RASPBERRY PI BASED SECURITY SYSTEM

[1]Mrs.Vergin Sheeba E,[2]Velthangam S, [3]Shanthi M,[4]Raglin T

[1] Assistant Professor, [2-4]UG Student, Dept. of ECE,

Kings Engineering College, Chennai.

ABSTRACT: *Nowadays the security system in Locker is easily accessed by unauthorized person. So we proposed the real time low cost system. The system checks the input image(face and fingerprint) with reference images(already stored).If the person is authorized, at that conditions the system will open the locker. If the person is unauthorized, the system will do shuts the door of locker room, sprays the chloroform, activates the alarm circuit, send the details of unauthorized person through WIFI. In this project, we design a system that can help us to keep our things and documents, safe and secure. Our locker can activate, authorize, and validate the users and unlock the door in real time for locker secure access. This system can be helpful to us in banks to maintain locker system which can help bankers to maintain their confidentiality.*

Keywords: Raspberry pi, Finger print, LCD, LDR, Wifi, Webcam

I.   INTRODUCTION

In this project, we design a system that can help us to keep our things and documents, safe and secure used in bank locker rooms. It has become an important part of our life .To

survive in this competitive world and for a continuous growth, the banking industry needs to provide a high degree of security. video surveillance in moving areas has become a current topic of interest in computer vision technology. In these system contains the cameras, alarm systems, LDR, fingerprint module, raspberry pi etc. The camera is used to monitor the unauthorized activity and records the unauthorized person details sends to the authorized person via WIFI. The night time unauthorized person occurs at that condition needs for a alarm emergency button. LDR is used to detect weather the locker is open or close. Fingerprint module is used for identification and authentication. Raspberry pi based security system fulfils all these requirements. A prototype of this security system has been designed in the dissertation to increase the level of security in bank locker rooms effectively. The face detection will be done through camera itself and the hardware associated with it will provide three different ways to inform the security officials i.e. using alarm system, the image which can be automatically uploaded on webpage which can be downloaded from anywhere for video output via WIFI will be utilized .So the important objectives of bank security system are tracking the bank locker room areas, detection of motion and taking the necessary

282

control action. The further sections will describe that how these objectives that how these objectives have been achieved.

II. EXISTING SYSTEM

In an existing system, RF ID scanner is used for identification and authentication. After few days fingerprint module is used for identification and authentication. The existing system use biometric authentication using fingerprint module. Detects authentication and validates it for registered owner. The person is not authenticated at that moment alarms using buzzer. Displays the details about authentication on LCD. Even if unauthenticated person access locker, the system does nothing just plays buzzer. No confirmation that locker has been opened or not. No record about the eventhappened.

III. PROPOSED SYSTEM

The proposed system provides authentication and validates when fingerprint input is given to the system the person is authenticated user at that moment the locker door is opens. LDR is fixed inside locker is used to detect the locker door weather it is open or close. If LDR is detected when unauthenticated user tries to open the locker ,the camera fixed inside the locker gets activated and sends the image captured at the moment and considered as theft. The unauthenticated user tries to open the locker at that moment automatically spray's chloroforms using chloroform spray. simultaneously the shutter closes after detecting theft activity. The system can be used to record the theft event and sent the unauthorized person details(video) to the authorized person. In these system ,theft can be conformed using LDR andwebcam. [4] discussed about Positioning Of a Vehicle in a Combined Indoor-Outdoor Scenario, The development in technology has given us all sophistications but equal amounts of threats too. This has brought us an urge to bring a complete security system that monitors an object continuously. Consider a situation where a cargo vehicle carrying valuable material is moving in an area using GPS (an outdoor sensor) we can monitor it but the actual problem arises when its movement involves both indoor (within the industry) and outdoor because GPS has its limitations in indoor environment.

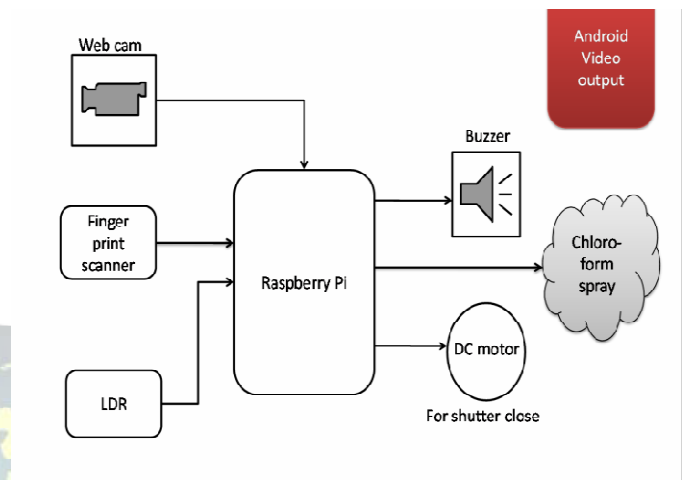## IV. SYSTEM ARCHITECTURE

Fig1.Block diagram Fingerprint

scanning:

Fig 2.Fingerprint scanning

Fingerprint is one of several forms of biometrics, used to recognize person and verify their identity. The analysis of fingerprints for identical purposes generally requires the similarity of several features of the print pattern. Fingerprint sensor module with TTL UART interface. The user can store the finger print data in the module and can configure it in 1:1 or 1:N mode for identifying the someone. The fingerprint module can directly interface with Raspberry pi. Fingerprint scanner is used check the predefined image to produce the output is matched ormismatched.

