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Automatic Door Lock System Facial Recognition

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ABSTRACT: As the world is advancing day to day life and security system also plays a very important role in pur daily life and it is also a part of concern to the people. As the world's advancing and people too need a smart technology that deals or is applicable to daily needs. The main purpose of thus paper is to analyze a person's face and unlock the door immediately. The whole project is based on IOT applications as ESP32-32 module is used and it is an wireless video monitoring home security system and it can lso be said as home security system as one's can know who's outside the door as a person face is also displayed. One's can see or view from real time and can alos view or see from any place or country that who's outside or who's trying to get in.

I. INTRODUCTION

In this generation security is most concern for almost everyone and home security is also one part of people concern, with thw advancement of techno2IOT, digital doorlockhas become common these days. Digital door lock doesn't require a bunch of keys but it requires one's fingerprint, face id, pun code ,password and many more features that is applicable through IOT. Still in present there are many other home security systems. We build a automatic door lock with face id where we canenroll multiple faces and register faces. It verifies the enrolled faces and matches the register face if it's not matched with the registered faces the door remains locked. It only unlocks when person face matches the registered faces. So, it can be considered a useful project using ESP32CAM module.

II. LITERATURE SURVEY

A . “Motion Sensing and Image Capturing Based Smart System on Android Platform” Smart locks were previously utilized to improve the security aspects of the home. Because security is provided by the door itself, the proposed approach can eliminate the concept of a door lock mechanism. When someone walks in front of the door, a motion is triggered, the image is captured, and the owner is notified. .In this system, a mobile phone is linked to the door, and the owner is notified whenever someone comes to his house. By glancing at the photographs, the owner of the house can send an open door signal to only trustworthy visitors. During the implementation of this project, a smart phone was used. If the owner is busy and someone knocks on the door, the owner receives a notification but is unable to respond, an issue arises.

B. .”Design And Implementation of Automated Door Accessing System with Face Recognition”. Biometrics is a type of analysis that is specific to human comprehension. Facial recognition is one of the most widely used forms of facial recognition technologies, with finger skills. one is called certification and the and the is called valid. Understanding the face mains telling structure of whose , or perhaps it is , the image of the face . Face recognition means that the system will tell you the truth and lies about the assumption given to the facial image and the detection assumption .So far , many sources have come out of nonrenewable sources, During the implementation of this project, a smart phone was used. If the owner is busy and someone knocks on the door, the owner receives a notification but is unable to respond, an issue arises.

C . “Development of Intelligent Door Locking System on Face Recognition Technology”. This paper describes a low-cost smart door locking system that uses facial recognition technology to make decisions. The system is controlled by an Arduino UNO and an Android-based smartphone. It can handle all aspects of facial recognition on its own, including face detection, feature extraction, and face recognition using open CV libraries. The system isn't a fully automated security system. It does, however, provide a more comfortable means of accessing the facilities. The user does not need to do anything because the camera searches for the registered faces in real time.. is project is It is more expensive since it employs additional door locking and unlocking techniques. It makes use of a facialrecognition system. It also uses an electromechanical locker system. However, if a facial recognition systemis in place, there is no need for a keyword system.

