IJIRCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 10, Issue 4, April 2022

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 8.165

International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.165 |

|| Volume 10, Issue 4, April 2022 ||

| DOI: 10.15680/IJIRCCE.2022.1004035 |

AI Based Automatic Door Lock Access Control System

Prof M.K. Gawali, Mansingh Sunil Jadhav, Manisha Raosaheb Sonawane, Nilam Vilas Zagade

Omkar Kishor Hendre.

Department of Information Technology, Jayawantrao Sawant College of Engineering, Pune, India

ABSTRACT: Face recognition is one of the most widely used technologies in today's world. The continuous development of the technology along with its integration with the Internet of Things (IoT) can prove to be helpful in maintaining security of our homes and businesses. As the name suggests, this technology detects faces and verifies the same with the help of images; wherein the Internet OfThings (IOT) will play a crucial role in maintaining precision and providing accurate results.Along with the above technologies, algorithm like the Local Binary Patterns Histogram (LBPH) method for "face recognition" will help in ensuring security of homes. Raspberry Pi camera will be used for capturing images and movements. This system does will deny entry to unauthorized i.e. unknown people into the home or building.For ensuring extra security , the system will have a GSM module which will send unique password (OTP) to user's mobile number ,which will allow the person to enter the house . But,the system will automatically grant access to the user or owner of the house.A vibration sensory module will also be used for protection of the device and security of the house by informing the owner and also by ringing an alarm.To ensure that the entire process runs smoothly, an Android application will be provided to the user for notifying the owner about the daily activity of entry of known as well as unknown people .The prototype design for real world implementation will prove to be an ideal example of usage of Face recognition and IOT together which will not only ensure security but also help in reducing criminal cases involving burglary and house breaks.

KEYWORDS*:* Door Lock, IoT, Face Recognition, etc

I. INTRODUCTION

The human face assumes an essential part in our social association, passing on individuals' character. Utilizing the human face as a key to security, biometric confront acknowledgment innovation has gotten tremendous consideration in the previous quite a while because of its potential for a wide assortment of utilizations. A facial acknowledgment framework is a framework which gets facial pictures and confirms the character of a man using a propelled camera . It is an application fit for distinguishing or checking a man from a computerized picture. One approach to do this is by looking at chose facial components from the picture and a face database. As stood out from other diverse biometrics frameworks utilizing unique mark/palm print and iris, confront acknowledgment has unmistakable favourable circumstances due to its non-contact handle. Face pictures can be caught from a separation without touching the individual being recognized, and the ID does not require participating with the individual. It is normally utilized as a part of security frameworks and can be contrasted with different biometrics. It has additionally turned out to be main stream as a commercial recognizable proof and advertising instrument**.** In the present age Internet of things (IOT) has entered a golden era of rapid growth. The Internet of things is a concept that aims to extend the benefits of the regular Internet constant connectivity, remote control ability, data sharing, and so on to goods in the physical world. Everyday things are getting connected with the internet. This concept can be used to manage the security concerned issues in a cost effective way. In this project work a system is being developed to connect any door with the internet, so that the access control system can be controlled from any where in the world.In these modern times, home security is the need of the hour for the development of society as a whole which in turn will help make our cities smart, so the concept of facial recognition to gain access of the house is an idea which is used to make our place of living more secure. A facial recognition system is a system which captures facial images and verifies the identity of a person using a digital camera.

II. LITERATURE SURVEY

1 . Meera Mathew ; R S Divya isworkedon **"smart door lock system"** A secure door locking system with two-factor authentication and multiple encryptions using RFID, which can activate, authenticate, and validate the user and unlock

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.165 |

|| Volume 10, Issue 4, April 2022 ||

| DOI: 10.15680/IJIRCCE.2022.1004035 |

the door in real time for secure access has been proposed. The main objective is to design and implement a digital security system which can deploy in critical zone where only authorized person can be entered.

