SMART HOME SECURITY SYSTEM

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Abstract - *A robust door lock system is the first and foremost thing to assure security to a home/building. Due to the ever- increasing responsibilities and daily tasks, people spend most of the time away from their homes. In such situations, identifying a visitor and getting remote access to their home is indispensable. A smart door lock which can be completely monitored and controlled from a remote location using an android application on a smartphone is proposed in this paper. When a visitor arrives it senses and a ESP32 camera gets powered up and notifies the owner with a message and when he opens he can see the visitor in blynk app. The owner, based on his willingness, can easily open/close the door remotely by pressing the option. In addition, we also have fingerprint module so that the family members of the own can enter by using biometric option in anyways both are very secure.*

Key Words: Security, monitoring, identifying, Blynk app

1. INTRODUCTION

A door is one of the main principal guard to keep up the security of the house. To secure the home and persons of the house can lock the door but in any emergency situations or in a hurry we forget to lock the door which leads to theft. So locking the door is very important in-order to avoid certain situation and safety of the persons in the house. In this paper smart home security system the person no need to go the door to open, person can unlock the door just by sitting where he is by using the unlock option in blynk app not only when he is inside the home but also he can unlock the anywhere via smartphone and this project also provides biometric in case if the family member smartphone is switched off/ any other issues with smartphones so that the registered family members can unlock the door without mobile also which is another advantage of this project.

Internet of the Things (IOT) provides with different and number of opportunities with different kinds of sensors. In this paper we are using ESP32 CAM module which makes us to connect with wifi and also camera available which can stream the video by creating a IP. We are using a IR sensor which detects movement in front of the sensor then it gives notification to the registered smartphones then the person can open the notification and the see the video stream. Our main point here is make affordable to every family rather than spending much on the secured lock system

The construction of this paper is separated into five segments. Segment 2 examines past work that has been finished by researchers in this field. Segment 3 is about process and design of the project. Segment 4 presents results and discussions. Segment 5 is about conclusion of the paper. Where they prompt an undesirable life. In keeping with the insights of 2016 quite 2 million ranchers abide within the state of Maharashtra. The suicide rates of the farmers are becoming expanded day by day thanks to lack of helping hands. So, we've got to assist the cultivators to grasp the importance of earlier yield forecast, to thrive the elemental information about soil quality, interpreting the insightful climate requirements of particular area, in request to accomplish high harvest yield through our innovation arrangement.

2. LITERATURE REVIEW

IOT has been applied in various smart security home technology to control the locking of the door. Some research are done by based on power consumption and with different modules such as As

In [1] not only the security for the door but also implemented the alarm for force entry and also sends the information to owner through cloud but this works only when the PIR sensor placed at certain height if tilt the whole system may fail this can be considered as a major failure.

In [2] when the owner see the visitor according to his willingness by entering the otp owner unlocks the door and he can also communicate by sending the audio message to the visitor and confirms by exchanging information. In this they have used raspberry pie and GUI over cloud.

In [3] here it is secured with door also with smoke alarm. In this also there are home automation options such as fan, light and door. These are controlled by Arduino board with internet and Blynk server.

3. IMPLEMENT

3.1. RELAY:

As it realized that a hand-off is an electrically worked switch. The essential working rule is it tends to be turned on or off dependent on releasing current through or not. By this it can turn on any heap on or off.

3.2. ESP 32 CAM:

It is featured with microcontroller which has integrated camera and video where it can be used for image tracking and recognition. It is available in a very affordable. It permits making IP camera projects for video real time with various goals. Utilizing the ESP32-CAM is just like utilizing the ESP32 modules, with one significant difference. The ESP32-CAM board has no USB port, so you can't interface it up to your PC and begin stacking programs.

3.3. SOLENOID LOCK:

The solenoid lock represents as a latch for locking and unlocking. It can be used based on the situation as it have power-on mode for locking and unlocking. When the power-on mode is on it can unlock the door only when the solenoid is powered on. If the door is locked and the solenoid power is off it can't be opened since it had great security system it very secure to use. This can be used as a security for prevention of crime or theft.

