Smart Kitchen Using IOT

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DOI: https://doi.org/10.58260/j.iet.2202.0110

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The purpose of this paper is to highlight the many features of the Internet of Things and their relevance in the smart kitchens. By different technologies and their applications smart kitchens have been covered. Different types of appliances have been described, as well as their applications in the smart kitchen. In recent years, the number of kitchen-related issue has been increased in domestic kitchen as well as commercial kitchens. Integrating IoT technology can keep away from these types of situation, such as remote monitoring of the entire kitchen via applications, messages, Gmail, Bluetooth, and Wi-Fi. Both hardware and software will be used for making smart kitchen. On the hardware part MQ2(Gas) sensor, Pressure sensors, DHT11 sensors, IR sensor is used in this. An integrated cloud application as well as a mobile app were used in software. For cloud data transfer, all of the sensors will be attached to an Arduino Uno board, and the software and coding will be handled by Porteous. By implementing the smart kitchen, it can be help people to make life easier in this busy world.

Keywords: Internet of things, mobile application, sensors, kitchen- accidents, data transfer, integration

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Introduction

Human life has been changed a lot due to the impact of the application of information and communication technology[1]. In today's world the digital environment is becoming more and more accessible[2]. Nowadays, everyone is reliant on the internet and social media platforms. People can now have faster and higher-quality internet access due to several types of internet connections. The 'Internet of Things,' which allows for connectivity and intelligence, is a further advancement of this technology. This is achieved by internet-connected gadgets, wireless sensor networks, and smart phones communicating among each other. These device in the system helps, deliver the product according to their program. In the field of electronic media, the Internet of Things is really important for automating processes. Enhancement of existing safety standards is one of the add-on benefits.

The main goal is to create a better world for humans in which items in our surroundings perceive what people like, want, and need after that the system act according to the needs of human without specific commands and instruction. For cooking and heating, natural gas is a common energy source in households[2]. Accidents caused by gas leakage result in financial damage as well as human injuries. The main targets of the creating a system are to detect gas leaks and, Subscribers are notified via alerts and stored the updated status in a database and shown on a device like Android mobiles. The system is efficient in that it does not cause a problem by continuously ringing the alarm, but instead provides people with alerts[3].

The remaining part of this paper is structured as follows.: In next part of this paper shows the background concepts are discussed. After that this paper shows the related work, It also includes a survey of several comparison analyses based on criteria and benefits or drawbacks. The next part of this paper discussed about the architecture that is proposed by the users. At the end final section concludes the article by showing the results[4].

Literature Survey

In 2009 Kiritsis describe a new thing of intelligent outcome, that shows what problems we have to face as human. To produce more enriched product data, it conveys closed loop

Result of life cycle management. Technology that can be used to produce smart or intelligent products in the future, and the other side it deals with static data and dynamic data both. In the 2009, Eisenhauer and colleagues (Eisenhauer et al.) Al., a paper was released that propose an intelligent application for sensors and wireless devices uses this IOT platform. This information will useful for developer as a middleware to design intelligent embedded systems applications. This platform was built using a unique combination of Service-oriented Architecture, in short it is written by SoA & an Architecture of semantic-based Model Driven.

In 2010, Haller, et.al. concentrates on thoroughly explaining all of the key terms used in the IOT or internet of things. This document aims to provide simplicity by defining key concepts such as things, properties, devices, interest in entities, as well as resources, addressing, identification, and, most significantly, their correlation. HONG et al. presented wireless network and sensor network solutions based on several ideal or standard protocols and internet protocols to establishment the internet of things(IOT) in 2010. It concentrates about modifying IP address to the Universal objects interface or Internet of Things. The Sensor Networks for an All-IP World (SNAIL) catch up on to IoT (internet of things) is described in this article. There are many network protocols but the four major networks i.e. Mobility, synchronization, web development and security are included.

Tsado et al. hypothesized in 2013 that GSM cell phones may be used to detect gas leakage. They employed two gas sensors, which are intended to detect gas leaks in a specific area. They also employed an assembly language-programmed 8051 microcontroller and a phone based on GSM. The GSM phone is set up to send the information and alert of overflow of gas notifications to another GSM phone in the form of a message (SMS) that includes the accurate location so that immediate action can be taken. When a gas leak occurs, this entire system will result in a speedier discovery.

