IMPLEMENTING ROBUST SECURITY SYSTEM WITH SMTP PROTOCOL BASED MACHINE LEARNING ALGORITHM

Mr. J. Subhash[1], S. Mugilan[2], T. Mugilan[3], R. M. P. Mukhilan[4], V. Prem Kumar[5]

[1]Assistant Professor, [2,3,4,5]UG Scholars, Department of Electronics and Communication Engineering, Adhiyamaan College of Engineering, Krishnagiri district, Tamilnadu, India

subhash.ece@adhiyamaan.in[1], mugilansdpi@gmail.com[2], mugiltamil07@gmail.com[3], rmpmugil@gmail.com[4], premjack004@gmail.com[5]

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Abstract - *Safety in the home has become a major concern for all people in the present. In this work an effort has been made to create a home system that is easily accessible, affordable and effective. The proposed system is based on a Remote Monitoring System that operates on an online verification and monitoring platform. The system is relatively inexpensive as it relies on existing network infrastructure. As viola jones are very popular and efficient facial recognition algorithm, it has been used in this work. Next to it the interface is designed for the purpose of connecting to a wireless security system via the Node MCU module. In line with this digital image processing system, automatic door movement controls have been implemented using machine-based door lock technology. This helps users to monitor real-time activities with web services. The web service contains any web browser command. The system establishes a connection between the system and the verified user. E-mail received by the system using the IMAP (internet message access protocol) from an unauthorized person will monitor and control real-time operation and locking of the door. The entire control system is verified using the ESP 8266 Wi-Fi device and tested for real use in the home environment. The result shows the validity of the proposed system test.*

Key Words: Nodemcu, Motor driver board, RPM motor, Gear motor

1.INTRODUCTION

These days, the home security system is an important issue. Indeed, the program ensures that buildings and loved ones remain safe and secure. In the last few years, it has been important to have a strong home security system in place, which can be safe and secure. An important part of any home security system is an indication of a person entering and leaving the house. In the past, people used the traditional method of their home security system. The traditional security system relies on the use of external devices such as keys, passwords and ID cards to gain access. However, due to certain limitations, biometric is possible to deliver such a promising security system. Biometric is a unique parameter with a number of individual recognition. The biometric system requires the use of special hardware such as a fingerprint scanner, palm printer scanner, DNA analyzer and more. In addition, this particular device required that the target touch the hardware to obtain details of different human characteristics. Biometric technology is considered to be one of the most secure authentication systems available, providing a higher level of security than the standard method. Face recognition is the most popular method in biometric technology without fingerprint features. This is due to the increased stability as the face contains many features. Besides, it is considered a great protection as the face can be stolen, stolen or chosen to enter the house. Facial recognition is probably the most natural way to perform biometric authentication among humans. Face detection is the first step in a facial recognition program.

Facial images can be captured remotely using a webcam. A person can be seen without physical contact on any special Hardware to see who he or she is. Facial recognition using an in-depth learning process. Deep learning is part of the process A broad group of machine learning methods based on the representation of learning data, unlike algorithms specific to a particular task. Learning can be managed, directed or supervised. With in-depth learning, the system is improved from time to time. Some user authorization images are used as the program database and the system will train face recognition automatically. Therefore, the accuracy is increased. Home Security is an example of Internet of Things (IoT) applications. IoT refers to a network of compatible body systems that can interact and trade information between them without the need for human intervention [5]. IoT is the technology of the future where devices and the internet are connected. It is different from the Internet because the Internet overrides the connection by allowing any embedded circuit to communicate with others using the current Internet infrastructure.

IoT helps users to control one or more tool and automation capabilities for many everyday tasks. With the use of IoT, it can help control the entry of the door and send notifications all over the Internet. In this system, Blynk applications are used. The Blynk app is an application that enables us to control departmental entry by designing a graphical interface to applications based on a specific task to be performed. It can also send notifications to computers, smart phones and other smart devices.

