International Journal of
Marketing Management

www.ijmm.net

Email ID: editor@ijmm.net , ijmm.editor9@gmail.com

SMARTSAFETYSYSTEMUSINGRASPBERRYPI

B.SRIHARI1,Dr.B.LOKESWARARAO2,B.KUMARSANJIV3

Abstract: TheManagement of current housing and mechanical conditions is done logically in this work. To discriminate between proof and control in situations like earthquakes and fires as well as air quality (CO2) and LPG gas leakage monitoring, this method is put to use. The journey is designed to provide a prosperity system for homes and businesses employing a MasterCard-evaluated single board PC called Raspberry Pi, and it will also communicate with the IoT innovation. In the event that a strange circumstance occurs, the system will notify the relevant expert by sending a snapshot of the area, sending a text message by GSM, and alerting the aggravating normally. The system may be shown in a hall of 126 feet by 21 feet using one Raspberry pi module. Because it is an automation system, this can be used in a variety of settings where a human operator's presence isn't necessary.Thisstructureoffershighprecisioncontrollingand besides straightforward easily and steady inproportioningessentialness.

Keywords: GSM Modem, Webpage and Appliances for the Raspberry Pi 3, IoT, Gas Sensor and Air Quality Sensor.

I.   INTRODUCTION

The well-being, comfort, and safety of persons is a major concern for many people today. There are a number of places that are particularly enticing, including your house and current location. In order to keep an eye on the earth, there are a number of important estimates that must be constantly monitored. The probability of IoT to supervise success metrics and admonishment was done in this meander. Internet of Objects (IoT) is the inter-system association of physical gadgets, cars and structures that are presented with gear and programming, sensors and actuators and structure design that draws in the things to gather and exchange data. The Internet of Things (IoT) permits questions to be recognized and controlled remotely in the current structure foundation, making open gateways for sort out arrange that accomplishes practicality modifications, exactness, and financial central focuses to minimize human mediation.

1PGStudent,Dept.ofECE,CMRCET,Hyderabad,Telangana,India,Email:bsriharidurga@gmail.com

2ProfessorofECE&Dean(Academics),CMRCET,Hyderabad,Telangana,India,Email:dean.academics@cmrcet.org3AssistantProfessor,Dept.ofECE,CMRCET,Hyderabad,Telangana,India,Email:bkumarsanjiv@cmrcet.org

II.**HARDWARESYSTEM**

Fig1:Blockdiagram
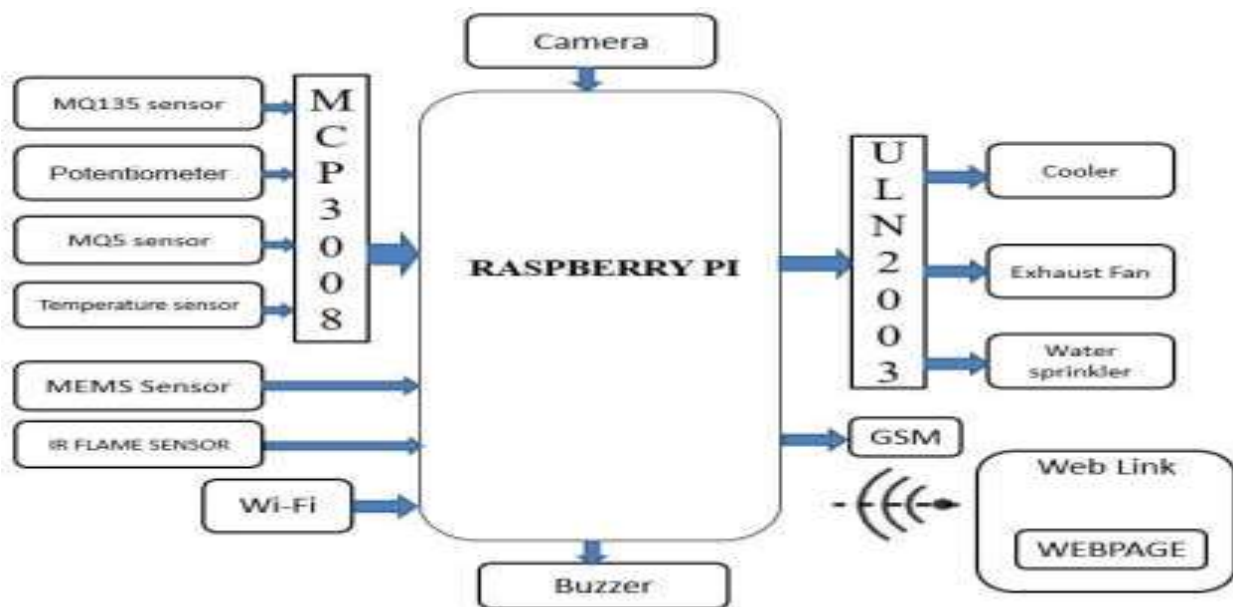
In this venture I have utilized the likelihood ofremotesystemsassociationutilizingRaspberryPicontrollerwithaspecificextremegoaltocontrol and moreover alarmed the client and goaboutasappearedbytherequest.Thisstructureisspreadouttoanawesomedegreeflexiblewith aspecificextremetargettogiveastraightforward interface.Thiscanbeexhibitedeffectively.Theac knowledgedinsightfulsecurity structure works utilizing the thing madein Python. The Raspberry Pi unit is associatedwithsensorsexhibitedonthemechani calCongregations are used as a part of the household and its current state. Using the Internet of Things, sensors in a room or area detect deviations from the norm and send a text message to the owner and a ready email to the concerned professional.

