

Smart Home Security System Using Raspberry Pi3 Model B+ Interfacing with IOT

¹Mr.B.Prudhvi Raj, ²Mr.L.T.S.Sai Sarath, ³Mr.M.J.Prudhvi Raju, ⁴Mr.N.Akhil, ⁵Mr.P.Dinakar
¹Assistant Professor, ²Student, IV B.Tech., ³Student, IV B.Tech., ⁴Student, IV B.Tech., ⁵Student, IV B.Tech.,
¹ELECTRONICS AND COMMUNICATION ENGINEERING,
¹VISHNU INSTITUTE OF TECHNOLOGY, VISHNUPUR, BHIMA VARAM, INDIA.

Abstract: In these days, we are not sure that our home had been protected by us due to our busy works. There is a chance of entering some strangers and thieves into our home. We are seeking high security systems in order to be protected. Considering this problem, we are proposing a system based on IOT which will protect our home and saves electricity. This door lock system recognize the faces and allows only the faces known to it. Otherwise, it will send an email and send image of stranger by using Raspberry pi to owner. Also gives alert message on Blynk app.

Keywords - IOT, Door Lock system, Email, Raspberry pi.

I. INTRODUCTION

Now-a-days automation plays a key role in human life. By using Internet of Things (IOT), we can control our appliances and home from anywhere. The idea behind the IOT is to allow things to communicate directly with each other, e.g., to share related information from different systems and to present the information to users in a more useful manner, allowing humans to focus on decisions and actions rather than filtering and combining information from different sources.

Internet of Things provides wireless infrastructure with distinctive identifiers and the capability to discussion information over a network. The world of electrical, communicating devices is growing at a rapid pace as a result of the growth of consumer electronics in the 1980's and 1990's, the Internet in the 1990's and the 2000's, and the increasingly mobile connected devices of the 2000's and 2010's. The growth is expected to continue over the next decades with the breakthrough of the Machine-to-Machine and IOT correspondence.

Raspberry pi is used in security of home because, it is like a small computer and live streaming and alert messages by emails and Blynk app. Two types of alert messages can be send to users, one is image of the unknown person by email and another one by the Blynk application.

II. EXISTING METHOD

In the existing method, Raspberry pi3 model B+ is used and camera, buzzer and sensor also be used. But, only one alert message can be sent to user and there is no focus light to detect the person clearly during night time.

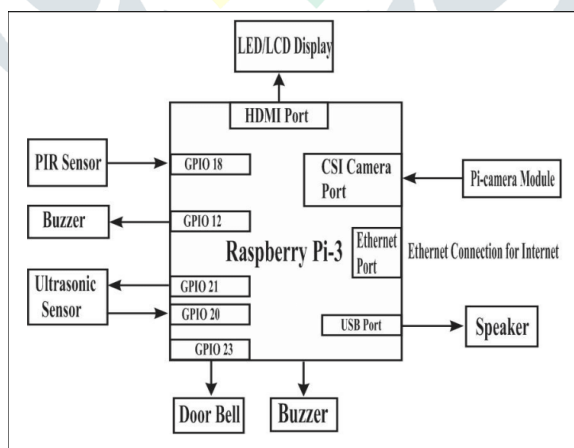


Figure 1: Block Diagram of Existing Method

Drawback of this method is whenever the person came near to the door during night time, it is difficult to detect the face of the person. System didn't find whether the face is known or unknown due to lack of lighting. Also, only one alert message sent to the user, it is not sufficient to alert the user, because no one can always check their emails on every minute.

III. PROPOSED METHOD

Considering the drawbacks in the existing method, we extend the method to reduce the drawbacks, i.e., a light can be placed at the door to detect the face of the person during night also and also another alert message can be sent to users by using the Blynk application.

Any unknown face arrived at the door, an alert message can be sent to user by an email with image and a message also sent by the Blynk app. This will help the user to alert and to protect the home on time.

