



# Psychological Locker Guard System Based on Open CV and User Authentication Using Android

A. Irudayapaulraj Vinod, B. Ankayarkanni

M.E Student, Dept. of CSE, Sathyabama University, Chennai, India

Asst. Professor, School of Computing, Sathyabama University, Chennai, India

**ABSTRACT:** Security and Authentication of people is important, especially in Bank lockers. But the security provided by bank systems has some backfalls. It has been enhanced by using techniques like pattern recognition comparing their existing traits and there is still a need for considerable computer vision. In this system a new approach is proposed for banking system. At first pattern flow are collected as data sets and maintained in bank agent server. The machine is attached with a camera to catch the example stream of client and sent for handling features of the user is recognized by comparison. Along with the authentication of user there is another system to identify the user before that RFID tag checking. Password entry through mobile phone is needed for next level of security. This can be done by using Bluetooth and also authentication is checked by verification through IMEI number. Finally when all levels of security is finished, the locker is opened for the user and the information is passed to the bank manager. Temperature and vibration sensors are used to find thief entry inside the bank. This project shows that all the bank accounts can be accessed using cards through this pattern recognition effectively and safely.

**KEYWORDS:** Security, Authentication, OpenCV, Wireless communication, RFID tags.

## I. INTRODUCTION

Banking is one among the sectors wherever technology and its advancements haven't been used to the fullest in any security or access systems or even in material handling in banks. For example in the protection systems even these days terribly previous practices area unit followed that may be created heap higher victimization technologies like open CV that is straightforward to use and implement at a shopper level. In present, safety has become a vital issue for many of the folks particularly all told areas. Some folks would possibly try and cheat or steal the property which can endanger the protection of cash in bank, house, and work place. To beat this security threat, most of the folks can install heaps of locks or alarm system. There area unit several alarm systems accessible within the market that utilizes completely different sorts of sensors. The device may sight completely different sorts of changes occurring within the encompassing and therefore the changes are processed to offer out a alert according to the pre-defined price. At constant time this technique might not be the most effective for all purpose. In this paper we tend to have enforced safety of the cash within the bank locker, house, and work place (treasury) by victimisation RFID and GSM technologies that will be safer than alternative systems.

Radio-frequency identification (RFID) based access-control system permits solely licensed persons to open the bank locker victimization GSM technology. AN RFID system contains AN antenna or coil, a transceiver (with decoder) and a electrical device (RF tag) electronically programmed with distinctive info. There territory unit contrasting sorts of RFID frameworks inside the business sector. These area unit categorized supported their frequency ranges and a few of the foremost normally used RFID kits area unit low-frequency (30-500 kHz), mid-frequency (900 kHz-1500MHz) and high-recurrence (2.4-2.5GHz). The latent tags area unit lightweight and less costly than the active tags. International framework for versatile correspondence (GSM) might be an internationally customary for digital cell correspondence. GSM is a typical European cell telephone customary for a mobile cellular radio system in operation at 900 rate In this work, SIM300 GSM module is employed AND it's a Tri-band GSM/GPRS answer in an exceedingly compact plug in module that includes an

# International Journal of Innovative Research in Computer and Communication Engineering

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industry-standard interface. It delivers voice, information and fax in an exceedingly little type issue with low power consumption. during this paper we've designed and enforced a bank locker security system primarily based on RFID and GSM technology that enable solely authentic person to recover cash from bank locker with 2 word protection technique. In current bank lockers we tend to use our locker key and Biometric accessing system is not concerned .In the previous implementation RFID Card technologies area unit used for authentication and word pin verification conjointly used however these all might provide a likelihood for theft. Higher level of authentication is required therefore CCTV camera systems area unit used however this kind of system won't offer instant alert to the particulars.

## II. PROPOSED SYSTEM

Nowadays we tend to are victimization locker key for banking although secured there are some disadvantages am passionate about it may enable wrong person access the account. thus in our project we tend to ar implementing vibration device, temperature device on the door facet for security purpose and on machine facet 3 levels of authentication is required .

First RFID tag is provided for authentication of user id, next camera is put in to capture the pattern word of user and with the assistance of image process victimization OPEN CV is shown in Fig[1]. It acknowledges the user pattern in order to offer authentication for banking by word entry through mobile instead of traditional computer keyboard entry. For causation word from mobile to locker Bluetooth is employed .in the meantime validity of IMEI variety of mobile is additionally checked. when finishing all the amount of authentication check the locker is opened for the user. data concerning of these strategies are sent to the bank superior through GSM. this technique are a best industry because it is secured and of less price. Timer is on for accessing the bank locker it's barred mechanically whereas the client surpasses the time and in addition message warning additionally intimated to the manager.