METHODOLOGY

RaspberryPi:The Broadcom BCM2837 System-On-Chip(SoC) has been specifically designed for the Raspberry Pi 3 demonstration B and includes four superior ARM Cortex-A53 process centers running at 1.2GHz with 32Kb Level one and 512Kb Level two reserve memory and is associated with a 1GB LPDDR2 memory module on the back of the board. Along with Bluetooth Low Energy (BLE) and built-in Wi-Fi (BCM43143), it features 40-pins of widely usable information yields (GPIO). Additionally, it features a 5V USB control supply of up to 2.5 Amps for control administration. The Raspberry Pi 3 Model B is the greatest Raspberry Pi PC right now, at least for the time being.

Fig2:RaspberryPi3ModelB

With a clock speed of 1.2GHz and 1GB of RAM, the Raspberry Pi can handle even the most intensive tasks. Another 2.4GHz and 5GHz 802.11b/g/n/air conditioning Wi-Fi double band underpinning the Raspberry Pi 3 Model B's 802.11b/g/n/air conditioning Wi-Fi. USB 2.0's introduction of Gigabit Ethernet over USB has made wired connections even more reliable.Ethernetexecutionisadditionallysupported,withanextraordinarythroughputaround300Mb.TemperatureSensor(Lm35):It's used to keep tabs on local temperature extremes.

When it come s to determining the amount of thermal radiation being released by the heat bodies, they use Plank's law. A linear relationship between output voltage and temperature is demonstrated by the LM35 temperature sensor, a precision integrated

circuit temperature measurement device.

Fig3:LM35Temperaturesensor

MQ5LPGGASSENSOR:Thesensorhereused is MQ5, which is used for sensing LPG gasshowninfig.MQ-5gassensorishighlysensitivetobutane,propane, methaneandcandetectMethaneandpropaneat thesametime.

a poisonous gas that can be found in the air of most houses and offices. When compared to clean hair, the gas has a lower conductivity, and this conductivity rises as a result of pollution in the air. Ammonia, nitrogen oxide, smoke, carbon dioxide, and other hazardous gases are detected by the air quality sensor. The air quality sensor is powered by a 5V power supply. The air quality sensor is a signal output instruction. Analog and TTL outputs are available. The Microcontroller's IO ports can be used to access the TTL output, which is a low signal light. Rising voltage corresponds to increasing concentration, hence the analog output is a concentration. Both the lifespan and the stability of this sensor are excellent.

