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Raspberry Pi House Safeguard System with Alarm and Email Alert

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ABSTRACT
These papers are useful since they not only protect the home, but also notify the owner through email if anything goes wrong. As soon as the system detects a stranger, it immediately sends out a warning using a Raspberry Pi. An unidentified person's photo is taken by a Pi camera and sent along with the email. We may install this system in our homes, workplaces, and other locations where safety is paramount.
Keywords: - Mobile, Camera, Online, Chip, Bluetooth, Short Message Service, Electronic Circuit.

I.INTRODUCTION
4.1.Design focuses on making the home as secure as possible. This setup allows for constant monitoring of the system at any given location at any given time. This setup allows the owner to protect the home from an intruder while they're away, and it's also wireless and affordable. The design incorporates state-of-the-art wireless communication for safety and appliance control, namely Bluetooth, Infrared, and Wi-Fi. The rising rate of criminal activity has made home security a pressing problem. Everyone is thinking more about putting in place the necessary safeguards against invasion. It's remarkable how simple and efficient this approach is. When someone except the owner is in the area, the PIR sensor will pick them up, and the Raspberry Pi camera will snap pictures and transmit them on to the owner. When an unknown individual enters the field of view of a PIR sensor, the sensor will pick them up. To record these moments, we'll set off the Pi camera and store the resulting files. Using Pi, we'll whip up a standard email, attach the photo, and fire it off to the owner. The pictures taken by a Raspberry Pi camera are documented along with the time and date that it was done. The PIR potentiometer allows the user to customize the detection range of this device.

Second, the Current Setup
Closed-circuit television (CCTV), fingerprint detectors, and other conventional security measures have all been shown to be less effective, more costly, and resource-intensive than previously thought. Problems with GSM Module and raspberry pi's network connectivity and corrupted SIM cards are avoided in the recommended setup.

Third, the proposed setup
The proposed Raspberry PI home security system is an efficient, low-power, and extremely adaptable method of keeping valuables safe in places like homes, ATMs, and approved investment facilities. Using a PIR and a magnetic sensor, the suggested solution handles the security-related difficulties cheaply. In a matter of seconds, this sensor can identify a person, take a picture of the ensuing procedure

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using a Raspberry Pi camera, and inform the user by text message or email. Python 3 is used to verify the system and ensure its reliability.
Methodology 4.
The difficulty may be solved by breaking the tasks down into three distinct sections. Components -: Submodule 1: Safety through Near Field Communication (NFC)
Here we'll check the PIR sensor's detection range, take pictures with the Raspberry PI camera, and save them in the cloud using the Python programming language.

Part 2: Managing Your Android Device
This module's focus is on building an Android app that will simplify the system's interface for the end user.
Third-Party SMS Notification Module
Both the email and the text message notice will be sent by us. Create a mobile app that can sync with all of your devices' 1 Photographic Recording 2.Recording Audio Wireless communication tools, 3. Our programs need to be able to connect with 4. email 5. SMS and to recognize such electronic devices that are used for home security.

BLOCK DIAGRAM

Fig:1 Block diagram

Hardware Requirement

- Raspberry pi
- USB camera
- PIR sensor
- Buzzer

Software Requirement

- **Python**

Working

When the "PIR" sensor identifies an unfamiliar individual, the camera is triggered and a photo is taken.
In this case, the captured image is sent to the owner.

• The alarm has sounded.

HARDWARE COMPONENTS

Raspberry Pi

Raspberry Pi is a line of low-cost single-board computers created by the Raspberry Pi Foundation and Broadcom in the United Kingdom. Raspberry pi's modest price belies the fact that it is a fully capable little computer. It's a computer, whether you recognize it as a PC or an SBC. Primary use is in the classroom, where students learn fundamentals of computing. Numerous automation projects, from the simple to the complex, can benefit from using a Raspberry Pi for tasks like weather prediction and robotics. Its cheap price and malleability make it a valuable tool in the construction of a wide variety of circuits.

Fig: 2 raspberry pi

\PIR sensor

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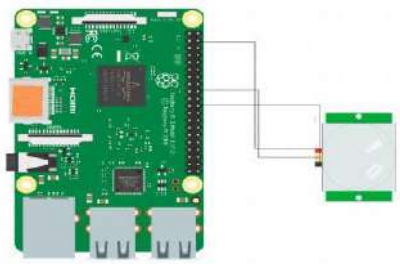
When it senses someone other than the owner is around, it activates the Raspberry Pi camera and transmits the resulting photographs to the user. When the mysterious visitor gets within range of this PIR sensor, it will alert you. The photographs will be taken using a Pi camera, which will be triggered and saved after being taken.

```
rom picamera import PiCamera
rom time import sleep
mport smtplib
mport time
rom datetime import datetime
rom email.mime.image import MIMEImage
rom email.mime.Multipart import MIMEMultipart
mport RPi.GPIO as GPIO
mport time

oaddr = 'TO_EMAIL'
ne = 'FROM_EMAIL'
ubject='security alert'

GPIO.setmode(GPIO.BCM)

=PiCamera()
.resolution= (1024,768)
.start_preview()
```

Fig: 3 PIR sensor

Buzzer

Fig: 4 Buzzer



The buzzer goes high when the PIR sensor detects an intruder.

USB camera

Fig: 5 USB camera

When the stranger enters the field of view of the PIR sensor, it registers them. The photographs will be taken using a Pi camera, which will be triggered and saved after being taken.

Implemetion Code

design

Fig:6 Raspberry pi with PIR sensor.

PIR sensor connection with Raspberry Pi is show in above Schematic diagram

Fig:6 Raspberry pi with USB camera.

USB camera connection with Raspberry Pi is show in above Schematic diagram

Fig:6 Raspberry pi with Buzzer.

Buzzer connection with Raspberry Pi is show in above Schematic diagram

6 RESULT

This solution can protect you using a variety of wireless communications and cutting-edge mobile devices. System features include appliance remote control, intrusion detection, system protection, and auto-configuration, wherein the system modifies its settings automatically once a hardware support check has been performed. The following outcomes are anticipated from this work.

In the first place, the images and sounds of the individual are entered into a database to establish their similarities. Authorization and authentication requests will be sent to the user's email address.

Safety will be assured by taking prompt steps & Children will be safe If the parents are going to be out of town, they will be notified.

The home is being monitored from afar.

A SMS or email notice will be produced if unknown individual attempts to access into the residence. Images captured during a call may be shared straight to the user.

V.CONCLUSION

We've created a home security system that relies on a Raspberry Pi, a PI camera, and a PIR sensor. E-mail alerts allow the user to be notified regardless of their location. Whenever any unusual or suspicious movement is detected, it raises loud warning. Hence the created method effectively restricts the access of unknown individual into the House.

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