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III. METHODOLOGY

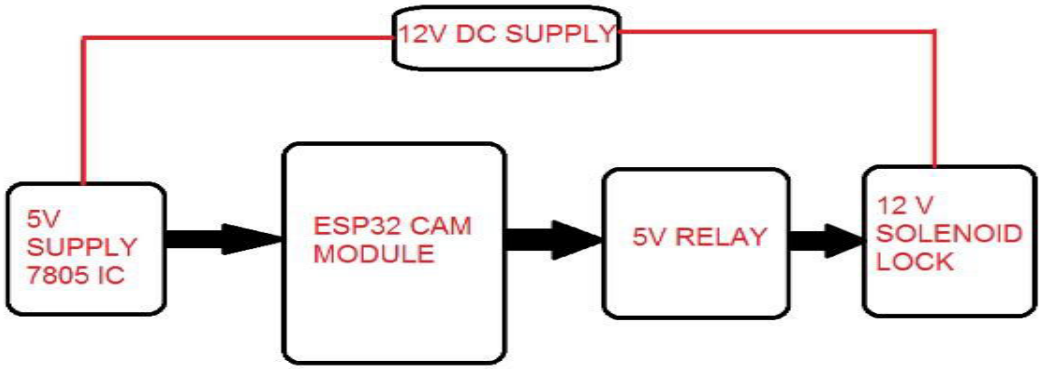

Fig-1: Block diagram

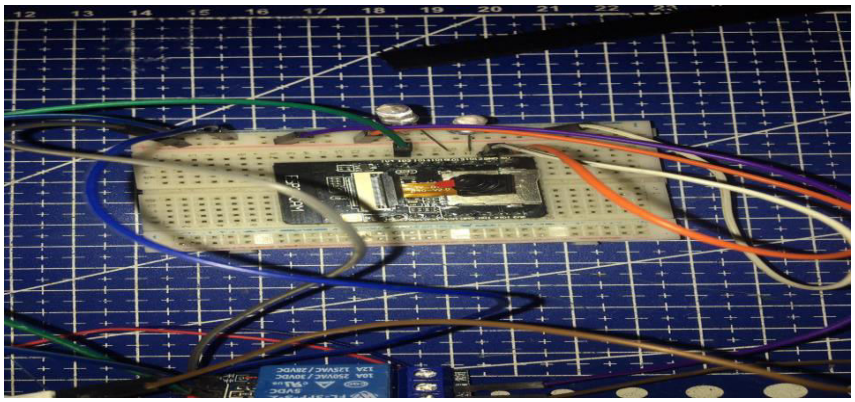

Fig 1.1 breadboard connection

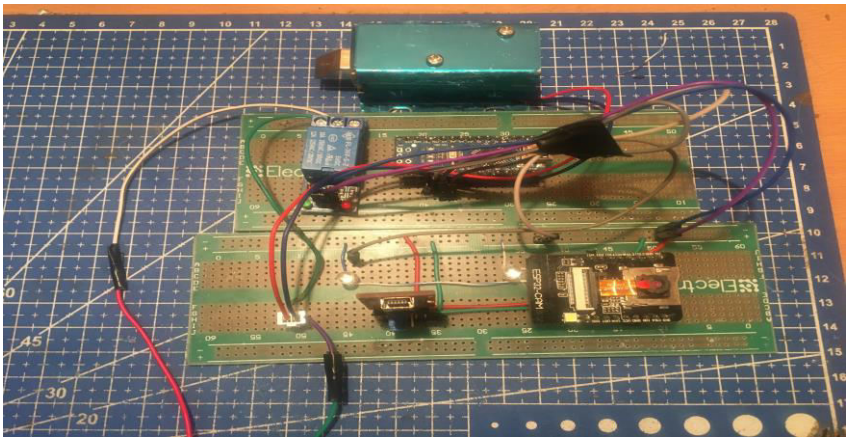

Fig 1.2 PCB connection

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12v supply –The 12 v supply is needed to power the solenoid valve

REGULATOR IC- Here a regulator IC 7805 ic used along with a 220µf filter capacitor to power the entire circuit as the components work on 5v. thus the 12v supply gets distributed as direct line 12v to power the solenoid valve and another one gets stepped down from 12v to 5v using regulator ic

ESP CAM Module – This module has a 2mp camera which is used to capture images or faces that needs to be enrolled by following a series of steps as mentioned earlier. After enrolling the faces whenever a registered person stands in front of this module the camera starts capturing images of that person and starts to tally it with the enrolled faces if the face matches with the enrolled face it send a high pulse via its IO pin which in turn activates the relay and the solenoid valve opens and after 5 sec the relay becomes normally open switch and thus the valve closes again

Relay module- Here we have used a 5v relay module to turn the 12v operated solenoid valve on and off whenever a high pulse is received by the this relay the relay becomes a closed switch completing the 12v supply circuit to the solenoid valve and thus the valve opens after a desired time the relay again comes back to its normally open switch state disconnecting the 12v supply to the valve and thus the door becomes locked

Components used:

Esp33-cam
5v Ic 7805 regulator
12v Solenoid lock
5v Relay
12v Dc Supply

IV. CONCLUSION

Face recognition technology has come a long way in the last twenty years. Today, machines are able to automatically verify identity information for secure transactions, for surveillance and security tasks, and for access control to buildings etc. These applications usually work in controlled environments and recognition algorithms can take advantage of the environmental constraints to obtain high recognition accuracy. However, next generation face recognition systems are going to have widespread application in smart environments -- where computers and machines are more like helpful assistants.

V. FUTURE SCOPE

Using ESP32-CAM the current project can be modified by an infrared camera interfacing. It can be used in smart surveillance monitoring security system Improvement in the security issue is in high restricted area.
Industrial automation and control through internet.

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