2. Muhammad Sabirin Hadis ; Elyas Palantei ; Amil Ahmad Ilham ; Akbar Hendra is worked on **"Design of smart lock system for doors with special features using bluetooth technology"**The paper presents a design of lock system for operating door without a control to open or lock it that brings a comfort and can be applied effectively. Besides, the lock system can be used for all kinds of human's physical condition. The system uses bluetooth technology with low power and is available on almost all gadgets. The design of the system is also completed with special feature to increase the security and the comfort of the users. The lock system indirectly supports the program of United Convention of Right People with Disabilities.

3.Faiz Aman ; C Anitha is worked on "IOT Based Door Access Control Using Face Recognition"The aim of this paper is to assist users for improvement of the door security of sensitive locations by using face detection and recognition. The proposed system mainly consists of subsystems namely image capture, face detection and recognition, email notification and automatic door access management. Face Recognition supported OpenCV is brought up because it uses Eigen faces and reduces the scale of face images without losing vital features, facial images for many persons can be stored in the database.

4.Amritha Nag ; J N Nikhilendra ; Mrutyunjay Kalmath is worked on" IOT Based Door Access Control Using Face Recognition"The aim of this paper is to assist users for improvement of the door security of sensitive locations by using face detection and recognition. The proposed system mainly consists of subsystems namely image capture, face detection and recognition, email notification and automatic door access management. Face Recognition supported open CV is brought up because it uses Eigen faces and reduces the scale of face images without losing vital features, facial images for many persons can be stored in the database.

5."Blockchain based smart door lock system "Donhee Han ; Hongjin Kim ; Juwook JangPublished in: International Conference on Information and Communication Technology Convergence (ICTC)DOI: 10.1109/ICTC.2017.8190886To improve these security issues, we propose a Smart Door Lock system based on blockchain. Also, this provides data integrity and non-repudiation. Lastly, author proposed an algorithm that the Smart Door Lock system judge some situations around itself and operates based on data sent from sensors.

6. "Super secure door lock system for critical zones" Meera Mathew ; R S Divyapublishedin**:** International Conference on Networks & Advances in Computational Technologies (NetACT)DOI**:** 10.1109/NETACT.2017.8076773 author design secure door locking system with two-factor authentication and multiple encryptions using RFID, which can activate, authenticate, and validate the user and unlock the door in real time for secure access has been proposed. The main objective is to design and implement a digital security system which can deploy in critical zone where only authorized person can be entered.

7.Motion sensing and image capturing based smart door system "on android platform Faiz Aman ; C Anitha Published in: 2017 International Conference on Energy, Communication, Data Analytics and Soft Computing (ICECDS) The proposed model can eliminate the concept of lock system as here the security is provided to the door itself. This would result in a safe and secure door with no locks! Controlling the movement of the door is enabled by Raspberry pi and its related embedded software. Also merging IOT with android is has many advantages in terms of security. The motion sensors are used to detect any movement in front of the door. If any person comes in front of the door, a motion is triggered; the image is captured and notified to the owner. Thus in overall proposed system, two technologies are concentrated on, one is motion sensing in the front of the door in real time.

