IOT Based Kitchen Monitoring System : A Review

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Abstract—**with using enormous speed in advancement of home automation technology the kitchen monitoring system using raspberry pi is designed to measure the kitchen environment parameter such as Tempeterure, fire detection, motion detection and LPG gas level has been developed. When the system sensed any abnormality it sends an alert SMS via IOT network automatically..Enormous increase in user of internet and modification on the internet working technology enable networking of everyday object. In this project raspberry pi b model is used for processing monitoring and controlling different sensor and communicating with embedded server .because of its advance feature and easy to communicating through internet of things (IOT)**

Keywords: IOT, Sensornode, Raspberry pi, Embedded web server

I. INTRODUCTION

The Internet of Things (IoT) can be described as connecting everyday objects like smart-phones, Internet TVs, sensors and actuators to the Internet where the devices are intelligently linked together enabling new forms of communication between things and people, and between things themselves. Building IoT has advanced significantly in the last couple of years since it has added a new dimension to the world of information and communication technologies.The Internet has come a long way over the last 30 years. Old-fashioned IPv4 is giving way to IPv6 so that every device on the Internet can have its own IP address. Machine-to-machine (M2M) communication is on the rise, enabling devices to exchange and act upon information without a person ever being involved. Every day the people expect new device and new technology to simplify their day to day life.Deu to invention in every day circuitry became as small as requirements ofhumans satisfied their needs.

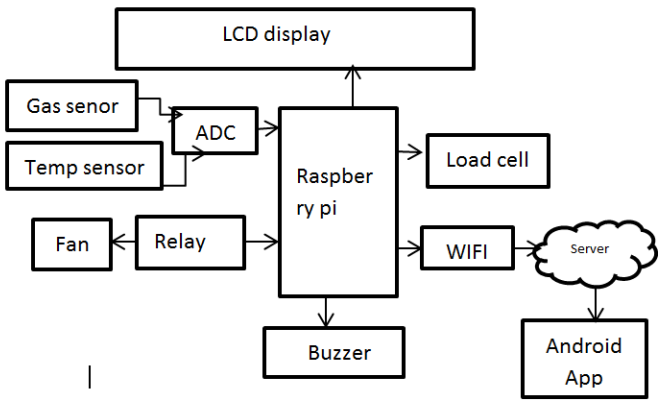
These papers propose a raspberry pi kitchen based monitoring system through embedded web server. This system can monitor the status of kitchen parameter and send a notification on user phone using kitchen monitoring application installed on user phoneby using IOT.This system shows the values of gas, temperature, and load cell on user Phone**.** These system has the ability to control through internet where it subjected to received notification is read by develop algorithm fed to raspberry and system responds to corresponding instruction with high security. The raspberry pi unit and associated sensors are installed in home and threshold for each analog input is configured. The user can directly login to kitchen monitoring application to get sensors value

II. LITERATURE REVIEW

In existing system cost is effective as we know most off system are using GSM system is expensive s compare to the WIFI concept but those architectures are mostly use raspberry pi .In pervious paper circuitry becomes more complex due to GSM zigbee and microcontroller but in these paper onlyraspberry pi model with WIFI makes it easy for user. This system can monitored the statues of kitchen and sends details about parameter on network automatically .this system finds wide application in area where physical presence is not possible all the time. The system offers real time monitoring and remote control of kitchen.as I pervious paper we need to control parameter value on a login page were ON \OFF buttons are configuredfor fans other parameters but in this paper automatically fan willstart after it sense the gas leakage and automatically off on normal condition The main functions of the project is to collect signals through a wireless sensor network using API's and the analysis for data through an adaptive architecture that produces real-time heath monitoring system to improve medical support for people in their homes and in assisted living environments. The paper does however reinforce the advantages of using a wireless standard. Bluetooth is a global standard for connecting a wide range of devices, it is available on most handheld devices, the technology is very easy to use and set up, and it provides security by encrypting data using a 128bit long shared key but the disadvantage of system is that it has a very short range of communication. On Smartphones enabled systems for the smart home with focus on the Raspberry Pi applications. Although many systems have been researched and proposed, very few if any have been implemented. This project aims to build on the previous research described to implement a wireless sensor network to monitor appliances in the house. These appliances will be controlled via a smartphone running Android OS. This approach provides an easy to operate and

cost effective approach that will benefit users to interact with Home appliances remotely.