3.4. IR SENSOR:

To open automatic doors, infrared sensors use infrared technology. If there is a change in temperature it can be observed by infrared sensors and it will activate the opening and closing mechanism of the door. When the sensors sense a temperature that is warmer, then it will reflect as a person.

3.5. UART TTL MODULE:

UARTs transmit one bit at a time at a given data rate is specified. Serial communication form is referred to as TTL serial communication. Serial contact will often stay between the 0V and Vcc limits, which are mostly 5V or 3.3V, at the TTL level.

3.6. FINGERPRINT:

A unique finger impression scanner is a kind of innovation that recognizes and validates the fingerprints of a person to allow or deny admittance to a PC framework or an actual office. The manner in which an optical scanner works is by focusing a splendid light over your unique finger impression and taking an advanced photograph.

3.7. ARDUINO IDE:

It is an open-source contraptions stage subject to simple to- utilize stuff and programming. Arduino sheets uses inputs such as light on a sensor, or a Twitter message and these are transforms into a yield - enacting an engine, switching on a LED. One can do their own board with the help of sending information to the controller board. To perform this function we have to use Arduino programming language and the Arduino Software (IDE), thinking about Processing. By giving instructions in the form of code in Arduino and it passes information to the controller then it performs the function. An overall association of creators - understudies, prepared experts, gifted laborers, architects, and trained professionals - has accumulated around this open-source stage, their obligations have amounted to an inconceivable extent of available information that can be of marvelous assistance to disciples and specialists the same.

3.8. Blynk server:

The Blynk mobile app acts as a control panel to visualize and control your hardware kit. It can used for both Android and iOS. The app provides a productive guidelines and different widgets. Blynk is working on a currency called energy, which is his own. With a free Blynk account, new users get 2000 quantities of Blynk energy and this energy is used to purchase and buy deploy in-project widgets. The most impressive aspect of the Blynk Framework is the Blynk Server, where almost everything can do. Blynk server is the main reason for security and also allows different types of communication between devices. With a little tinkering, the Blynk server is also a open source so one can make your own server and make even more safe.

4. METHODOLGY

When the system is fixed and initiated if there is a moving then the IR sensor automatically detects and sends information to further. After detecting, this information this proceeds through the blynk server which is already connected with the wifi network. Blynk server receives information and notifies owner with notification in mobile phone. When there is a movement ESP32 CAM will be on. When the owner opens the notification which is blynk app it show the person who is at the door. After seeing the visitor it is upto the owner to open the door or not this one method. And the other is biometric where only the registered fingerprints can get access to open the door. It is having 2 options which is fingerprints and by watching through cam and accessing the door. Blynk app have another advantage is that owner can open the door even if owner is out of the house or city.
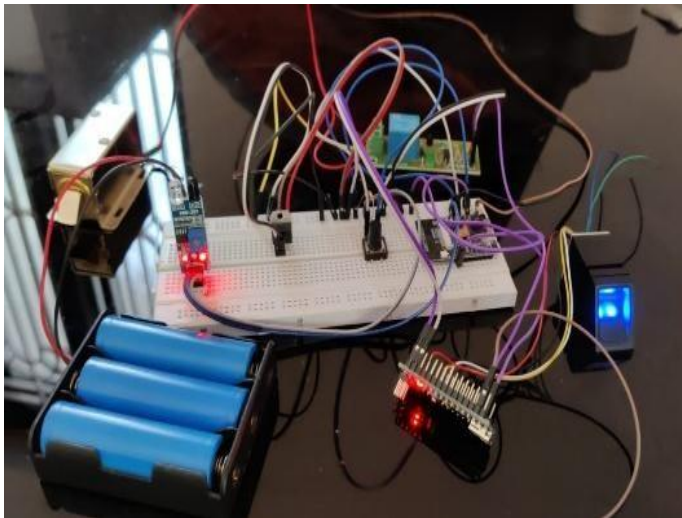
Fig 1-Circuit

