Smart Kitchen Using IoT

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Abstract: **Although much of the work has been done until today to realize the Internet of Things (IoT) into practice, most of the work focuses on resource-constrained nodes, rather than linking the existing embedded systems to the IoT network. The Internet of things (IOTs) is a network of physical objects or things embedded with electronic, software, sensors and connectivity to enable objects to exchange data with manufacturer, operators and connected devices. It can be described as connecting everyday objects like smart phones, 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. IOT allows objects to be sensed and controlled remotely across existing network infrastructure. It also provides efficiency , accuracy, comfort and economic benefit. Now anyone, from anytime and anywhere can have connectivity for anything and it is expected that these connections will extend and create an entirely advanced dynamic network of IOTs. Our work here tries to enhance Internet oriented approach with semantic oriented method, both of which are required to build practical, complex IOT applications, which are expected on rich embedded devices. We are going to propose a system which will sense if the gas in the cylinder is about to get over and will immediately inform the owner as well as do the booking automatically . We are going to present a low cost gas control and monitoring system using an embedded micro controller, cloud server. We will evaluate our system through case study and will show that our framework can be used effectively to implement practical IOT applications.**

I.   INTRODUCTION

1.1 Motivation and objectives

The design of a gas leakage monitoring system is proposed for home safety. This system detects the leakage of the LPG and alerts the consumer about the leak by SMS and as an emergency measure the system will turnoff the power supply, while activating the alarm. The additional advantage of the system is that it continuously monitors the level of the LPG present in the cylinder using load sensor and if the gas level reaches below the threshold limit of gas around 2kg so that the user can replace the old cylinder with new in time and automatically books the cylinder using a GSM module .The device ensures safety and prevents suffocation and explosion due to gas leakage and

software monitors all the functionality of software.

1.2   Need of System

Natural gas is another widely used fuel in homes. Both burn to produce clean energy, however there is a serious threat about their leakage. The gases being heavier than air do not disperse easily and may lead to suffocation when inhaled; also the leaked gases when ignited may lead to explosion. The number of deaths due to the explosion of gas cylinders has been increasing in recent years. There is a need for a system to detect and also prevent leakage of gas.

1.3 Basic Concept

The design of a gas leakage monitoring system is proposed for home safety. The system detects the leakage of the gas and alerts the consumer about the leak and as an emergency measure the system will switch on the exhaust fan and also checks the leakage. An added feature of the system is that the approximate consumption is indicated in terms of the total weight. The proposed system makes use of android mobile application to alert about the gas leakage via an SMS. Whenever the system detects the increase in the concentration of the LPG it immediately alerts by activating an alarm and simultaneously sending message to the specified mobile phones. activating an alarm and simultaneously sending message to the specified mobile phones. The device ensures safety and prevents suffocation and explosion due to gas leakage. It also reduces the customer burden, It will monitor and display the quantity of gas level in the cylinder and sends SMS alert to the user as well as sends booking SMS to gas refill agency.

1.4 Applications

1. Monitoring the all sensors and its value for safty detection of gas leakage,temperature and Humidity of room,and daily usage of system to the user.
2. Automatic Booking for gas refill.

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3. Stores the data related to the system like daily usage,booking dates etc..

II. PROBLEM DEFINITION

Intelligent System for Domestic Gas Appliances using IOT. In our day-to-day life there is serious threat about leakage which leads to suffocation when inhaled, when ignited leads to explosion and causes a number of deaths.

This project is about designing a LPG leakage monitoring system which is proposed for home safety. This system detects the leakage of the LPG and alerts the consumer about the leak by SMS and as an emergency measure the system will turnoff the power supply, while activating the alarm.

III. LITERATURE REVIEW

LITERATURE SURVEY

Safety plays a major role in today's world and it is necessary that good safety systems are to be implemented in places of education and work. This work modifies the existing safety model used in homes. The main objective of the work is design in microcontroller detecting and alerting system. The gases like LPG and propane were sensed and displayed each and every second in the LCD display. If these gases exceed the normal level then an alert message (SMS) is sent to the authorized person . The advantage of this automated detection and alerting system over the manual method is that it offers quick response time and accurate detection of an emergency and in turn leading faster diffusion of the critical situation.

