Design a Smart Kitchen Model for Smart Homes based on Arduino

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ABSTRACT

Research on IOT estimates that by 2019, the Iot market will be more than double the size of the smartphone, PC, tablet, connected car, and wearable market combined. Future smart homes will have kitchens that are intelligent and intuitive. They enable personalized interaction and real-time insight in everything from food and fitness to grocery shopping. Jars are the most commonly used items to store food in. So it was a good place to start introducing smartness without changing consumer behavior. Our smart jar works just like a regular jar except it has connectivity and sensors built into it which collect and send data to the cloud. Our kitchen with jars is synced with an android app. When the food in the jar gets low an alert is sent to add its contents to your grocery list. The smart jar is dishwasher safe, has an airtight lid, and looks pretty good. 'Built with Bluetooth connectivity and sensors it lets you track, syncs with fitness devices, gets recipes and gives you total control of your kitchen. 'The air-tight jar can be used for various food including pasta, pulses, snacks. On another hand, we can even automate the controlling of stove regulator using an LPG gas sensor. Whenever there is any leakage the regulator gets switched off automatically.

Keywords: Smart Kitchen, Jar, Arduino, Bluetooth, Sensors, Ultrasonic Sensor, Cloud.

1. INTRODUCTION

In these diverse sensors for various applications now and then we may even utilize the same sensors contrasting for various applications [1]. Whatever it might be the last yield is life has expanded its speed with the innovation promoters. One of the perfect methods for utilizing innovation is to utilize Bluetooth innovation and Internet of things to detect basic needs in the kitchen with the goal that consequently request can be put to the stores [2-5]. The individual who utilizes this framework can get updates of the requests set through the portable application. This framework in conjunction with portable application and the site made by Stores [6, 7]. The measure of basic needs in the containers and LPG gas accessibility, temperature and damply levels in the kitchen can be pictured through the versatile application. The diminishing levels in the containers will be detected by ultrasonic sensors and requests will be set, if LPG weight goes beneath some limit esteem a message ready will be sent to the client, in the meantime in view of the temperature and moistness esteems exhauster fan can be managed to utilize the portable application [8,10]. The controlling gadgets of the entire framework are Arduino Uno with Ethernet. Bluetooth modules, sensors, are interfaced to Arduino Uno. The information from the slave Bluetooth modules associated with Arduino Nano is bolstered as a contribution to the Master Bluetooth which is associated with the Arduino Uno [11-13]. Information from Arduino Uno is sent to the cloud utilizing Ethernet shield. The information refreshed in the cloud will be envisioned in an android application created in the android studio and website page. Fig. 1. Example of a figure caption. As per last 10 years, this concept was trying to develop in different applications. In
every year the percentage was going on increasing. It was the upcoming application development. I got a new idea for the smart kitchen so I thought to make every house as the smart kitchen. To make every house as smart kitchen we proposed this method develop this application. By using this application we can get all information regarding of our kitchen [14-17]. By using cloud and mobile application we can control our kitchen automatically.

The main objects are:
1. Automatically online ordering and updating the information to the system users.
2. Indicating kitchen status using different sensors.
4. Providing data analysis to the system users about the smart kitchen grocery.

B. Taskin, et.al (2017) proposed a Comparison of Tools Application on Smart Kitchen administration Design. The creator depicts the design and administration manage delivering astounding items with the inventiveness in a transient period. Creator has created strategies to tackle that issue as TRIZ. The TRIZ-based procedures expect to recuperate the holes of the imaginative development to take care of particular issues of specialized items and advances [3].

Y. Li, M. Z. Asghar, et.al (2013) proposed an elucidating Out hardly helped savvy kitchen senior residents experiencing dementia. The creator portrays the brilliant kitchen condition was capacity to adjust to fit senior nationals with dementia's propensities and living conditions. He plans to encourage the senior subjects experiencing dementia and their parental figures [4].

3. PROBLEM STATEMENT

Clever System for Domestic Gas Appliances utilizing IOT. In our everyday life, there is not kidding risk of spillage which prompts suffocation when breathed in when touched off promotes blast and causes various passing’s. This task is tied in with planning an LPG spillage observing framework which is proposed for home wellbeing. This framework recognizes The spillage of the LPG and cautions the shopper about the break by SMS and as a crisis measure, the framework will kill the power supply while initiating the alert.