Guo et al. proposed in 2013 that the Internet of Things be built on extempore, network devices that is overambitious (such as cell phones and smart vehicles) using short-range wireless methods (such as Bluetooth, Wi-Fi). It concerns with information transmitting and spread with the overambitious and among opportunistic associates developed depends

On civilization, human movement and opportunistic that is connects with the universe, this will build a nearby interaction between people and their needs i.e. connected with wireless connection or can say smart things. This study proposes a strategy for creating IoT in a different way, one that may be done at any time using radio frequencies.

In the year 2018, Shital Imad, et. al. focus on leakage of gas detection and smart alerting system using IOT in this paper the main function of to alert, whenever the gas is leaked, then not only will this device be able to identify gas leaks, but it will also be able to inform users via audio alerts. This system will notify the user if there are excessive quantities of harmful gases in the surroundings. Before an accident occurs, the system can send a message to the society administrator advising them of the issue.

In the year 2016, Ashish Shrivastava, et. al. proposed a system. They dealt with issues like hoodlums, spillage, and fires. When this happens, their system sends an SMS to the designated crisis number. In the suggested framework, they designed "LPG gas watching and planned barrel booking with ready framework. These reports focus on the location of financial fillers such as oil, fluid oil gas, and alcohol, and send out SMS alerts to the surrounding area about the leakage.

In 2016 Falohun et. al.; In their research, they demonstrated their harmful gas detection using an integrated circuit and MQ-9. They essentially used an installed plan that includes standard information and produce gadgets like switch, transfer, solenoids, LEDs, very little custom LCD displays, radio wire gadgets, and temperature, humidity, and light level sensors. The absence of a console, screen, circles, printers, or other visible I/O sensors on implanted frameworks is typical of a PC, and may necessitate the use of a human collaboration device.

In 2014 S Shyamaladevi, et. al.; In their study paper, they exhibit their project ARM7-based mechanisation better framework for LPG refill booking and leakage identification and system. On the buyer's end, the document is designed using a methodical methodology that can be broken down into an LPG chamber booking unit, a gas spillage checking unit, and a server framework unit. MQ6 was placed in the area of the gas chamber. When a leak occurs, the sensor's covering weakens,

Allowing its conductivity to expand. The microcontroller is encouraged to compare beats while also turning on the bell and fumes fan. By using the GSM module, the message is sent by microcontroller like "Crisis ALERT, Liquid petroleum gas spillage that is found in our houses" to the relevant phone number, with a similar message is displayed on the LCD. This paper proposed, described, and efficiently implemented a gas spillage recognition system for home security and current applications. This system detects LPG leakage and sends an SMS notice to the customer, as well as shutting down the power supply as a security precaution. This framework provides a completely programmed method to gas booking, in addition to gas spillage location. The constant weight estimation of a gas and LCD display make it an ideal home security device which can also be used to detect gas spills in businesses and other locations.

In all the related work, in all the related papers says that, if by any case fire exist in our kitchen then it sends the alert to the customer by mail, SMS, Wi-Fi and by Bluetooth also. But the drawback is, its takes time around 30-40 minutes. And the other thing is that all the papers tells us that the proposed system only sends the alert and alert the customer.

In this paper, we are trying to reduce the time to alert the people about fire and make the automatic fire exhauster that will control by customer.in this paper we are also try to fix the camera, like if any child or ant pet is try to enter the kitchen and there is any gas leakage and any other things happened, then the customer gets alert and saves their pets or children's.

In all the given previous paper, many research papers tell about gas leakage and the solution to cure the gas leakage. But in all the research paper when any system alert about any gas leakage, it takes more time to alert the user. In all the given paper no one use many sensors like flame sensor, PIR sensor, moisture sensor, most of the paper only use gas sensor for leakage of gas.