Fig5:MQ135Airqualitysensor

Potentiometer: By comparing an unknown voltage to a predetermined reference voltage, a potentiometer can be used to determine the field voltage. Sliding or twisting contacts on the three-terminal resistor create a voltage-divider adaptability structure. A variable resistor or rheostat can be made out of this device by connecting it to just one end and a wiper. Occasionally, potentiometers are used to regulate the major control (power greater than one watt) explicitly, because the power dispersed in the potentiometer is

fundamentallyvaguetothepowerinthecontroll

edload.

Fig6:ATypicalrotarypotentiometer.

MEMSSensor: Microelectromechanical systems (MEMS) accelerometers are among the simplest and most effective small-scale electromechanical systems for detecting gravity. Depending on how the accelerometer is moved or vibrated, these forces can be either static (like gravity's constant pull on our feet) or dynamic. The principles of making an accelerometer can be dealt with in a wide number of ways.

Fig7.MEMSSensor

When subjected to acceleration, tiny stone formations in a few accelerometers use the piezoelectric effect to generate a voltage. Each of the three deflections of the MEMS sensor's X, Y, and Z directions will be evaluated as a difference in capacitance and assortment.components has been used as a piece of MEMSidentifying.AverageMEMSaccelerome rismadeoutofversatileconfirmationmasswithpl atesthatisassociatedthroughamechanicalsusp ension system to a reference plot. Versatileplatesandfixedoutsideplatesaddressc apacitors.Thedeflectionofcheckmassisassesse dusingthecapacitancedifferentiated.

IRFlameSensor:An IR Flame sensor is a sensor designed to detect and respond to the presence of a fire or a fire, allowing for the detection of a fire. Infrared light with a wavelength of 700nm to 1000nm can be detected by it. An infrared fire test turns the light that is visible as infrared into current changes. Infrared Flame sensor affectability is balanced by the locally available variable resistor with a specific evidence explanation for 60 degrees. 3.3 to 5.2 V DC is the operating voltage, and a flag's proximity can be seen when it is pushed.
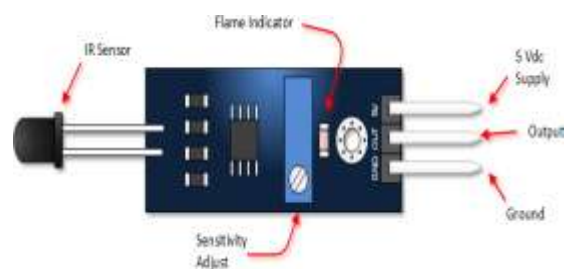

Fig8.IRFlamesensor

Relay: A hand-off is a switch that is activated by electricity. Some businesses use an electromagnet to operate an exchange system mechanically, although alternative operating rules are also used.... Trades are used in situations where it is critical to maintain a degree of control.
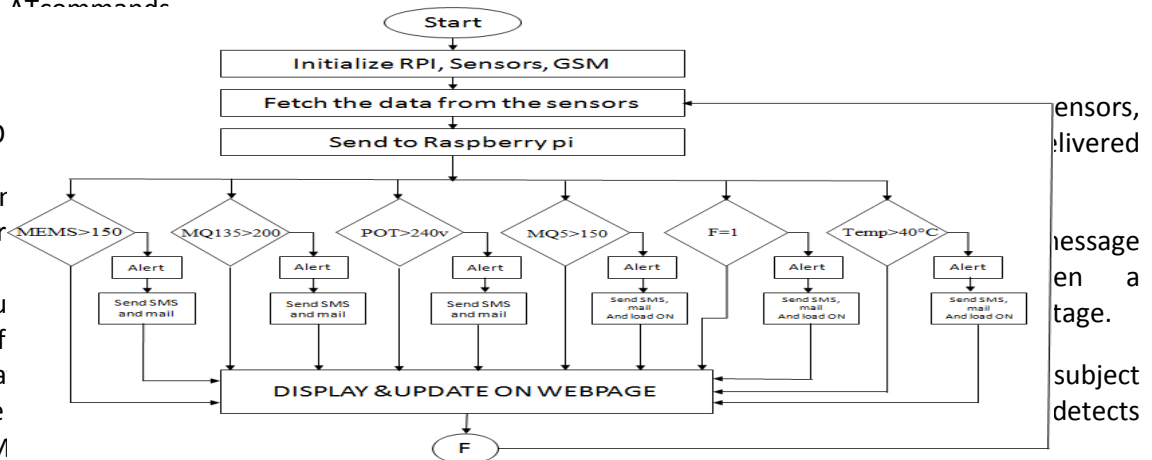
xThisGSMmoduleisactivatedfordifferentapplic ationslikesendingSMS,Callingthe

particularauthorityprovidedaNumberbyusing some ATcommands.