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.165 |

|| Volume 10, Issue 4, April 2022 ||

| DOI: 10.15680/IJIRCCE.2022.1004035 |

III. PROPOSED SYSTEM

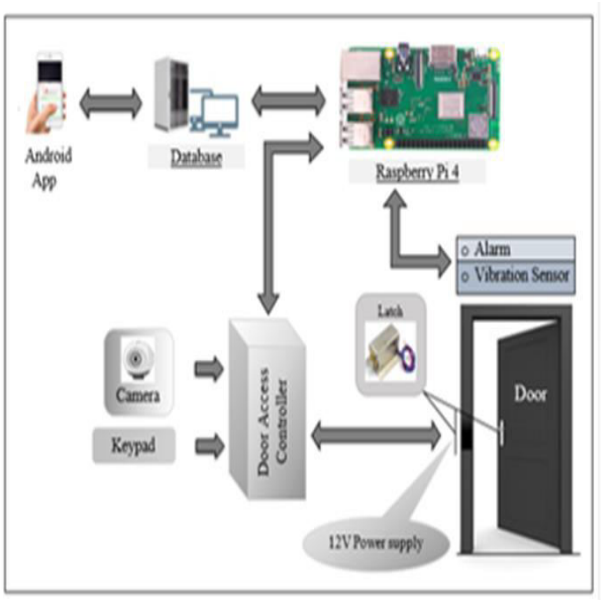

Fig. Door Access Control System

Face recognition is basically the task of recognizing a person based on its facial image. Facial recognition is a way of identifying or confirming an individual's identity using their face. Facial recognition systems can be used to identify people in photos, videos, or in real-time. Eigenfaces , Local Binary Patterns Histograms, Fisherfaces and Scale Invariant Feature Transform (SIFT)

Advantages:

1. Improved Public Security
2. Face Recognition Furthers Enables Computer Vision
3. Touchless access to doors
4.No need to remember to grab a key card

Algorithm: LBPH

It was first described in 1994 (LBP) and has since been found to be a powerful feature for texture classification. It has further been determined that when LBP is combined with histograms of oriented gradients (HOG) descriptor, it improves the detection performance considerably on some datasets.
Using the LBP combined with histograms we can represent the face images with a simple data vector.As LBP is a visual descriptor it can also be used for face recognition tasks, as can be seen in the following step-by-step explanation.
Parameter
Training the Algorithm
Applying the LBP Operation
Extracting The histogram.
Performing The face Recognition

