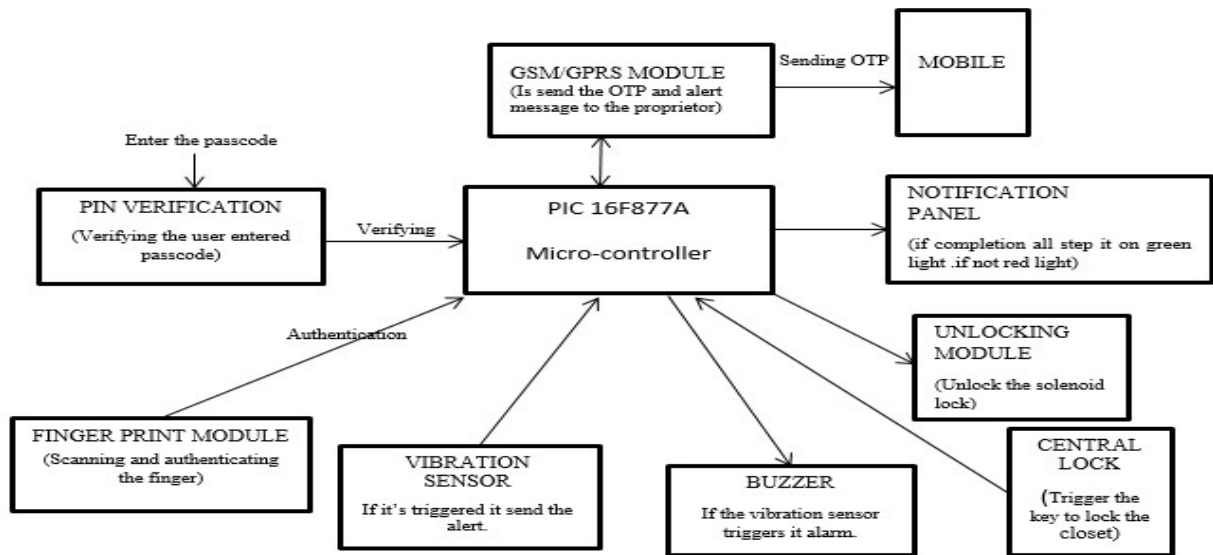


Fig-4: Working Architecture

### LIST OF MODULES

- PIN verification
- Fingerprint authentication
- OTP verification
- Breaking Alarm
- Unlock Process

### PIN verification

The PIN verification module, user enter the passcode in the locker. The system will verify the passcode and if passcode is valid then it generates OTP to send the registered mobile number. And it transfers the control to the second level of authentication process. If the passcode is invalid the access control is denied.it show that the passcode is "invalid PIN". If the enter invalid passcode twice it's send alert message to the registered mobile number.

### Fingerprint authentication

The fingerprint verification module user can place the finger in the biometric finger print reader. The fingerprint reader scans the fingerprint. If the fingerprint is match with existing fingerprint data stored in the system, it's transfers the control to next level of authentication process. if fingerprint doesn't match to the existing data it shows as "place again" if twice time you place a invalid finger it's cancel the unlocking process of safe locker. If you don't place the finger correctly its show as "capture error".

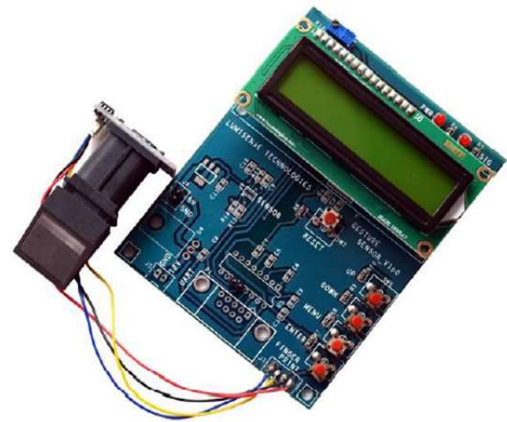


Fig-5: rs232 Interface Fingerprint Reader with Board

**Description-**SM-621 is RS232 /UART fingerprint module scanner for the demand of access control system, door lock; T&A and safety box OEM POS Consisting of high function DSP, large capacity FLASH and color CMOS, etc. SM621 optical fingerprint module can conduct fingerprint enrolment, image processing, templates storage, fingerprint matching and fingerprint searching. This Optical biometric fingerprint reader is with great features and can be embedded into a variety of end products, such as: access control, attendance, safety deposit box, car door locks.

### GSM/GPRS Module

The OTP verification is a final level of authentication to open a locker. system send a 4 digit passcode to the register mobile number (the passcode is valid for few minutes).if you enter valid passcode it allow to unlock

the locker door .If you enter invalid passcode it show as “invalid OTP”, if you enter invalid OTP passcode it's cancel the unlock process of the safe locker and send an alert message to registered mobile number.



**Description-**SIMCom Wireless Solutions is a subsidiary of SIM Technology Group Ltd (stock code: 2000. H.K). It is a fast-growing wireless M2M company, designing and offering a variety of wireless modules based on GSM/GPRS/EDGE, WCDMA/HSDPA and TD-SCDMA technical platforms by partnering with third parties, SIMCom Wireless provides customized design solutions in M2M, WLL, Mobile Computing, GPS and other applications. SIMCom Wireless also provides ODM services for customers. According to ABI Insight report, SIMCom Cellular Module was number two provider of wireless modules worldwide in 2008 with 20% acquisition of global market share.

### Breaking Alarm

The locker has extra security features, we use vibration sensor to detect the abnormal moment or breaking vibration of the locker. If anyone trying to break or theft the safe locker it's send an alert message to registered mobile number (you can store maximum 5 trusted mobile number) and nearest police station with the locker details and location of the locker.



**Fig-7: Vibration Sensor**

**Description-**Vibration sensor usually at any angle switch is ON state, by the vibration or movement, the rollers of the conduction current in the switch will produce a movement or vibration, causing the current through the disconnect or the rise of the resistance and trigger circuit. The characteristics of this switch is

usually general in the conduction state briefly disconnected resistant to vibration, so it's high sensitivity settings by IC, customers according to their sensitivity requirements for adjustments. Because it briefly the buzz film used in the conventional alarm device, the complex structure of the magnet plus the spring, and thus on the electric car alarm in recent years extensive application.

### Unlocking module

The unlocking process, if the entire authentication is valid it's unlock the door. After hearing the buzzer sound and seeing the GREEN LED notification you can able to open the door. If once you close the safe locker door it locked, and you can hear a buzzer sound and LED light is turn to RED color.



**Fig-8. Solenoid Lock**

**Description-**A solenoid bolt is a type of electronic-mechanical locking mechanism. This type of lock is characterized by the use of a solenoid to throw the bolt. Sophisticated solenoid bolt locks may use microprocessors to perform voltage regulation, reduce power consumption, and/or provide access control.

### CONCLUSION

The design and implementation of fingerprint-based lock system is customizable and flexible. Fingerprint based lock system has high accuracy rate and is also quick to recognize fingerprints which enable seamless integration with the users and provides tighter security. In our country private and government organizations are very much concerned about security. Many companies are interested in using this type of locking mechanism but the system which is available have very high installation cost. One of the main advantages of this system is its flexibility. Several other systems can be implemented with this system. The system is very secure. Fingerprints are unique, and the sensor can identify most of the prints during testing. It provides greater control for access to restrict. In feature we can add the IRIS Authentication method in safe locker security system.

## REFERENCE

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