Facial images can be captured remotely using a webcam. A person can be seen without physical contact on any special Hardware to see who he or she is. Facial recognition using the Viola-Jones algorithm is used. Some user authorization images are used as the program database and the system will train face recognition automatically. Therefore, the accuracy is increased. We can also control the entry of the department through the hardware component of the system, depending on the specific task to be performed. Notify the owner, when someone enters the wrong pin three times continuously. After notification, the owner can send a response by answering the door controller such as opening or closing the door. This door entry control is performed using a pinion rack mechanism.

2. LITERATURE SURVEY

Somjit Nath, Paramita Banerjee, "Arduino Based Door Unlocking System with Real Time Control"2018

This method was used with RFID scanning codes to open the door. So when someone wants to get in the door they need to scan the card and get access to that door. If he puts that card in the wrong way he will not be able to enter the door and there is a risk of security that anyone can enter the door with the wrong card. This stands as a step back in the process.

CharoenVongchumyen, Pakorn Watanachaturaporn, pattaya, "Door locking system via web application"2017

In this way, the web app is designed to monitor the door so that the user can easily access his cell phone and can check whether the situation is locked or not. There's a go back to this system: when someone breaks in and gets a security code where hackers can easily get into that room.

Suchit Shavi, "Secured Room Access Module"2019

In In this way the keyboard-based door opening system is operated with a small controller. The user therefore needs to enter his password to unlock the door. In this way it is safer compared to previous models and better used in today's world. Even if this system is secure it may have a problem: If someone keeps your password, they can still access that department using the password you entered.password, they

can gain access to that door by using the same password you have entered.

G. Senthil Kumar, K. Gopalakrishnan, V. S. Kumar., "Embedded image capturing system using raspberry pi system" 2018

Many processes such as drawing out money from banks requires password. Other such parking in private space would also need parking ticket. For some houses, the house key is very important. However, all this method also has several disadvantages such as losing key and forgetting password.

F. Chollet., "Kara's: The Python Deep Learning library" 2018

Existing architecture was used in the training process. Images were train using deep learning method using Convolutional Neural Network (CNN) technique. The current architecture used is AlexNet which consist of eight layers. This architecture builds with several layer and activation function such as Convolution, Maxpooling, Flatten, Dense, Activation and Dropout. The entire neural network approach was implemented in Python language and Kara's library.

S. Ahmad Radzi., "A MATLAB-based convolutional neural network approach for face recognition system" 2017

There are many advantages to using CNN as it is able to detect patterns with high variability and intensity distortion and simple geometric modifications such as translation, measurement, rotation, compression, stroke range and sound.

M. Sajjad et al., "Raspberry pi assisted face recognition framework for enhanced law-enforcement services in smart cities" 2017

Basically, biometrics can be divided into two physiological and behavioral categories. More recently, face recognition technology has engaged with a host of researchers and has gradually taken over other biometric security frameworks.

P. Kamencay, M. Benco, T. Mizdos, R. Radil, "A new method for face recognition using convolutional neural network face recognition system - state of the art" 2018

From all the research that has been done, there are two types of face recognition method which is face-to-face and video-based visual recognition. Video-based face recognition is the process of obtaining 3D images from its 2D while the image-based visualization process, a process in which a

person trains a machine using a camera by displaying camera sets of still images. The Face Recognition Program is a framework that looks at and looks beyond personal identity from digital photos or video frame from a video source.

S. S. Liew, M. Khalil-Hani, S. Ahmad Radzi, R. Bakhteri., "Gender classification: A convolutional neural network approach" 2019

If this happens, it may be difficult to recover. This approach is taken lightly by biometric methods as it is a solution to those problems. This method requires the use of specialized hardware such as a fingerprint scanner, a palm print scanner, a DNA analyzer to collect data on many biometric systems and target objects that must affect the hardware for information.

3.EXISTING SYSTEM

In the current system, first register his name for recording, then you will be given a QR code to get inside the laboratory. To open the door, the student will scan his / her QR code card into the QR scanner. When we receive the information, the system will check the database to see if the information is compatible with the data stored in the user list table.

If the details match, the camera will capture a user photo and the door will open. Image details and registered student information will be sent to the database entry table. If not, the door will not open and the user must re-scan the card for re-authorization. A buzzer will sound indicating that the user cannot access the laboratory.