Methodology

In this project, the paper is all about smart kitchen using IOT. In this proposed system, there are many sensors used like MQ2 (gas) SENSOR, Pressure

Sensor, DHT 11 sensor, IR sensor has been used, water sensing sensor PIR sensor, and camera also. And for alert GSM, Wi-Fi, Bluetooth can be used. Arduino uno board and Porteous is also used in this project. In this, proposed system, it is help to extinguish the fire by automatic gas exhauster that will be controlled by the customer itself.

In this paper, there are many hardware parts as well as software parts. In hardware part, Arduino UNO, mobile app, sensors, camera fire exhauster. In software part Porteous.

Figure 1: Simulation design

Figure 2: Simulation design

Results

The simulation of the project on proteus software was done and is shown here in Figure.2.

Figure 3: Result

As we can see when we give input means any accident occurs in our kitchen the sensors sense the problem and the sensor goes high means it goes 1 and it detect the water is leakage, fire exist, gas leakage etc. after detection it sends alarm. By hearing that alarm or it send SMS by Bluetooth, after knowing that any accident occurs in our kitchen we can operate from our phone for some time and after reaching home we can easily control the situation.

Conclusion

After applied all the software and hardware part software means codes, after applying these things, our Arduino uno tries connecting to Wi-Fi network. Now serial monitor will display the humidity, temperature, gas level, air quality, sound or alarm status and the presence of human etc. If any type of accident occurs in kitchen we can get notification through mobile app.

So once the project connects to the Wi-Fi network it will automatically start sending the data to the mobile application. Mobile application receives all the data and display that data to user. This mobile application is also show that there is any human present or not if there is any human that this application indicates the fire, otherwise it will automatically, means it will automatically on or off according to the presence of human. When the gas level of this kitchen reaches verry high the exhauster will automatically open, but we have to set the desire value of temperature.

Future scope of this systemWhen home appliances are linked to the internet, they can collaborate to deliver the best service possible as a whole, rather than as a collection of separately operating gadgets. Here we are trying to implement a smart kitchen that is operated by any user if they are in the house or not. In future it helps to minimize the number of accidents like gas leakage, over water flow etc.

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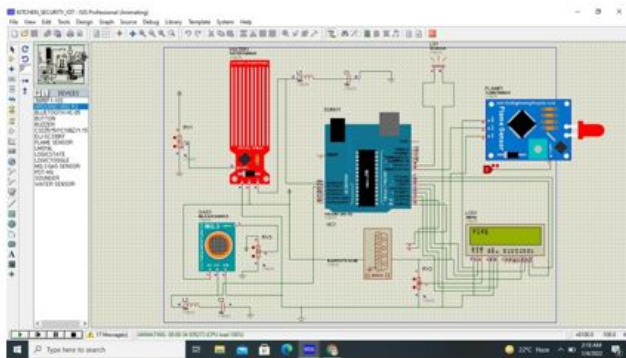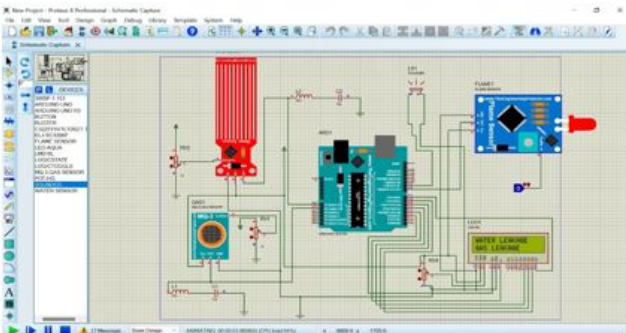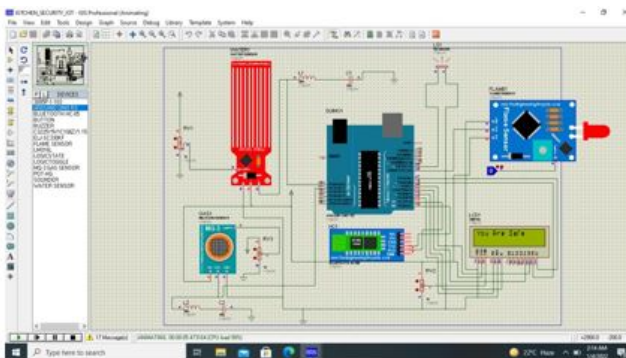
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