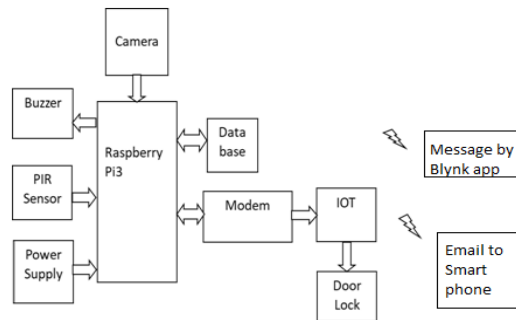


Figure 2: Block Diagram of Proposed Method

Flow Chart:

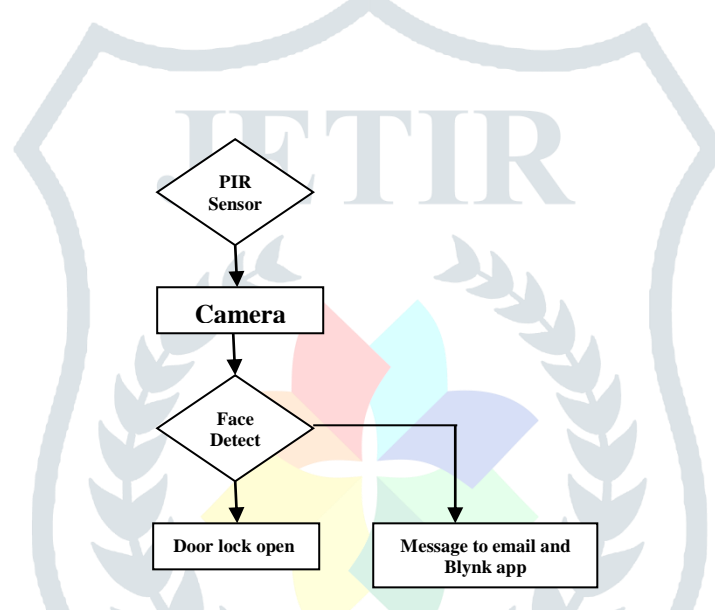
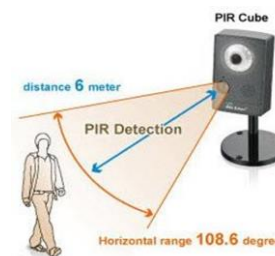


Figure 3: Flow Chart of Proposed Method

COMPONENTS:

1. PIR Sensor:

- PIR Sensors is nothing but, motion sensors. PIR sensor allows to sense motion always used to detect whether a human moved in or out of the sensor ranges.
- These sensors are small and easy to use, inexpensive, low power consumption.



2. BUZZER:

- A buzzer or beeper is an audio signalling device which may be mechanical or electromechanical or piezoelectric.
- Typical uses of buzzer and beepers include alarm device, timers and confirmation of user input such as mouse click or key stroke.



3. CAMERA:

- Raspberry pi has the camera serial interface type 2(CSI-2), it provides the connection of a small camera to the main Broadcom.
- Camera is sony imx 8 mega pixel.
- The range of Camera is 6-10meters.
- The CSI camera port has M-PHY speed gear 1 having bit rate 1.25Gbit/s and speed gear 2 having bit rate 2.5Gbit/s and speed gear 3 having bit rate 5Gbit/s.

**4. RASPBERRY PI3 MODEL B+:**

- It has 1.4GHz Quad-Core ARM Cortex-A53 (64Bit)
- It has memory of 1GB LPDD
- It's dimensions are 85 x 56 x 17mm
- Power consumption is Micro USB socket 5V, 2.5A

**IV. RESULTS AND DISCUSSION**

1. When the known face came to the door, the door will automatically opened.
2. We also open the door anywhere from the world by using Blynk app.
3. At first, we train our faces. The image during face training can be shown below.

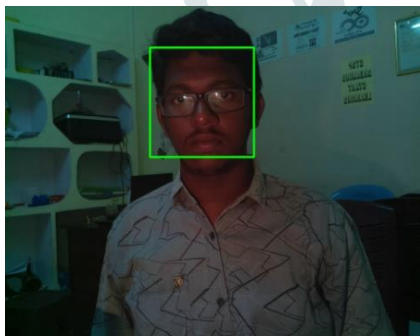


Figure 4: Result of face during training

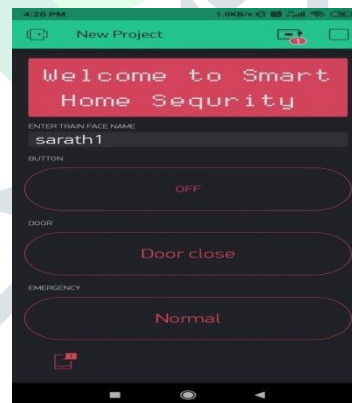


Figure 5: Name of face given at Blynk app during face training

- Whenever the unknown person arrived at the door, it sends an email to user along with the image of unknown person.