5. ALGORITHM

This flow chart completely describes about the process of the project. As shown when sensor detects the visitor at door sends notification and then the owner performs the next steps according to his willing. If the visitor have registered finger print can access and unlock the door.
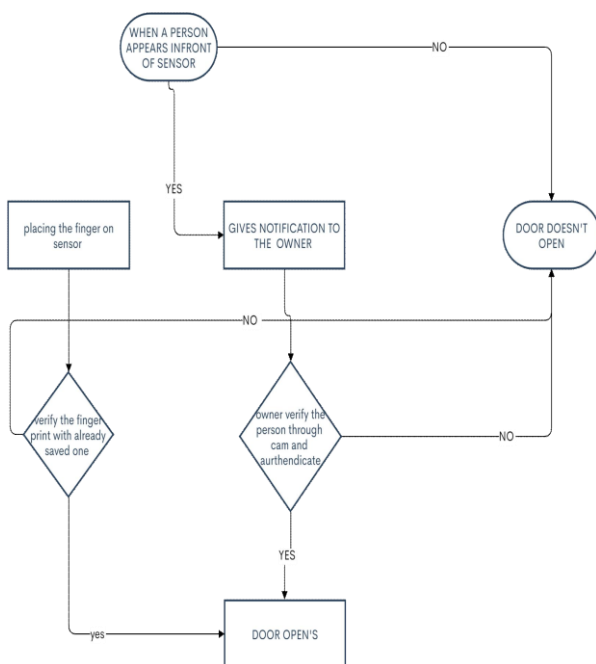

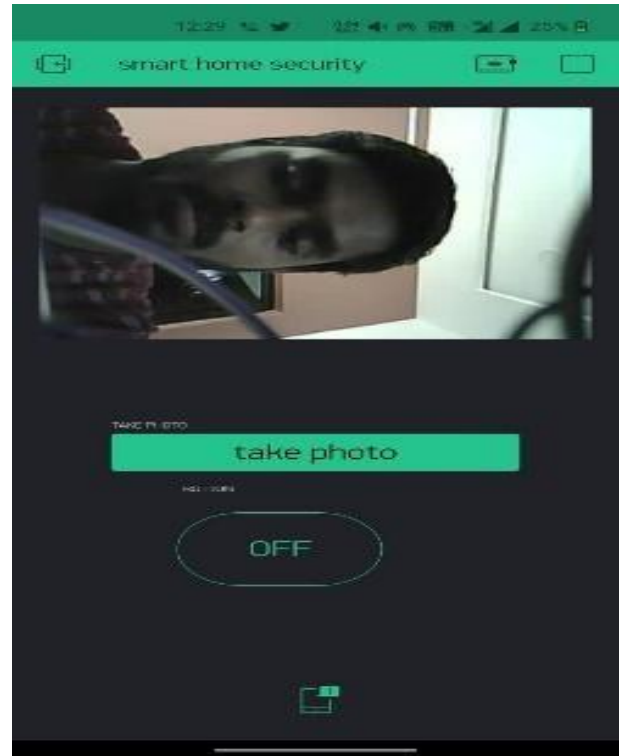Fig 2 – Algorithm

6. RESULT

Fig 3- Result of Blynk app

As you can see here when the owner opens the notification it takes to Blynk app and shows as fig 2 and by this can see who is at door and can unlock the door. There is also another way of opening the door if the person is registered for fingerprint module then, the person can enter by fingerprint access. Since we are using Blynk app we can open the door from anywhere by checking through esp32 cam and by Blynk server.

7. CONCLUSION AND FUTURE SCOPE

As we give more importance to security over anything it can be perfomed with the technology which gives immediate actions according to our requirements. So technology and security cooperates well and gives our safety. When it comes to future scope can add automation, face sensor and any detectors like fire or smoke which gives alarm.

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