IVWO

Loggir
pictur
keep
irregu
specif
activa
flame
an SM

Fig10. Flowchart for the system

Start → Initialize RPI, Sensors, GSM → Fetch the data from the sensors → Send to Raspberry pi

MEMS>150	MQ135>200	POT>240v	MQ5>150	F=1	Temp>40°C
Alert	Alert	Alert	Alert	Alert	Alert
Send SMS and mail	Send SMS and mail	Send SMS and mail	Send SMS, mail And load ON	Send SMS, mail And load ON	Send SMS, mail And load ON

DISPLAY &UPDATE ON WEBPAGE → F

...ensors, :livered ... iessage en a tage. ... subject detects

LPG gas is detected, and the EXHUASTED FAN is activated and an SMS is sent as LPG GAS DETECTED to notify the user.

V.   RESULTS

IoT WEBPAGE is used to monitor room or area parameters. Images taken by a digital camera are sent to a designated email address and an SMS alert is sent via a GSM module for mobile communication if there is an abnormality in a room's activities. Because of this, the specific load will be turned on.

Fig11. System Hardware TEST CASES RESULTS

Smart safety system using Raspberry Pi

Voltage: = 228
Temp: = 32.16
LPG: = Not_Detected
CO2: = Not_Detected
FIRE : = Not_Detected
EARTHQUAKE : = Detected

Fig12.WebpageoftheSystem

Byusingthiswebpage,thetrackingofparameters is performed and those preserve onconvertingfor every5s.

+91 87 90 846994

Earthquake detected please alert!!

25 Jul

VI.   CONCLUSION

VII.   Using IoT and GSM, we'll explore how to create user-friendly homes and businesses by following machine parameters. In the field of computerization, a trend is emerging in which electrical hardware is mechanically controlled and followed over the web. Customer records for various sensor metrics can be obtained via the internet and sent to control realities by replacing PCs with low-cost single-chip processors. As a result of the wide range, the decision to use GSM and mail is made. Any of the most important GSM networks can be accessed with this device because SMS is a content-based convention. Using a secret key, it is possible to firmly anchor the entire framework in place. Thus, it provides high levels of well-being, while the parameters may be monitored and corrected routinely if any deviation from the norm is discovered.

VIII.   FUTURESCOPE

Canbeactualizedwiththeguideofalarmingwithphone message and may open up as, muchasawideassortment.Unpredictabilitycan bedecreased.

IX.   REFERENCES:

[1]   Pi-based Smart Fire Management System Employing Sensor-based Automatic Water Sprinkler, 2017 International Conference, Noorinder, Jaspreet Singh.

[2]   "Sensor Andrew: Large-scale campus-wide sensing and actuation," IBM Journal of Research and Development, vol. 55, no. 1.2, pp. 6:1–6:14, 2011, A. Rowe, M. E. Berges, G. Bhatia, E. Goldman, R. Rajkumar, J. H. Garrett, J. M.F. Moura, and L. Soibelman.

[3]Boss: Building services for the operating system is a paper by N.Kitaev and D.Culler in Proc. 10th USENIX Symposium on Networked

Systems Design and Implementation, pp. 443–457, 2013.

[4]Security concerns in wireless sensor networks, linSystems and Networks Communications, 2006.ICSNC '06. International Conference on, Oct 2006, p. 40.

[5]O.Seppanen, WJFisk, and Q.Lei, "Effect of temperature on task performance in office setting," 2006, http://escholarship.org/uc/item/445g4n3rv.