2.1 Related Work

Home automation or smart homes (also known as domotic) can be described as introduction of technolgy within the home environment to provide convenience, comfort, security and energy efficiency to its occupants. With the introduction of Iot, the research and implementation of home automation are getting more popular. Various wireless technologies that can support some form of remote data transfer, sensing and control such as bluetooth, wifi, Rfid and cellular network have been utilised to embed various levels of intelligence in the home. The studies have presented bluetooth based home automation system using android smart phones without the internet controllability. The devices are physically connected to bluetooth sub controller which is then accesed and controlled by smart phone using built in bluetooth connectivity. Researchers have also attempted to provide a network interoperability and remote access to control devices and appliances at home using home gateways. Lately few researchers have also presented the use of Web services , simple object access protocol (SOAP) and representational state transfer as an interoperable application layer to remotely access home automation system.

2.3 Existing System

2.3.1 Scope

When things like household appliances are connected to a network, they can work together in cooperation to provide the ideal service as a whole, not as a collection of independently working devices. This is useful for many of the real-world applications and services, and one would for example apply it to build a smart residence; windows can be closed automatically when the air conditioner is turned on, or can be opened for oxygen when the gas oven is turned on. The idea of IoT is especially valuable for persons with disabilities, as IoT technologies can support human activities at larger scale like building or society, as the devices can mutually cooperate to act as a total system. So far, much work has been done on realizing the IoT .

2.3.2 uID-CoAP architecture

There is a existing system which introduces the uID-CoAP architecture, a new IoT framework that aims to provide a solution and a new way to let the existing embedded systems be integrated into the IoT network.

2.3.3 Philips Hue

There is another existing system by Philips Hue which is an intelligent web based LED lightening solution with internet of things which allows the user to control the home lightning anytime anywhere. Philips Hue allowa users to create and control home lightning usind their smart phones aur tablet and work seamlessly across both Iot and android mobile platforms. The philips Hue range for India includes Hue starter kit which includes the bridge and three Hue lamps .

Technology Used:

The system is proposed of an Android Smartphone users mobile app will be developed in android. MySQL will be used for maintaining database.

SYSTEM ARCHITECTURE
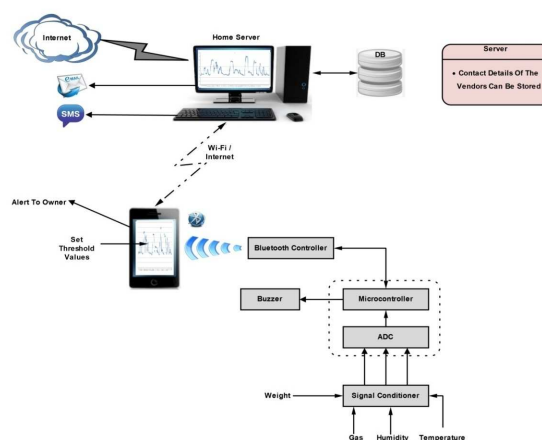
In this system, the main concept used is automisation of home appliances using the domain of Internet Of Things. For this

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purpose, a gas cylinder is used which is provided with different kind of sensors as mentioned above. The variation in parameters will be observed with the help of the different sensors and the values will be taken accoding to the variations. For example, reduction in the weight of the gas below the threshold value will be sensed by the weight sensor and accordingly messege will be sent to the user. also the value will be stored in the database accordingly. Thus the working of all sensors takes place in same manner.

SOFTWARE AND HARDWARE REQUIREMENTS

4.1 Hardware specifications

The system proposed consists of three major modules namely, leakage detection module, protection circuitry. It uses ATMEGA32, which is an 8 bit microcontroller. It finds wide application due to its features and low power. It finds wide application due to its features and low power.

4.1.1. Sensors

For the weight measurement load cell is used. For temperature measurement LM_35 sensor is used. For Gas measurement MQ5 sensor is used. For humidity measurement SY_HS 220 sensor is used. Control Unit and Power Supply Unit are the On-Board Units used in this case.

4.2 Software specifications

The proposed system consists of an android application. This Smartphone application provides different kind of functionalities to the user. Remote connection to the home gateway is proposed in the given system. Managing schedule of the devices and sensors is the factor of great importance in proposed system. Device monitoring and device control are also done over here.

4.2.1 Software Requirements

For Server Application Operating System used is Windows operating system. Application Server used is Glassfish server. Java is used as a Front End. Back End is Mysql.

CONCLUSION:

Our system will detect the leakage of the gas, incase there is any leakage it will send a sms to the owner and it will turn off power and activate an alarm. The system will continuously monitor the weight of the gas. There will be automatic booking of the gas done (by setting a threshold value for the weight sensor). We will even measure the Humidity and the Temperature around the gas cylinder.

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