### OPEN CV

Open CV supports a good vary of programming languages like C++,python and such others. Open CV python may be a library of python bindings designed to resolve pc vision issues wherever Python may be a general purpose programing language started by Guido van Rossum that became highly regarded because it is incredibly fast and additional specifically attributable to its straightforwardness and code readability. It grants the software engineer to specific concepts in fewer lines of code while not reducing readability. Compared to languages like C/C++, Python is slower. That said, Python is simply extended with C/C++, which allows United States of America to jot down computationally intensive code in C/C++ and build python wrappers which will be used as python

Modules

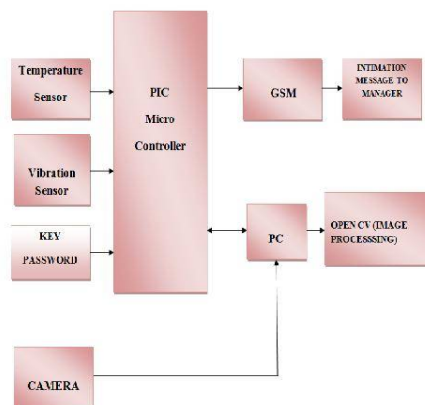


Fig.1 Block Diagram of experimental arrangement

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## III. SOFTWARE PROGRAM TESTING

The code program is written in EMBEDDED 'C' language and compiled by high-tech C compiler mistreatment MPLAB IDE code. This compiler is used to convert middle level language into machine level language. once compiler operation the hex codes are generated and hold on within the computer wherever the hex codes are codes that's understood by the small controller. The hex code of the program is burnt into the read-only storage (Flash memory) of PIC16F877A by mistreatment PICKIT2 software engineer. Unique data.associate in nursing RFID reader could be a device that's accustomed interrogates associate in Nursing RFID tag is shown in Fig[2]. The reader has Associate in nursing antenna that emits radio waves that the tag responds by causation back its knowledge.

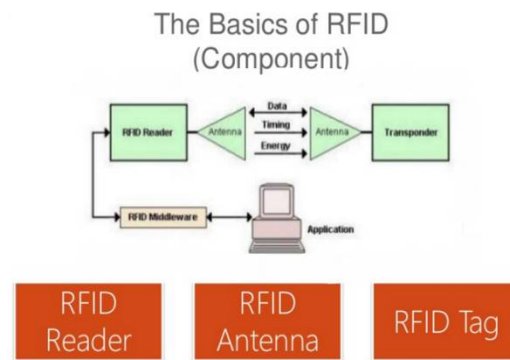


Fig.2 Basic Of RFID

## IV. PIC16F877A

PIC16F877A is High performance RISC electronic equipment machine that has solely have thirty five easy word directions. Some very important options of PIC16F877A in operation speed: clock input (200MHz), instruction cycle (200nS)Up to 368×8bit of RAM (information memory), 256×8 of EEPROM (information memory), 8k×14 of non-volatile storage. Wide in operation voltage vary (2.0 – 5.56) volts,28 bit timer and one sixteen bit timer is on the market,10bit multi-channel A/D convertor, Synchronous Serial Port (SSP) with SPI (expert code) and I2C (expert/slave). a hundred thousand times erase/write cycle increased memory.1000000 times erase/write cycle knowledge EEPROM memory.

## V. RFID

"RFID" means Radio Frequency Identification. The RFID tag's Associate in Nursing antenna picks up signals from an RFID reader or scanner so returns the signal with some extra knowledge sort of a distinctive serial range or alternative customized range info. RFID system consists of 3 parts particularly Associate in Nursing antenna or coil, a transceiver (with decoder) and a electrical device (RF tag) electronically programmed with some.

The GSM electronic equipment could be a specialized electronic equipment that accepts a SIM card in operation on a subscriber's mobile range over a network, simply like a cellular phone. Modem sim900 is a tri- band GSM/GPRS engine that works on EGSM900MHz, DCS1800MHz what's more, PCS1900MHz frequencies. GSM electronic gear is RS232-logic level compatible. within the pin configuration the signal at pin eleven of the microcontroller is sent to the GSM electronic equipment through pin eleven of goop 232.This signal is received at pin2 (RX) of the GSM electronic equipment. Then the GSM electronic equipment transmits the signals from pin-3 (TX) to the microcontroller through MAX 232, that is received at pin ten of IC1.

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## VI. BLUETOOTH DEVICE

Fig.[3] is shown the Bluetooth could be a frequency hopping wireless communication technology. As shown below in the scrolling spectrograph show, the Bluetooth device (the red/yellow energy squares) hops across the total two.4 GHz Wi-Fi frequency band. This is easily seen in the scrolling spectrograph show, however harder to see in spectrum analyzer displays as its shows solely frequency and amplitude info with restricted time- domain info.