III. METHEDOLOGY



A. BLOCK DIAGRAM

Kitchen monitoring system using raspberry pi 3 model b which is simple is a series of small single broad computer with a 64 bit quad core processor, and has on-board WIFI, Bluetooth and USB boot capabilities

a faster 1.4 GHz processor and a 3 times faster network based on gigabit Ethernet (300 Mbit / s) or 2.4 / 5 GHz dual-band WI-FI (100 Mbit / s). Other options are: power overEthernet (PoE), USB boot and network boot .Raspberry pi is connected to two sensors i.e. Gas sensors and temperature sensors.The MQ3 gas sensor is alcohol sensor which is used to detect the alcohol concentration on your breath. This sensor provides an analog resistive output based on alcohol concentration. When the alcohol gas exist, the sensor's conductivity gets higher along with the gas concentration rising. It is suitable for various applications of detecting alcohol at different concentration. It is widely used in domestic alcohol gas alarm, industrial alcohol gas alarm and portable alcohol detector.The LM35 is one kind of commonly used temperature sensor that can be used to measure temperature with an electrical o/p comparative to the temperature (in °C). It can measure temperature more correctly compare with a thermistor. This sensor generates a high output voltage than thermocouples and may not need that the output voltage is amplified. The LM35 has an output voltage that is proportional to the Celsius temperature. The scale factor is .01V/°These both sensors will sensed the value and when it finds the sensor value is exceeding threshold value the buzzer will start sound i.e. beep.[(gas>0.2ppm and (temp>30°C)].then ADC MCP3204 will communicated with raspberry pi through SPI communication then raspberry pi will execute the algorithm fed into it and connect to the server on other side fan will on through relay ,LCD will display the value .load cell HX711 also an sensor which detected if cylinder is empty or not if it is then load cell will communicated with pit through I2C communication and display on LCD cylinder is empty or weight of a cylinder and buzzer will sound beep. The code executed in raspberry is in python language after it will send all the sense values of sensor on http server and the notification of sensor will display on user phone through smart kitchen monitoring application.

IV. RASPBERRY PI

The Raspberry Pi 3 Model B is the third generation Raspberry Pi. This powerful credit-card sized single board computer can be used for many applications and supersedes the original Raspberry Pi Model B+ and Raspberry Pi 2 Model B.

Whilst maintaining the popular board format the Raspberry Pi 3 Model B brings you a more powerful processor, 10x faster than the first generation Raspberry Pi.Additionally it adds wireless LAN & Bluetooth connectivity making it the ideal solution for powerful connected designs.

Raspberry Pi 3 - Model B Technical Specification

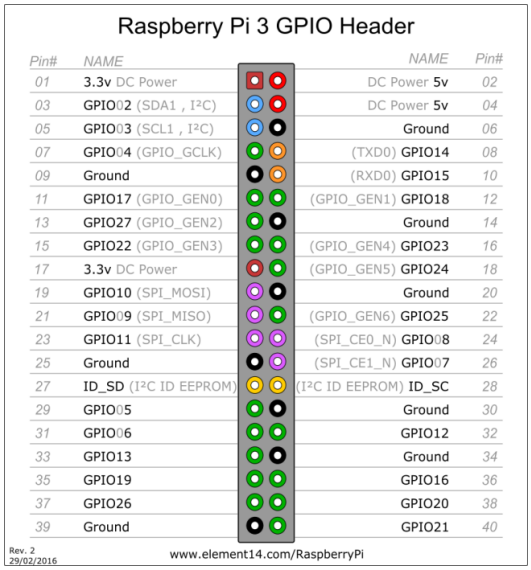
- Broadcom BCM2387 chipset
- 1.2GHz Quad-Core ARM Cortex-A53
- 802.11 bgn Wireless LAN and Bluetooth 4.1 (Bluetooth Classic and LE)
- 1GB RAM
- 64 Bit CPU
- 4 x USB ports
- 4 pole Stereo output and Composite video port
- Full size HDMI
- 10/100 BaseT Ethernet socketbr
- CSI camera port for connecting the Raspberry Pi camera
- DSI display port for connecting the Raspberry Pi touch screen display
- Micro SD port for loading your operating system and storing data
- Micro USB power source

Raspberry Pi 3 - Model B Features

- Now 10x Faster - Broadcom BCM2387 ARM Cortex-A53 Quad Core Processor powered Single Board Computer running at 1.2GHz!
- 1GB RAM so you can now run bigger and more powerful applications

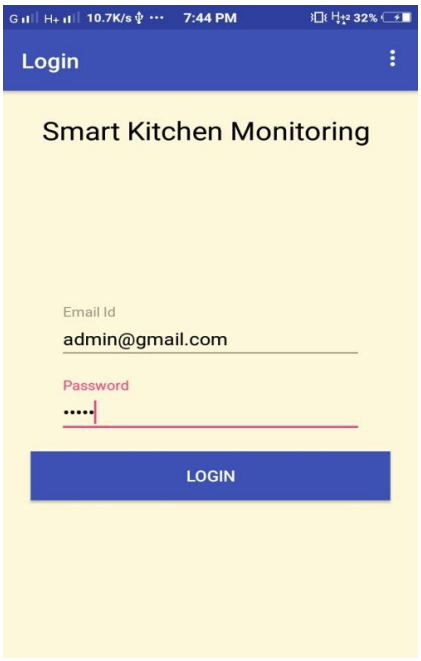
- Fully HAT compatible
- 40pin extended GPIO to enhance your “real world” projects.
- Connect a Raspberry Pi camera and touch screen display (each sold separately)
- Stream and watch Hi-definition video output at 1080
- Micro SD slot for storing information and loading your operating systems.