283

Raspberry pi:

The Raspberry pi is a fully featured micro- computer squashed onto a circuit

Fig 3.Raspberry pi

Board measuring approximately 9cm*5.5cm.The Raspberry pi hardware contain the 10/100 Base T Ethernet socket, HDMI Socket, USB 2.0 Socket, RCA video Socket, SdCard Socket, powered from micro USB Socket,3.5mm Audio out Jack, Header Footprint for cameraconnection.
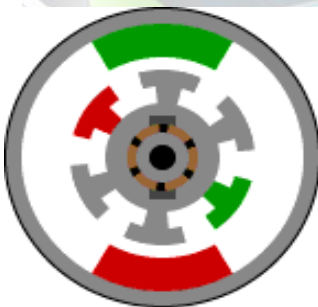
Dc motor:

Fig 4.Dc motor

Dc motor L293D motor drive is used as a dual H-bridge motor driver integrated circuit. In its common mode of operation, two DC motors can be driven simultaneously, both in forward and reverse direction. Input logic 00 or 11 will stop the corresponding motor. Logic 01 and 10 will rotate it in clockwise and anticlockwise direction,respectively.

Buzzer:

Fig 5.Buzzer

A Buzzer or Beeper is an signaling device which may be mechanical, electromechanical, or piezoelectric. Buzzer include alarm devices, timers and confirmation of user input such as a mouse click or keystroke. The buzzer volume is 95dB @ 10cm,the current is 20mA.piezo buzzers exhibit the reverse piezoelectric effect.
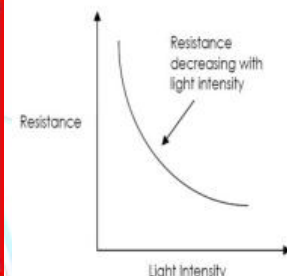
LDR:

Fig 6. LDR

A Light Dependent Resistor (LDR) is special type of resistor that reacts to changes in light level. The resistance of the LDR changes as different amounts of light fall on the top 'window' of the device. This allows electronic circuits to measure changes in light level.

Webcam:

Webcam is used for face detection using haar cascades algorithm. Initially, the algorithm needs a lot positive images(images for faces) and negative images(images without faces) to

284

train classifier. Then we need to extract features from it. They are just like our convolution kernel. Each features is a single value obtained by subtracting sum of pixels under white rectangle from sum pixels under black rectangle. Now all possible sizes and locations of each kernel is used to calculate plenty of features. For each features calculation ,we need to find sum of pixels under white and black rectangles.

V. Result
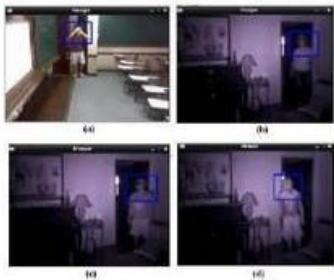
In these project human face was detected and video output was successfully received by the authorized person.

VI. CONCLUSION

In this paper we have implemented smart locker using Raspberry pi and the programming language using python. Fingerprint of the registered user is saved initially in the database and if the user need to access the locker the fingerprint in the database must match with the saved ones. In case the fingerprint does not match then the image is captured immediately and saved in the SD card also a chloroform spray is sprayed. Also a buzzer is setup to notify theft. Also a buzzer is

setup to notify theft. This smart locker can be implemented in all the sectors of industry where security ismust.

REFERENCES

[1]GyanendraKVermapawanTripathi."A Digital Security System Using RFID Technology" International Journal of Computer Application (IJCA)(0975 8887),Volume5- NO.11.August 2010.

[2]Kenneth J.Ayala, The 8051 Microcontroller,2004 edition.

[3]Kamnik, R,S. Stegel ,and M. Munih. Design and Calibration of Three AxialIntertial Motion Sensor in Power Electronics and Motion Control Conference,2006.EPE-PEMC 2006.12[th] International. 2006.http://invensense.com/mems/gyro/documents/RM-MPU-6000A.pdf

[4] Christo Ananth, S.Silvia Rachel, E.Edinda Christy, K.Mala, "Probabilistic Framework for the Positioning Of a Vehicle in a Combined Indoor-Outdoor Scenario", International Journal of Advanced Research in Management, Architecture, Technology and Engineering (IJARMATE), Volume 2, Special Issue 13, March 2016, pp: 46-59

[5]Motion Based Security Alarming System for Video Surveillance.

[6]Raj Kamal, Embedded Systems: Architecture, Programming And Design,2008 edition, published by McGraw Hill Education Private Limited.

[7]Yamada, K. and M. Soga, A compact integrated visual motion sensor for ITS application. Intelligent Transportation Systems, IEEE Transaction on,2003.