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HOME SECURITY MODEL USING RASPBERRY PI

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ABSTRACT

The most basic definition of any security system is found in its name. It is literally a means or method by which something is secured through a system of interworking components and devices. In this instance, we're talking about home security systems, which are networks of integrated electronic devices working together with a central control panel to protect against burglars and other potential home intruders.IOT home security model can be remotely accessed by using any smart device and pc to monitor the security status within the house through the data collected from sensors through the internet.

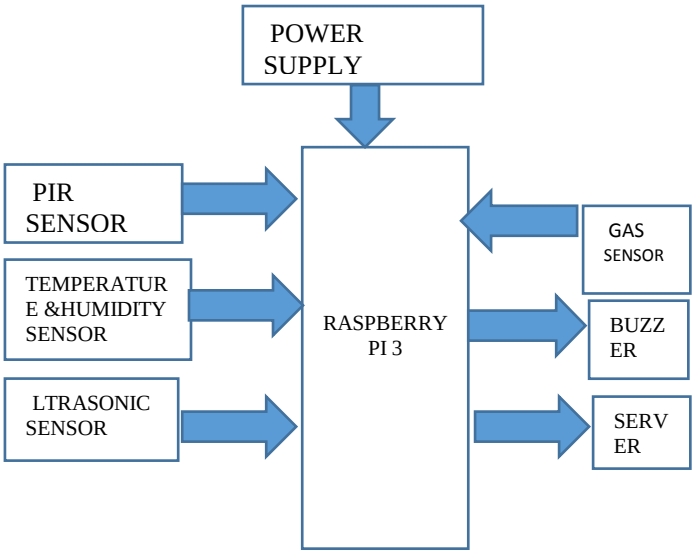
Keywords: Raspberry pi 3, Ultrasonic sensor, Gas sensor, Temperature & Tumidity sensor,PIR sensor,buzzer.

I. INTRODUCTION

When **security mode** is turned on, any **recognized harmful activities** that occurred within the house will be detected through installed sensors and automatically forward the alert message to the homeowner through the internet. The data from sensors will constantly be stored in the **cloud storage** and interact with the custom web-based application that enables it to display the data in a website, and this allows the homeowner to have an advantage to monitor any potential harmful activity that might occur within the house in real-time

II.SYSTEM REQUIREMENTS

This system in paper proposes consist of raspberry pi , ultrasonic sensor, temperature & humidity sensor, PIR sensor, Gas sensor, buzzer.



2.1 Raspberry PI3

The Raspberry Pi 3 is the third generation Raspberry Pi. It replaced the Raspberry Pi 2 Model B in February 2016.It has 1.2GHz 64-bit quad-core ARMv8 CPU, 802.11n Wireless LAN, Bluetooth 4.1.As pi 2 raspberry pi3 also has some similar features like 1GB RAM, 4 USB ports, 40 GPIO pins, Full HDMI port, Ethernet port, Combined 3.5mm audio jack and composite video, Camera interface, Display interface Micro SD card slot, Video Core IV 3D graphics core.

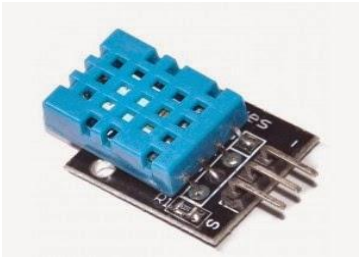
The Broadcom BCM2835 SoC used in the first generation Raspberry Pi is somewhat equivalent to the chip used in first generation smartphones (its CPU is an older ARMv6 architecture),[14] which includes a 700 MHz ARM1176JZF-S processor, VideoCore IV graphics processing unit (GPU),[15] and RAM. It has a level 1 (L1) cache of 16 KB and a level 2 (L2) cache of 128 KB. The level 2 cache is used primarily by the GPU. The SoC is stacked underneath the RAM chip, so only its edge is visible. The Raspberry Pi 2 uses a Broadcom BCM2836 SoC with a 900 MHz 32-bit quad-core ARM Cortex-A7 processor (as do many current smartphones), with 256 KB shared L2 cache. The Raspberry Pi 3 uses a Broadcom BCM2837 SoC with a 1.2 GHz 64-bit quad-core ARM Cortex-A53 processor, with 512 KB shared L2 cache.

2.2 PIR sensor

An individual PIR sensor detects changes in the amount of infrared radiation impinging upon it, which varies depending on the temperature and surface characteristics of the objects in front of the sensor. When an object, such as a human, passes in front of the background, such as a wall, the temperature at that point in the sensor's field of view will rise from room temperature to body temperature, and then back again. The sensor converts the resulting change in the incoming infrared radiation into a change in the output voltage, and this triggers the detection.