4. PROPOSED METHODOLOGY

The current frameworks have cooperation’s with kitchen utilizing sends and orders, kitchen checking and controlling kitchen apparatuses remotely, basic supplies in the kitchen are additionally as equivalent critical in everyday life. So adding extra highlights to the kitchen programmed web-based requesting is executed by utilizing the idea of a web of things and distributed computing [18-20]. These two ideas are the most recent and propelled advancements; the Bluetooth idea is additionally utilized as a part of this undertaking to diminish the
equipment use and to grow minimal effort and effective framework. The venture primary point is to plan the framework to break down the basic need shakes in the kitchen and Automatically requests will be put to the stores utilizing web of things, so time can be spared with going to stores face to face alongside this different thought included are, temperature and stickiness, LPG gas accessibility are detected utilizing temperature and dampness sensor, stack cell sensor separately. This information will be imagined in a versatile android application created in android studio Utilizing java and site created utilizing php [21-23]. The stores like enormous crate and spencer's etc. Can be profited by enhancing their items.

In this methodology, we used two types of hardware and software. In hardware, we have two modes of slave and master. In slave we have three jars which are connected to the Bluetooth from Bluetooth we will communicate to the master mode .in master mode we will be controlling the kitchen by using Ethernet shield, throw the Ethernet shield we will send the information to cloud [24-25].

5. SOFTWARE ANALYSIS
Steps to flow the software analysis:

5.1 Cloud module
The cloud is an administration for information support; if any client can't store the information all alone PC they can approach the cloud for information stockpiling and upkeep. The client and the cloud will be associated with the web. Whatever the data we are getting from the web is because of the cloud. There are numerous sorts of cloud administrations accessible. The client will pick in view of the prerequisite. In this task, claim web server facilitated in smart bridge cloud. This web server is intended to gather and keep up information from different gadgets in a city. This is planned as easy to use and it is open to all clients. This website page Can be evaluated using the URL "smartkitchenTheSmartbridge.com". The user should follow some procedures to utilize the services. • Open webpage using the URL. • The user should register to the cloud by using the registration form.

![Figure 2: Block Diagram](image)

![Registration Form](image)

![Homepage of Smart kitchen architecture](image)
Notification is designed to send notifications to the registered users according to the preferences of the user. The user can register any mobile number here to get the notifications about the device. Whenever the values of device exceeded threshold level then the user get notified about the same for necessary action. The user should enter the mobile number in below window for registering into notification engine. The user will receive OTP on the mobile number mentioned, that should be entered again to confirm user should enter the mobile number in below window for registering into notification engine. The user will receive OTP on the mobile number mentioned, that should be entered again to confirm the registration. Please see below the figure for the notification registration process.

E-commerce

E-commerce is used to buy the product. In this web page we can find the grocery present below with their product name and its cost. one more benefit is that if we have any offers we can see them besides to the product. It is easy to select the products by seeing the prices and it offers.

5.2 Hardware Analysis

In this admin website, admin can check all details of the clients and retails. In this we can see how many members have been registering as well as client details. In this we can manage the channels as well as we can also check the e-commerce site in that we can see how many products of grocery has been sold. Overall admin can control this website by login into this website.
6 RESULT

6.1 Software Result

By observing the jar values and the jar measure. The output of jars has displayed the result in the cloud. In the cloud, we can see the result of jar, temperature, gas, LPG, and humidity result in form of graph representation. Based on the above experiment result we will get the output in the form of graph representation.

Figure 9: sample of hardware result of 3 jar circuit

Figure 10: level of the jar

Figure 11: Graph representation of jar.

Figure 12: Temperature level of kitchen
7. CONCLUSIONS

The project “Smart Kitchen Information System” has been successfully designed and tested. It has been developed by integrating features of all the hardware components and software used. Presence of every module has been reasoned out and placed carefully thus contributing to the best working of the unit. Secondly, with this system, we can purchase the online grocery directly place an order instead of going to retail shops. Further Scope We can also develop mobile application in which we can purchase online grocery .when a notification is pop up we can integrate monthly expenditure of our grocery &depending on our budget. By using this mobile. the application we can control the existing fan on and off by this app.

REFERENCES


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