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Smart Home Security With Owner Authentication Using IoT

Shaik Ibrahim[1], Alladi Vinay[1], Reddy Reddy Sai Eshwar Reddy[1], K. Rohit Kumar[2]

[1]Department of Computer Science and Engineering Sreyas Institute of Engineering Technology,Nagole,Hyderabad 500068, India.

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ABSTRACT

The paper postulates a Smart Bell Notification System using Internet of Things. The proposed system will improve the security system and also reduce human interaction involved. This can be achieved by facial recognition and a password to unlock the door. The door shall be controlled by a servo motor which feeds on binary input system. If the face or password match, the input will be one and the door would open and vice versa. Also an important feature of live streaming over the internet has been incorporated. This will help the owner to communicate with the person outside irrespective of his location. A Raspberry Pi is used as a microcontroller. A touch screen LCD has also been integrated in the unit to enter the password.

Keywords: IOT, Raspberry Pi, Face Recognition, Camera, PIR Sensor, Buzzer

1. INTRODUCTION

This project is a significant step towards smart home and living. With the increase in trend of online shopping combined with conventional trends of delivery we realized that a major inconvenience is faced by the customer as well as the delivery person if the concerned one is not present at his home at time of delivery. This also extends to friends and relatives who may visit your place unannounced. There is also a security concern in the old systems as we cannot see the person outside clearly. The old aged people are also mostly are targeted for crime and looting.

With the most important feature being able to live stream the feed of your front door to your device, be that you're mobile or laptop or your TV according to how one has configured the Raspberry Pi. The medium of course being the Internet. The system also includes an inbuilt 'Face Recognition' module to distinguish between a known and unknown visitor and hence accordingly enable or disable notifications based on the user's preference settings.

To improve security and reduce human interaction, a key like feature is introduced. This key or password is digital key which can shared with the person who is waiting outside. He/she has to enter the key and may enter. If a familiar face is recognized it will skip the procedure and open the door.

PROBLEM STATEMENT

- The owner should identify the unknown person who entered his house and take the corresponding actions according to that.
- There is a necessity to provide advanced security to house for reducing crimes.
- Now a days the intruders are just breaking down into your house and calmly vanishing.
- So to have high security we provide with web cam and the pressure sensors to detect theft.

*Corresponding author. Tel.: +911234567890
Email address:abc@abc.abc(Corresponding Author Name)
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1.1 MOTIVATION

The objective is to develop a System where the person who is not authorized will not be allowed into the house even the owner is not in the house and even when the theft happens the force sensor activates and the buzzer sounds.

1.2 SCOPE

We can upload even a video to our app to check what is happening in front of the door. The alert message can also be converted to voice message. We can also use cloud instead of using MATLAB and Keil software's. The image can be uploaded to a temporary cloud and can be retrieved in to the App from the cloud. This can be done through the Firebase cloud.

1.3 OUTLINE

We designed a Home Security System where if unknown person comes he will be authenticated an

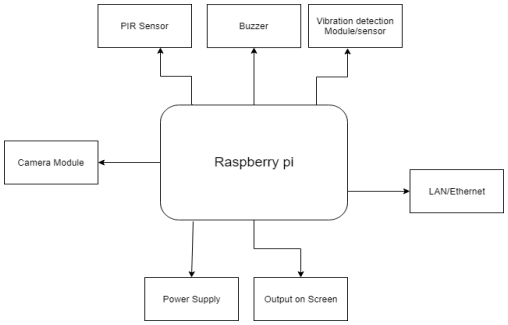
If authorized allows in or buzzer ring and photo of the person will be sent to the registered person mail.

1. LITERATURE SURVEY

In literature survey we look into the details about the existing system and we try to reduce the disadvantages of the existing system. We try to improve the performance and the efficiency of the new system.

1.1 EXISTING SYSTEM

- Whoever comes our house in our absence, it just sends a message to owner.
- Previous work focused on GSM based message sending for warning and that should be used only in the particular premises
- So the owner couldn't get the confirmation about the person who actually came.
- Whereas voice recording is also added for that feature.