2.3 Temperature & Humidity Sensor

DHT11 digital temperature and humidity sensor is a composite Sensor contains a calibrated digital signal output of the temperature and humidity. Application of a dedicated digital modules collection technology and the temperature and humidity sensing technology, to ensure that the product has high reliability and excellent long-term stability. The sensor includes a resistive sense of wet components and an NTC temperature measurement devices, and connected with a high-performance 8-bit microcontroller.



2.4 Ultrasonic Sensor

Ultrasonic sensors are based on measuring the properties of sound waves with frequency above the human audible range. They are based on three physical principles: time of flight, the Doppler effect , and the attenuation of sound waves.

Ultrasonic sensors are non-intrusive in that they do not require physical contact with their target, and can detect certain clear or shiny targets otherwise obscured to some vision-based sensors. On the other hand, their

measurements are very sensitive to temperature and to the angle of the target. Ultrasonic sensors "are based on the measurement of the properties of acoustic waves with frequencies above the human audible range," often at roughly 40 kHz. They typically operate by generating a high-frequency pulse of sound, and then receiving and evaluating the properties of the echo pulse

2.5 Gas Sensor

The MQ series of gas sensors utilizes a small heater inside with an electro chemical sensor these sensors are sensitive to a range of gasses are used at room temperature. MQ135 alcohol sensor is a Sno2 with a lower conductivity of clean air. When the target explosive gas exists, then the sensor's conductivity increases more increasing more along with the gas concentration rising levels. By using simple electronic circuits, it convert the charge of conductivity to correspond output signal of gas concentration.

2.6BUZZER

A buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke.

III METHODOLOGY

Consider a home security model consist of several rooms. Placing a PIR sensor at the main entrance of the home, it sense movement of people, animals, or other objects. Gas sensor, temperature & humidity sensor in kitchen and hall. It is to detect the LPG gas leakage in kitchen and temperature & humidity levels in the room. Using an ultrasonic sensor to intimate the level in water tank by this we can overcome the overflow of water from the tank. If any recognized harmful activities that occurred within the house will be detected through installed sensors and automatically forward the alert message to the homeowner through the internet by using the server way2sms and the data from sensors will constantly be stored in the cloud storage.

IV. RESULTS

The project has been tested for different categories of waste namely wet, dry and metal. Wet waste means organic wastes such as vegetable peel, garden wastes etc,. dry waste include paper wastes, plastic bottles etc, and metallic waste include safety pins, foil paper etc,.

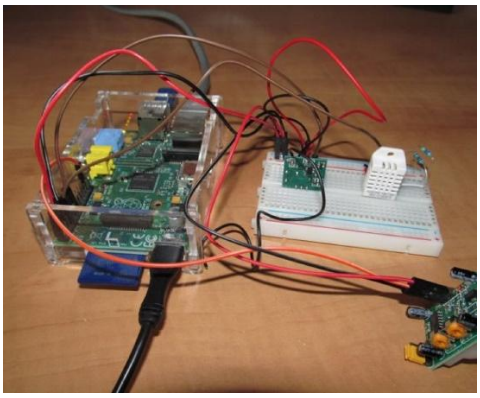


Fig: Home security model after placing sensor

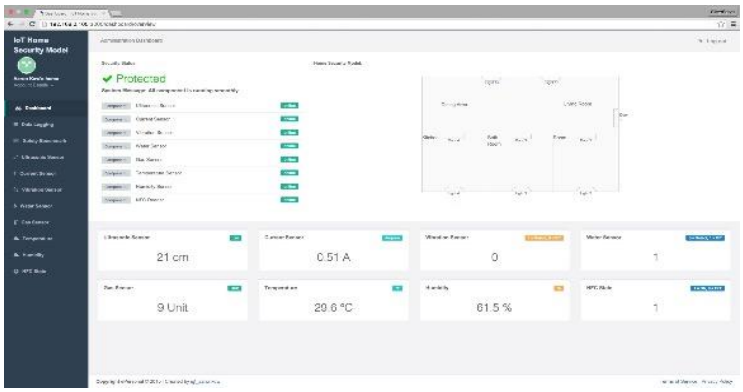


Fig: Data from sensors stored in Cloud Storage

V.CONCLUSION

Home Security System is one of the significant parts for the building blocks for a smart home. Thus, my consideration is to include as many sensors as possible and make good use of the data collected are the keys to making the home more "smarter", collectively will linked to the improvement of security for a house.

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REFERENCES

1."Raspberry Pi 3 Model b" . Raspberry Pi Foundation. 2 March 2017.

2."Home Security Model". Arduino Project Hub. 3 March 2017.

3."Working Of Sensors". Engineeers Garage. 3 March 2017.