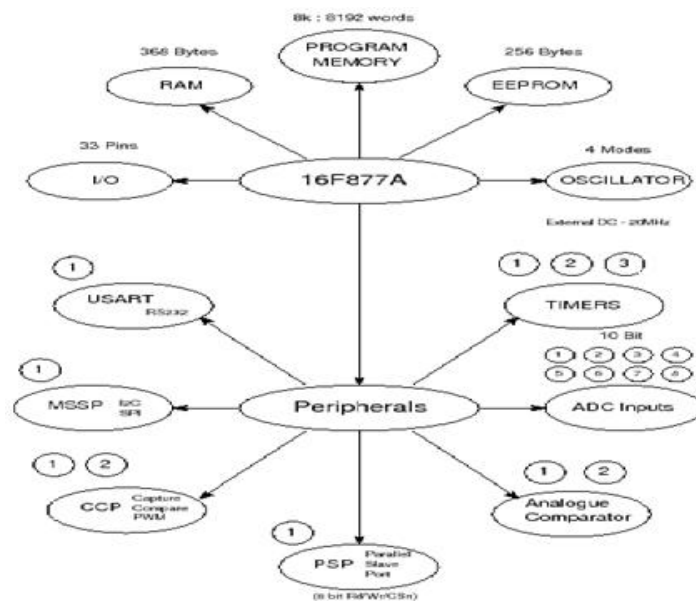


Fig.3BLUETOOTH DEVICE

## VII. TEMPERATURE SENSOR

The LM35 arrangement range unit exactitude incorporated circuit temperature sensors, whose output voltage is linearly proportional to the stargazer (Centigrade) temperature. . The LM35 is rated to control over a  $-55^{\circ}$  to  $+150^{\circ}$ C temperatures vary. With this feature of LM35 ,we can produce a digital measuring device simply by victimization LM35 temperature device and interfacing it with any microcontrollers.

## VII. VIBRATION SENSOR

A electrical phenomenon vibration device or associate measuring device is created from a condenser one plate of that may be a proof mass, with the opposite plate fastened to a substrate. Vibration sensors area unit} used in a varied applications to quantify increasing speed and/or vibration movement. Vibration sensors area unit helpful for observation the condition of rotating machinery, wherever warming or excessive vibration may indicate excessive loading, inadequate lubrication, or bearing wear.

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## VIII. RESULTS

The following figures indicate results of proposed system.



Fig.4 User installing Bank Application

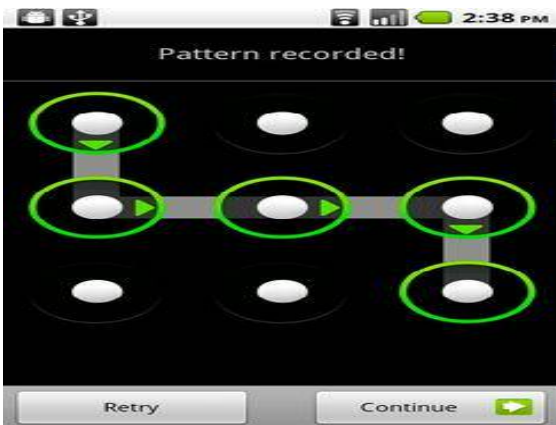


Fig.5 Initialentry of Userlocker pattern in Bank Application



Fig.6 RFID card for next level locker access



Fig.7OTP Generation

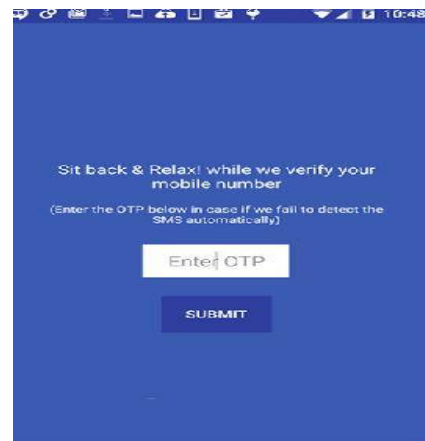


Fig.8Entry of OTP in Bank Application

Properties	Passive chip	Active chip
Characteristics	No battery	Battery integrated into the chip with an active transmitter and receiver. Generally equipped with sensors
Cost	Minimum 5/10 Euro cents	A few Euros
Stakes and crucial factors	<ul style="list-style-type: none"> <li>Reduced size of chips</li> <li>Very low cost</li> <li>Low reading distance</li> <li>Frequency</li> <li>High reading rate*</li> <li>Non-hostile environment (metallic /non liquid)</li> </ul>	<ul style="list-style-type: none"> <li>Limited energy consumption to increase chip lifespan</li> <li>Medium to long reading distance</li> <li>High security</li> <li>Effective interface with captors</li> </ul>

Table1: RFID Benefits





# International Journal of Innovative Research in Computer and Communication Engineering

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Vol. 4, Issue 10, October 2016

## IX. CONCLUSION AND FUTURE WORK

we have reviewed the recently planned wherever we have a tendency to are victimization locker key for banking .Though they are Secured there are a few pitfalls in them .It might give wrong person access the account. thus in our project we have a tendency to are implementing sensors vibration, temperature sensing element on the door facet for security purpose and on machine facet 3 level of authentication is required .First one is RFID tags for authentication of user id ,next is camera that is put in to capture the pattern secret of user .With the assistance of image process victimization OPEN CV we will acknowledge the user pattern and evidence them through computer keyboard secret sent to their mobiles that's parallely verified with the registered IMEI numbers of account users .This is another level authentication. for users access to bank lockers .In case of felony or stealing or the user exceeds the time a message notification is intimated to the manager and also the locker door gets fastened mechanically. This security system is secure and fewer price as easy hardware's are accustomed give made security for accessing the bank locker.

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