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.165 |

|| Volume 10, Issue 4, April 2022 ||

| DOI: 10.15680/IJIRCCE.2022.1004035 |

IV. RESULTS

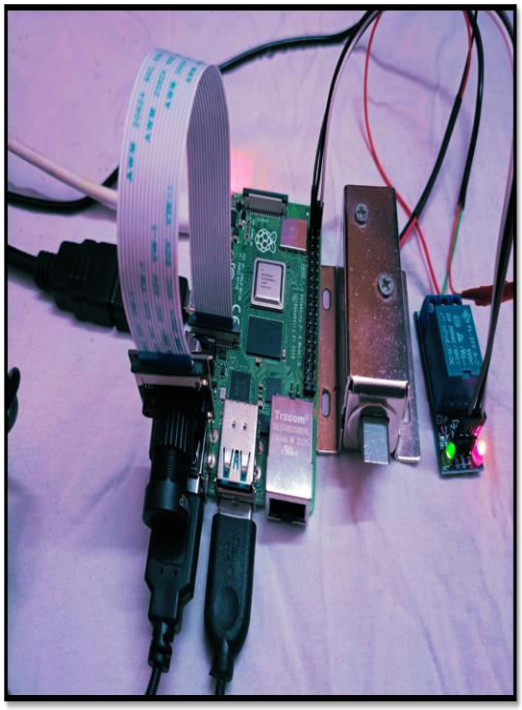

Fig: Hardware Implementation

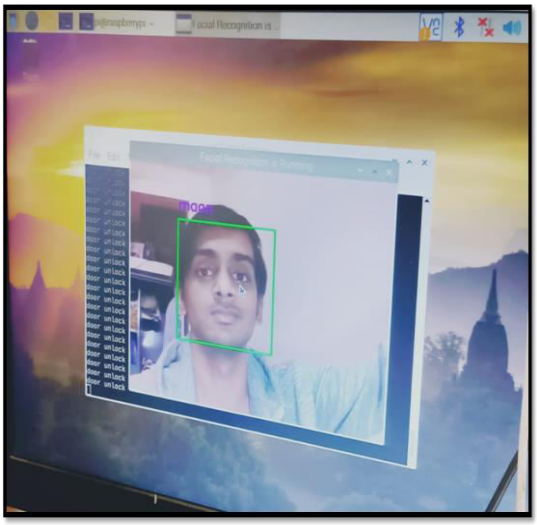

Fig: Face Recognition

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.165 |

|| Volume 10, Issue 4, April 2022 ||

| DOI: 10.15680/IJIRCCE.2022.1004035 |

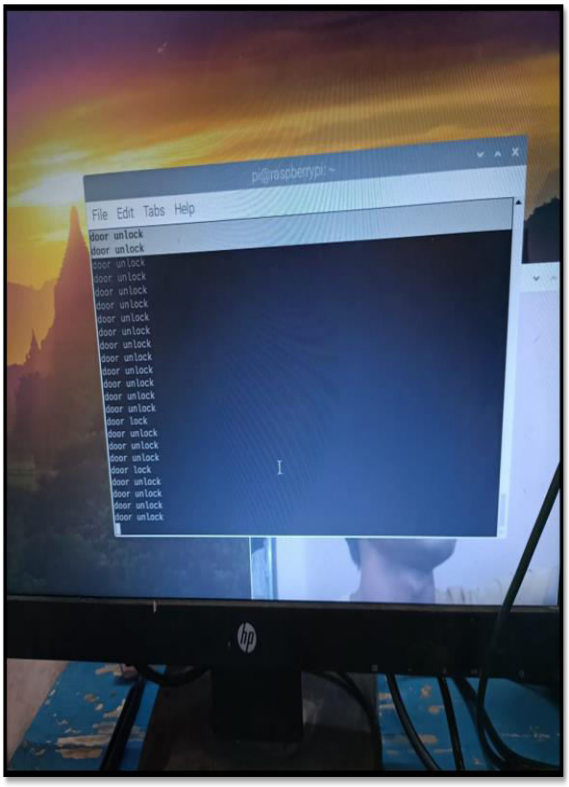

Fig: Output

V. CONCLUSION

Thus we have implemented the home security system using iot .Raspberry Pi will be used as a controller. This system will enhance the security level upto 100 percent.This system will helpful to reduce the crime rate and hence will make the public life peaceful. The communication interface that we have used in WLAN.

REFERENCES

[1] D. Surie, O. Laguionie, T. Pederson, “Wireless sensor networking of everyday objects in a smart home environment”, Proceedings of the International Conference on Intelligent Sensors, Sensor Networks and Information Processing - ISSNIP - 2008, pp. 189 – 194.

[2] Sirsath N. S, Dhole P. S, Mohire N. P, Naik S. C & Ratnaparkhi N.SvDepartment of Computer Engineering, 44, Vidyanagari, Parvati, Pune-411009,vIndia University of Pune, “Home Automation using Cloud Network and MobilevDevices” , ITSI Transactions on Electrical and Electronics Engineering (ITSITEEE) ISSN (PRINT) :2320 – 8945, Volume -1, Issue-2, 2013 pg 93-97

[3] M. H. Assaf, R. Mootoo, S. R. Das, E. M. Petriu, V. Groza and S. Biswas,v"Sensor based home automation and security system," Instrumentation and Measurement Technology Conference (I2MTC), 2012 IEEE International, Graz, 2012, pp. 722-727.doi: 10.1109/I2MTC.2012.6229153

[4] “ Microcontroller based Home Security System with Remote Monitoring”, Nikhil Agarwal, Department of EC Engineering MIT, Manipal, Special Issue of International Journal of Computer Applications (0975 –8887) International Conference on Electronic Design and Signal Processing (ICEDSP) 2012

INNO SPACE
SJIF Scientific Journal Impact Factor

Impact Factor: 8.165

doi cross ref

ISSN INTERNATIONAL STANDARD SERIAL NUMBER INDIA

निस्केयर NISCAIR

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

9940 572 462 6381 907 438 ijircce@gmail.com

www.ijircce.com

Scan to save the contact details