4. PROPOSED SYSTEM

This This project has a face recognition system for real-time use. Combined with digital image processing techniques to create a smart home security system. A machine learning process is being used for this project. In order to ensure that the expected results are available, a number of steps must be taken such as data collection, use, testing, and problem solving. These steps are used to analyze data and output. this project can be reviewed type built by combining part of face recognition and IoT together. Face recognition is applied initially.There are five steps to face recognition, image collection, database creation, pre-processing images, training images and image testing using the viola-jones face algorithm known as authorized or unauthorized. the authorized person door will open using a relay and engine. If the image of an unauthorized person can be captured and sent to the user using the IMAP protocol. The user can access the mail the door can control via the MCU Wi-Fi node device using the gear method if that person is known or relatives.
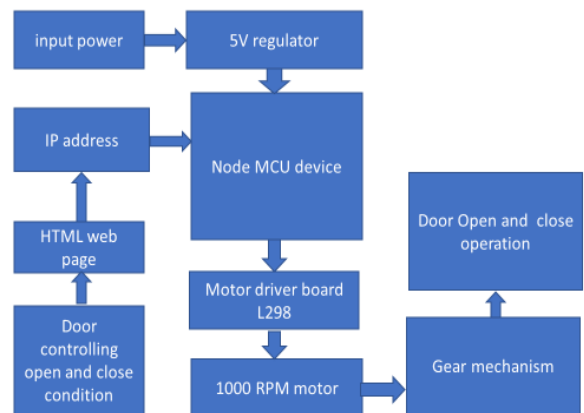
5. BLOCK DIAGRAM

Fig - 1: Block Diagram

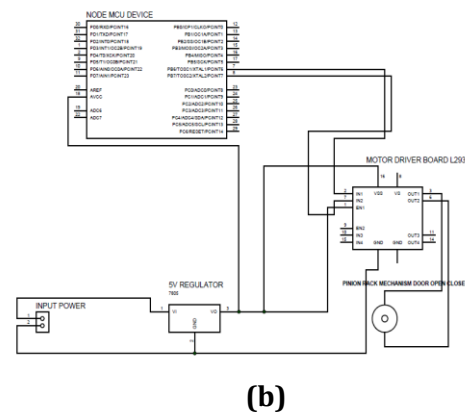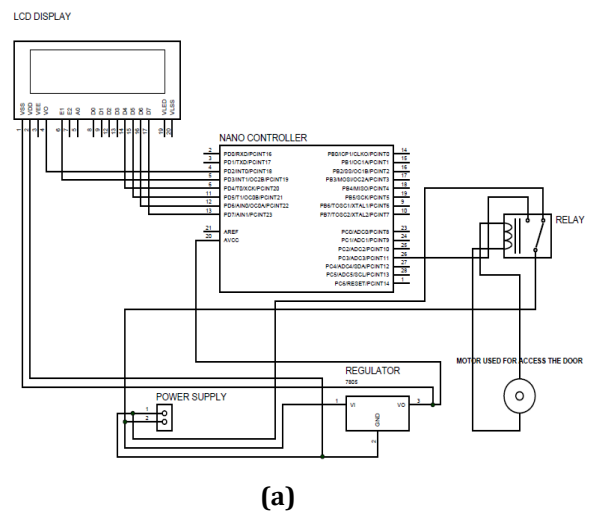## 6. WORKING PRINCIPLE

(a)