System Architecture

DISADVANTAGES

- with the cctv footage we can find the thief, but can't easily investigation to find the thief.
- The actual information of the person is not known to the owner. There may be the relative who came to your house.
- No notification was provided like messages alert or photo capture .
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2. PROPOSED SYSTEM

- No notification was provided like messages alert or photo capture
- Use the transmission protocol and internet standard protocol.
- Valid owner of that house is allowed and also only by the knowledge of house owner any one can enter into the house.
- We are using pressure sensors using which when the theif applies the pressure on doors automatically the buzzer on's

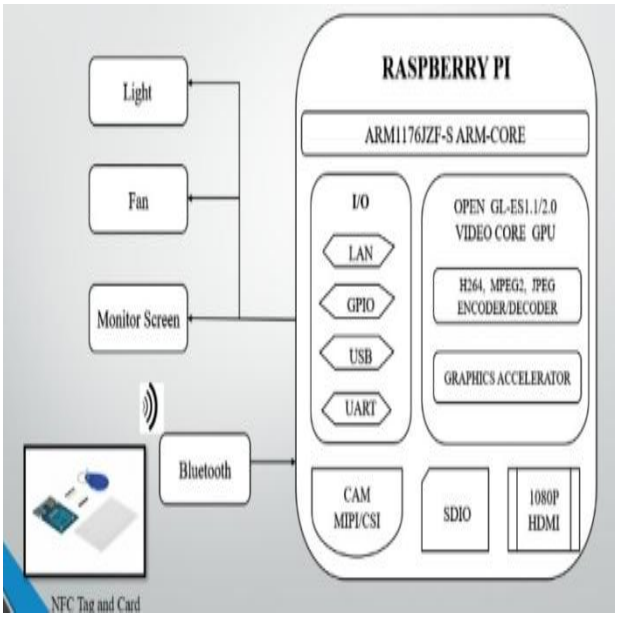

Fig 2: NFC BASED HOME AUTOMATION SYSTEM

ADVANTAGES

- The owner will get the picture of the actual person who has entered into your house. So the information about person is known to the owner.
- The owner can get the information from anywhere in the world.He should be just connected to internet.
- The pressure sensor triggers an alarm when pressure is applied on the doors or windows.

3. TEST CASES

TABLE 1

Test case 1:

Re ID	Ticket ID	S.NO	Req description	Expected o/p	Actual o/p
101	20	01	Check for authorized person	Authorized	Authorized

TABLE 2

Test case 2:

Re ID	Ticket ID	SN.NO	Req description	Expected o/p	Actual o/p	Status
102	21	02	Check for Unauthorized person	Buzzer rings	Buzzer rings	Status

TABLE 3 TABLE 4

Test case 4:

Re ID	Ticket ID	S.NO	Req description	Expected o/p	Actual o/p	Status
104	23	04	Unauthorized image to owner mail	Invalid mail ID	Invalid mail ID	Failure

TABLE 5

Test case 5:

Re ID	Ticket ID	S.NO	Req description	Expected o/p	Actual o/p	status
105	24	05	Unauthorized person,if owner allows	Door open	Door open	success

5. CONCLUSION AND FUTURESCOPE

5.1 CONCLUSION

The whole project takes a new look at the traditional bell vs the modern technology using IoT. With the use of Raspberry Pi, Camera, sensors and other various important modules, our homes are certainly more monitored and secured. This technology will definitely improve the security of our houses. We used Raspberry Pi because it is a strong and reliable embedded system device for solving complex and challenging tasks. Using both technologies in the system provide various benefits to increase the efficiency in terms of communication between visitor and owner of the house and providing safety of home, thus making use of IoT and integrating it into our day to day lives.

5.2 FUTURE SCOPE

We can upload even a video to our app to check what is happening in front of the door. The alert message can also be converted to voice message. We can also use cloud instead of using MATLAB and Keil software's. The image can be uploaded to a temporary cloud and can be

retrieved in to the App from the cloud. This can be done through the Firebase cloud. Internet of Things and 5G

IOT and 5G opens window of opportunities for new technologies to emerge. NFC enabled device will be required in IoT and 5G enabled networks for easier implementation and efficiency.

Fig 5: INTERNET OF THINGS AND 5G

1.Integrated Smartphone Applications

Smart RFID tags can be used to configure with smartphone applications like receiving points for a loyalty program, membership access, entry to a restricted area and many more customized applications

Fig 6: INTEGRATED SMARTPHONE APPLICATIONS

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