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Skybell: A smart doorbell system using OverGrive

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Abstract: *Home security systems is a need of every household to protect their family and valuables from potential break-ins and burglars. For this purpose, we aim to combine the functions of a smart phone and a home network system and build a simple smart doorbell using raspberry pi and overGrive. Avery apt location to mount his doorbell is at the doorstep of the house. If the doorbell is pressed, then the resident is notified via an email or SMS. Though the resident is not present, he/she will be notified about any incoming visitors. This can be proven immensely effective and beneficial for deaf people as they will get notified on their mobile phone about the presence of a visitor. To make it more advanced we have added a USB webcam that will take photos of the visitors and send it to the resident along with the email or SMS. So, if any outsider tries to break into the house the system can be used to identify the trespasser.*

I. Introduction

Doorbells have been supremely significant in protecting contemporary homes since they were invented and put in practice. A buzzer permits guests to announce their presence and request entry into a building yet as allows the occupier to verify the identity of the guests to assist stop home theft or invasion at a moment's notice. But this is not possible when the resident is away from its house. In such a case anything can happen, from missing an important visitor to any potential break-ins or robbery in the house. Thus, in order to prevent such events, we aim at building a smart doorbell. This doorbell will be installed near entrance of the house, whenever any visitor presses the doorbell an alert is sent to the resident. The alert can be in the form of SMS or an email including an image of the visitor. So, the resident can see the visitor in real time no matter wherever he/she is at the moment. This system provides you the management, convenience and safety you've never had before whether or not you are home or away, feel assured knowing you will see who's at your door.

II. Literature Survey

In today's scenario we totally depend on internet that helps us, people have the need to know the identity of a visitor who comes to their homes, regardless of whether they are there at that time. This necessity is even crucial for those who suffer from some disability that stops them from meeting the visitor. [1]

A doorbell system is installed into a system of electrical elements deployed to produce, transfer, and use power. It depends on internal wiring to ring the chime box when the doorbell is pressed, a loud voice generated. To overcome such drawbacks and provide a solution we connect any door system with internet and to make it more secure. Person from home or any other location can see visitor from web through camera from anywhere and system will take snap of visitor. If licensed person needs to convey a message to the visitor, it will be sent simply through internet. However, we are taking advantages of the internet to capture and to record data via Gmail such that it will helpful for users in security system. [2]

III. Block Diagram and its Description

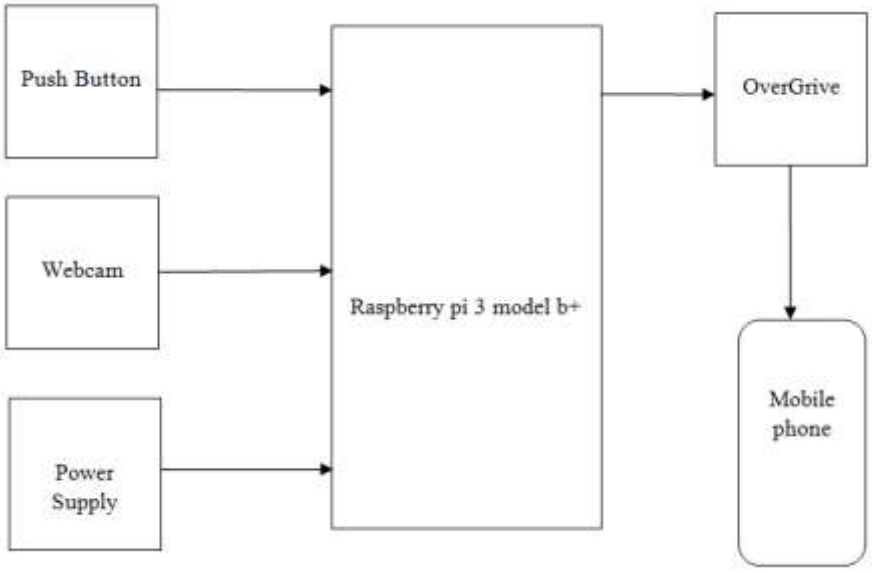

Figure 1: BLOCK DIAGRAM

POWER SUPPLY:

An electronic device which supplies energy in electrical form is called a power supply. Some power providers area unit separate, complete devices, whereas others are designed into larger devices alongside their masses. Power supplies found in PC's and basic electronic devices are examples of latter. Here the raspberry pi is supplied 5V using a USB connected to ac mains. The push button and webcam are powered by the raspberry pi.