(b)
Fig- 2: Circuit Diagram

In this region we use the Node MCU device to control the whole process and it has 9 digital pins and one analog pin.The input power source is connected to the regulator and has three pins are pin pin v1 and pin pin and pin pin v0 is Connected to a node device.The driver's car has 5 anchors are 1 command, instruction 2, allow pin, 12v power source and ground pin. Ins 1 and ins 2 pins are connected to digital pins 1 and 2, en pin is connected to 5v supply.Motor has two anchors plugged in out1 and out of 2 pins to the driver controller the car is attached to an open and closed door control gear. The LCD display is connected to digital nano controllers d2, d3, d4, d5, d6, d7.gnd pin connected to the GND pin. vcc pin connected to 5v .Another nano circuit breaker is used. The 5v transmission pin is connected to the digital d2.12v pin connected to the 12v.gnd pin connected to the ground. motor connected to open door
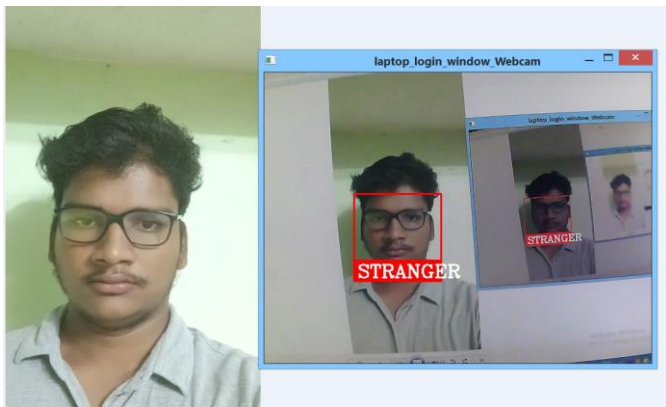
7. EXPERIMENTAL RESULT

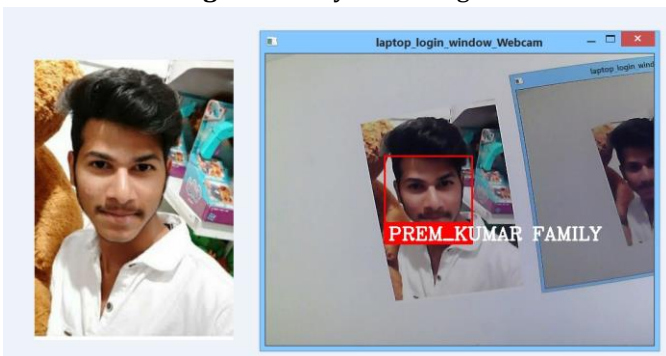

Fig - 3: Idenify the Stranger

Fig -4: Identify the Family Member

Home security system by Face Recognition uses to recognize the person is a stranger or a family member mask .if it detects unrecognized face, a notification can be sent out to the administrator.

8. CONCLUSION

As a conclusion, a home security system through integrated face recognition using a viola-jones algorithm has been developed successfully. Face recognition can identify an authorized or unauthorized person. If an authorized person is found the door will open using a relay. If an unauthorized person is found it means that the post is sending to the user after receiving the mail the user can control the door via an online wifi device. This project is successfully implemented based on machine learning and IoT.

REFERENCES

[1]   Hteik Htar Lwin, Aung Soe Khaing, Hla Myo Tun, "Automatic Door Access System Using Face Recognition", International Journal of Scientific & Technology Research Volume 4, Issue 06, June 2018.

[2]   B. Udaya Kumar, D. S. Murty, Ch. R. Phani Kumar, "Implementation of Low Cost Ethernet Based Home Security Using Wireless Sensor Network", Journal published at Algorithms Research, March 2018.

[3]   Jayashri Bangali, Arvind Shaligram, "Design and Implementation of Security Systems for Smart Home based on GSM technology", International Journal of Smart Home, Vol.7, No.6, August 2017.

[4]   V. Karri and J. S. Daniel Lim, "Method and Device to Communicate via SMS After a Security Intrusion", 1st International Confe-rence on Sensing Technology, Palmerston North, New Zealand, (2015) November 21-23.

[5]   Mae .Y, Sasao .N, INNoue .K, Arai .T, "Person Detection by Mobile Manipulator for Monitoring", SICE 2013 Annual Conference, pages-2801-2806.

[6]   J. Shankar Kartik, K. Ram Kumar and V.S. Srimadhavan3, "SMS Alert and Embedded Network Video Monitoring Terminal", International Journal of Security, Privacy and Trust Management (IJSPTM), Volume 2, October 2018.

[7]   M. Sahani, C. Nanda, A. K. Sahu, B. Pattnaik., "Home security system based on face recognition,"" 2017 Int. Conf. Circuits, Power Comput. Technol. [ICCPCT-2015], pp. 1–6, 2017.

BIOGRAPHY:

Mr. J. Subhash,
Assistant Professor,
Engineering Department,
Adhiyamaan College of Engineering,
Anna University.