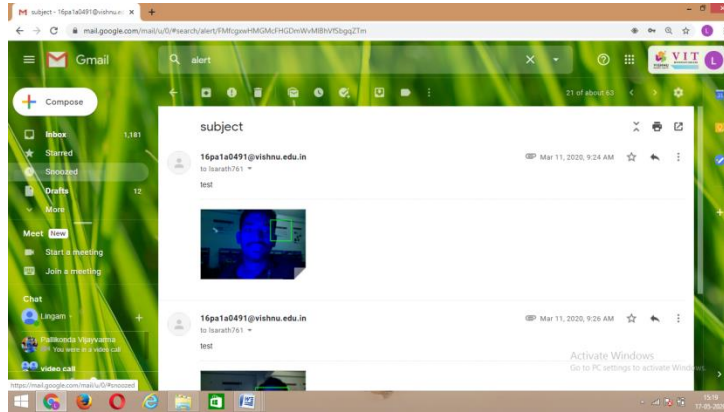


Figure 6: Alert message to email

- First alert message can be send to email along with image as shown below.

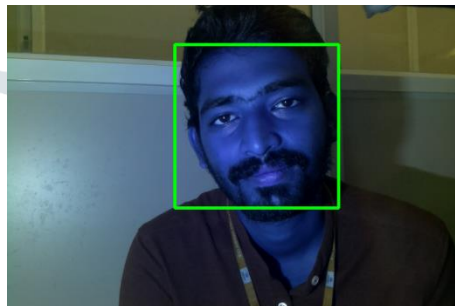


Figure 7: Image of unknown person at door

- Second alert message send to Blynk app with caption “Unknown Person Arrived”.

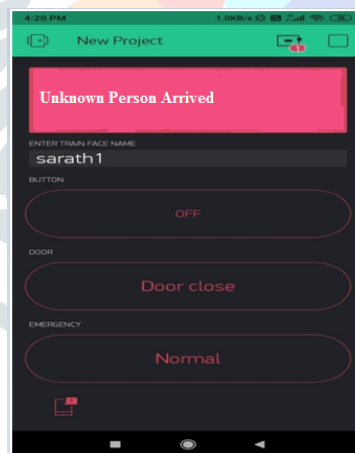


Figure 8: Alert message on Blynk app

- Also on detection of unknown person, Buzzer starts ringing to alert the neighbours and persons inside the house. It continuously rings the buzzer until the alert message send to email and Blynk app.
- We can also ON/OFF light at the door and also OPEN/CLOSE the door by using Blynk app anywhere from the world.

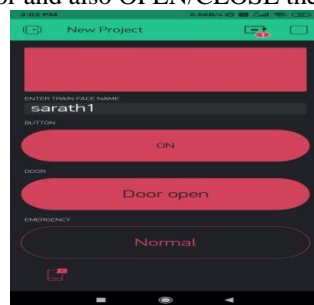


Figure 9: Control lights and door lock by Blynk app

9. Smart Home Security System can be shown below.



Figure 10: Smart Home Security System

V.CONCLUSION

This Smart Home Security System can be designed and implemented by using raspberry pi3 interfacing with IOT. By using this system, user can receive alert messages anywhere in the world. User can also receive the image of the unknown at the door and also buzzer rings at the door, whenever it detects the unknown person. An alert message also sent by Blynk app to alert the user.

VI.FUTURE SCOPE

The system can be extended to alert cops in the control room to the corresponding area when intruder identified at home and transfers the images through email automatically to the control room with buzzer indication.

VII.ACKNOWLEDGEMENT

We would like to give thanks to our Management Principal, Vice Principal, HOD and all faculty members and we also express our special thanks to our guide Mr.B.Prudhvi Raj, Assistant Professor, Department of ECE, Vishnu Institute of Technology, Vishnupur-534201.

REFERENCES

- [1] Deepak.S.Kumbhar, Shubhangi M.Taur, H.C.Chaudhari, Shubhangi S.Bhatambrekar for IOT Based Home Security System Using Raspberry pi-3, E-ISSN 2348-1269, P-ISSN 2349-5138 Volume 6, Issue 1, January 2019.
- [2] Research in Computer Science and Software Engineering ISSN: 2277-128X (Volume-8, Issue-4), April 2018, pp. 119-123.
- [3] Shaik Anwar, D.Kishore, for IOT based Smart Home Security System with Alert and Door Access Control using Smart Phone,ISSN: 2278-0181, Vol. 5 Issue 12, December-2016.
- [4] <https://static.raspberrypi.org/files/product-briefs/Raspberry-Pi-Model-Bplus-Product-Brief.pdf>