

# Skybell: A Doorbell Notification System

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**Abstract:** *The use of the smartphone has increased steadily over the past years as large number of people are gaining access to smart phones. The aim of the paper is to integrate the functions of the smartphone and home security system and develop a smart security system for the users. Home security system greatly improves the quality of life and it contributes to the evolution of smart homes. The appropriate location to install the doorbell is at the doorstep. The house owner gets access to the images of the visitor waiting outside the door. The user gets the images of the visitor through either email or SMS after it gets stored on the cloud storage. Furthermore, if the owner is not present at home, he/she will get notified with the help of email.*

**Keywords:** Smart phone, Raspberry pi, Doorbell, Home security system, Camera module, Email

## I. INTRODUCTION

The Internet of things is a crucial topic in the field of engineering and technology. This technology has excelled at large extent in various fields such as in sensors and systems which has led to advancement in computing and network interconnections. Besides these, IoT has a lot many applications in the branch of medical which includes fit bands to determine the overall efficiency of individual's body and heartbeat sensor to indicate the heartbeat of the person. There are several different applications in the branch of smart grid, robotics and intelligent transportation and various industrial applications. There are many kinds of door bell system. If we look at the traditional approach, the visitor used to ring the doorbell and waits for a certain time so that the owner would open the door.

If there is no one at home, the visitor use to leave without any clue whether the owner is at home or not. As technology has played a vital role in development, it has changed the lifestyle of the people in society. Doorbell systems have evolved from historical doorbell to modern touch pad and it has become more reliable and efficient with the use of sensors and IoT. The main perspective of this paper is to design and implement a home security system by combining the home network service and smart phone. Whenever the visitor presses the doorbell, the camera module captures the picture of the visitor and forwards that picture of the visitor to the owner.

This alert is in the form of email or SMS. Our home security system provides with user with gaining access to the images of the visitor and takes appropriate actions immediately. So, the owner can watch the visitor in real time irrespective of the presence or absence of owner. In today's generation of internet, people need to know the identity of the visitor waiting outside regardless of their presence at home.

The main emphasis of the project is to concentrate more on security with less cost. This system which is efficient and reliable is developed using raspberry pi 3, camera module, bell and internet access. The basic function of a smart door bell is to make the owner aware of the visitor waiting outside the doorstep when the visitor presses the doorbell. This system does not depend on the absence or presence of owner at home.

## II. LITERATURE SURVEY

In today's generation people are mainly dependent on internet. People want to get the information regarding the visitor waiting outside the doorstep even if they are present at home or not. Home security system becomes essential for the people who suffer from disability, handicapped or elderly people which restricts them from having face to face communication from the visitor.[1] As most of the elderly population consists of more than 10 percent which grows every year, home security system is introduced for the elder people who live alone at home to enable them with efficient security facility. In year 2015, there were about more than 2 million cases of abuses and most of them were in elderly's house.

This home security system is used to watch and get notification without having face to face communication.[2] In the earlier times, the doorbell consisted of normally the push button and the ringing bell, in which the owner had no clue of the visitor waiting outside the doorstep.[3] In modern doorbell, people from other location or home can have access to the visitor waiting outside the door using web through camera. Doorbells have evolved from historical doorbell to modern touch pad and it has become more efficient and reliable with the help of sensors and IoT.

### III. BLOCK DIAGRAM & DESCRIPTION

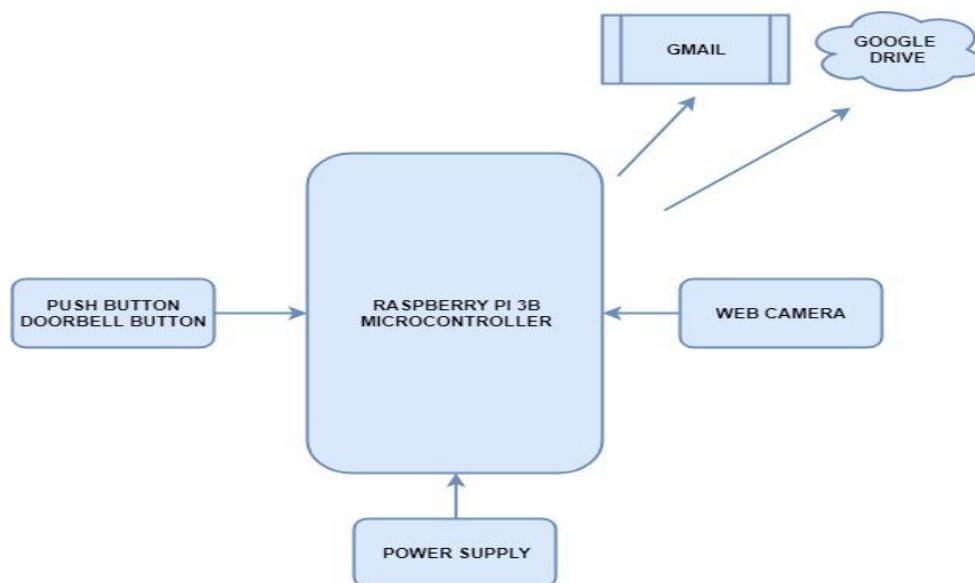


Figure 1: Block Diagram

#### A. Push Button

A button may be an easy form of switch that controls an action in an exceedingly machine or some form of method. Push button switches are standard during a kind of completely different applications, including calculators, switch phones, and plenty of home appliances. You can notice them within the home, the office, and in industrial applications these days. they'll flip machines on and off, or cause the devices to perform specific actions, as in the case of calculators. This push button acts like a doorbell switch in this project and when visitor presses this button it triggers the camera.

#### B. WEB Camera

A digital camera could be a photographic camera that's connected to a pc or it could be video camera that feeds or streams its image in real time to or through a pc to an electronic network. It will send live photos from where it's sited to a different location via internet. Here in this project webcam is used for taking a picture of the visitor due to which raspberry pi publishes and sends an alert to the resident.

#### C. Raspberry PI

It is a small size computer that can be used by the folks of all ages to explore computing. It can do everything that desktop computer can do such as browsing the internet, playing video games, word-processing and many more. We are using raspberry pi in this project is because of its WIFI connectivity that allows us to send visitors information to the resident's mobile phone.

#### D. Power Supply

In this project, a power bank is used as a power supply. It provides required power to raspberry pi in order for it to function without any lags.

#### E. Google Drive

Google drive is a cloud storage service which is developed by Google. It can be used to store any kind of data be it text, image, audio or video. It can be accessed by any smart device provided that it has a stable internet connection. It is very convenient to users since it gives the facility to edit the documents on the go.

#### F. Gmail

Gmail is a free electronic mail service provided by google which enables the users to send and receive mails via internet. It can be used on all kinds of devices like Android, iOS and desktop. It also has several security features which protects the integrity of the sender's message.

#### IV. CONCLUSIONS

The project named "Skybell" has been designed with the domain as Internet of Things. The proposed system with its raspberry pi and IOT capabilities solves a crucial drawback in our standard of living. Since these days in a technologically enhancing environment security problems is of utmost concern, this project shows however technology is wont to enhance the safety options of people's home. A smart push is built which has the feature to send a notification to a resident even when the resident is not at home, with an attached picture of the visitor. It uses components such as power supply, push button, USB webcam, personal computer, raspberry pi. This system aims to push social inclusion by resolution to a group of problematic things for people full of disabilities however additionally staying alone. So, this method may be a smart possibility for the protection of their homes. It's a sophisticated security system with new technology, that the user or will say the owner of the house will trust and simply use.

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