10/100 Base Ethernet socket to quickly connect the Raspberry Pi to the Internet.

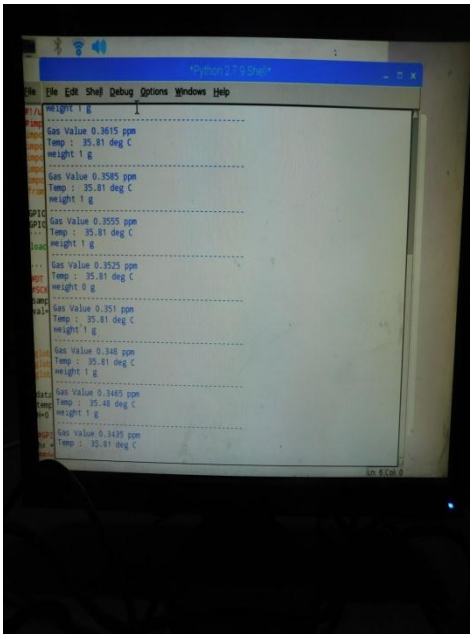


B. Raspberry Pi GPIO Pins

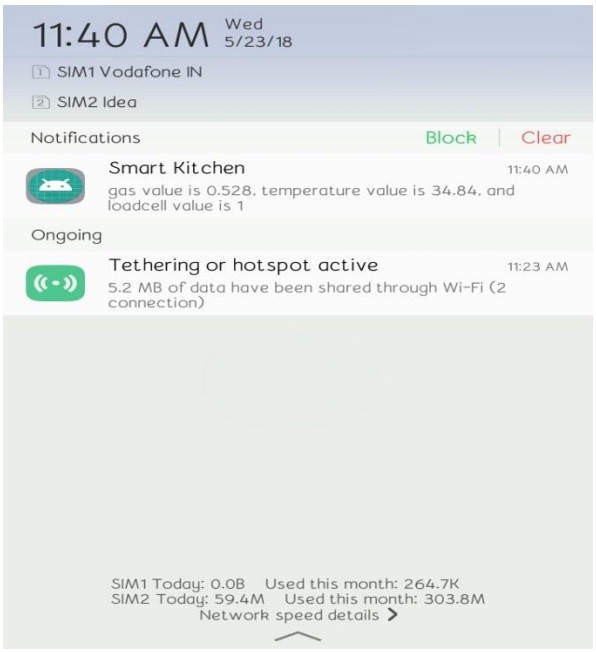
SOFTWARE:



C. kitchen monitoring application



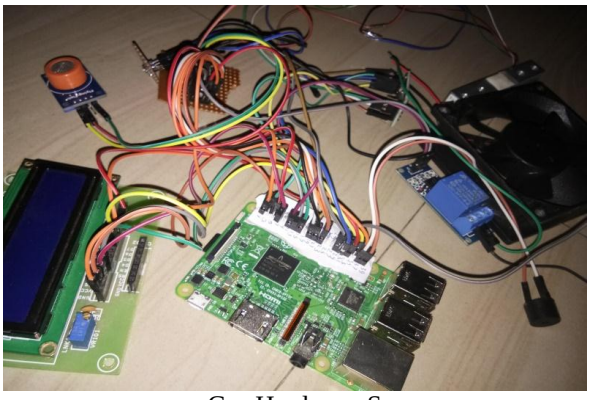
D. Sensors value sensed by raspberry pi



E. Notification on user mobile

F. Notification of sensors

HARDWARE**:**



G. Hardware Snaps

V. Expected Outcome

The system here deals with the gas leakage, temperature, and maintaining electrical equipments. It is armed with Raspberry Pi which has an inbuilt Wi-Fi and hence it enhances communication. Also continuous tracking of the kitchen and its atmosphere can be received via Wi-Fi. This is one step ahead in Home Automation.

VI. Conclusion

In this paper by using raspberry pi with Wi-Fi and The Web based monitor and automatic control of equipment is forming a trend in automation field. Replacing PC with low-cost single chip processor can make administrators to get parameters of different remote sensor and send control information to field equipment's at any time through Internet.

Instead of using GSM technology in this paper we used Wi-Fi concept with raspberry pi which is simple in construction and easy to understand and an additional requirement for kitchen may be implement in future like an audio jack is configured in raspberry pi so we can plug our mobile phones to audio jack and can hear or watch the recipe of any dishes or we can also used magnetic door sensors in case of robbery or any theft in human absence which may not able in microcontroller or aurdino.The Wi-Fi and Web based controlled duplex communication system provides a powerful decision making device concept for adaptation to several smart kitchen scenarios.

VII. References

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