PUSH BUTTON:

An electrical switch is a simple switch mechanism for controlling some facet of a machine or a process. Push buttons are typically made of hard material, usually plastic or metal. This push button acts like a doorbell switch in this project and when visitor presses this button it triggers the camera.

WEBCAM:

A digital camera may be a device that once connected to a PC permits its pictures to be seen by web users. Webcams are used for taking not only pictures but also high-quality videos, though the video quality may be lower as compared to alternative camera models. Webcams are typically cheaper than a typical video camera and permit for face-to-face communication online, creating it straightforward for instance things visually to the person you're speaking. This makes the digital camera an elastic device for home or workplace use. Webcams are used for security surveillance, video broadcasting and many more.

RASPBERRY PI:

Raspberry Pi is basically a small card sized computer. It is a proficient little PC that is capable of doing many things a desktop PC does such as spreadsheets, word-processing, games, etc., it can play high-definition videos as well. Raspberry Pi is the main block of this project as it sends the alert along with the image of the visitor taken by the webcam to the cloud computing system. The main reason for using raspberry pi is its WIFI connectivity that allows us to send visitors info. to the resident's mobile phone.

OVERGRIVE:

OverGrive is a Linux desktop used to access google drive features, it has an easy and simple GUI. we use it in our project to access photos taken by the raspberry pi when the doorbell is pressed.

IV. Circuit diagram and it's working

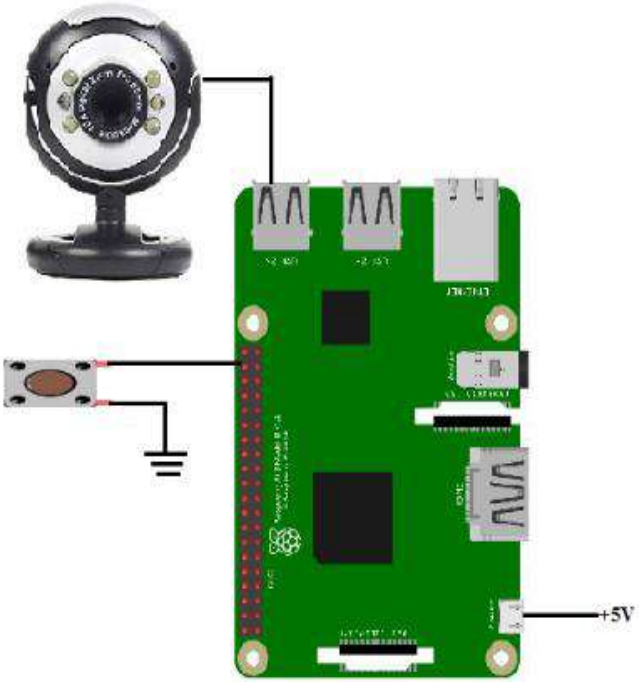

Figure 2: CIRCUIT DIAGRAM.

The raspberry pi module was set up using the camera module, Internet connectivity and the push button. When the person rings the doorbell, the signal is given to raspberry pi. Raspberry pi then triggers the camera and will also activate the buzzer. After clicking the picture, the camera module stores the picture in memory card of the raspberrypi and itself turns off which brings the idea of power saving. The clicked picture is then sent to raspberry pi. The raspberry pi then sends the picture to the overGrive. The overGrive sends the image to the mail of the resident. The main focus is on doorbell device that will have a push button switch to simulate the doorbell.

V. Conclusion

Due to Skybell a resident is precisely able to recognize any visitor who rings the doorbell. A user is very conveniently notified on his/her mobile phone through network. In order to increase the reliability of this system various strong recognition technologies can be implemented thereby making it more feasible in terms of security. This system aims to promote social inclusion by solving a set of problematic situations for individuals suffering from disabilities but also staying alone. Hence this project can bring about both technological and social advancement and has the potential to add thrust in making disabled peoples' lives much more facile.

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