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Smart Kitchenware

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Abstract: *Now a days Internet of Things devices are at their peak many daily use products or common devices are showing potential to get the connectivity of internet for transmission and receiving data to or from server. In IOT development Home automation is the most explored one but in home automation kitchen automation is less explored.*
Making a step towards smart kitchens, we are introducing Smart Kitchenware -smart daily use kitchen containers with internet connectivity. These containers will get connected to the Wi-Fi and send data and status of the containers to the cloud server. The users can view the status of their containers in the Mobile Application of Smart Kitchenware on real time.

The users can view the status of containers, how much stock is left in the container in graphical way, users will get notification when stock in the particular container seems to get over. It will also estimate remaining days for a stock to runout.

Keywords: **Smart Kitchen, Smart Kitchenware, ESP8266, Smart Containers, Smart Jars, Realtime database, IOT.**

1. INTRODUCTION

Wi-Fi enable smart containers for house hold and kitchen item storage. These containers are connected to our home Wi-Fi network and send real time data to the cloud server. In the cloud server the date is stored in No Sql Real time database. The data from containers which is to be transmitted is the readings from the sensor which is used in these containers to measure load inside the containers.

A mobile phone Application for user that is installed in the device of the user which will detect all smart containers into the network like any other smart devices. This mobile is based on platform independent development framework i.e. Flutter. Flutter provides modern UI, graphical and statistical representation of data which is very important in this project.

This application will show data of containers to the user, the data such as status of container, which container is empty, what is the estimated date to refill the container, show when the last refill done, user will get notified if the best before date passed by any product in the containers and many more.

User can also analyze the usage of particular container or product using application.

2. PROPOSED SYSTEM

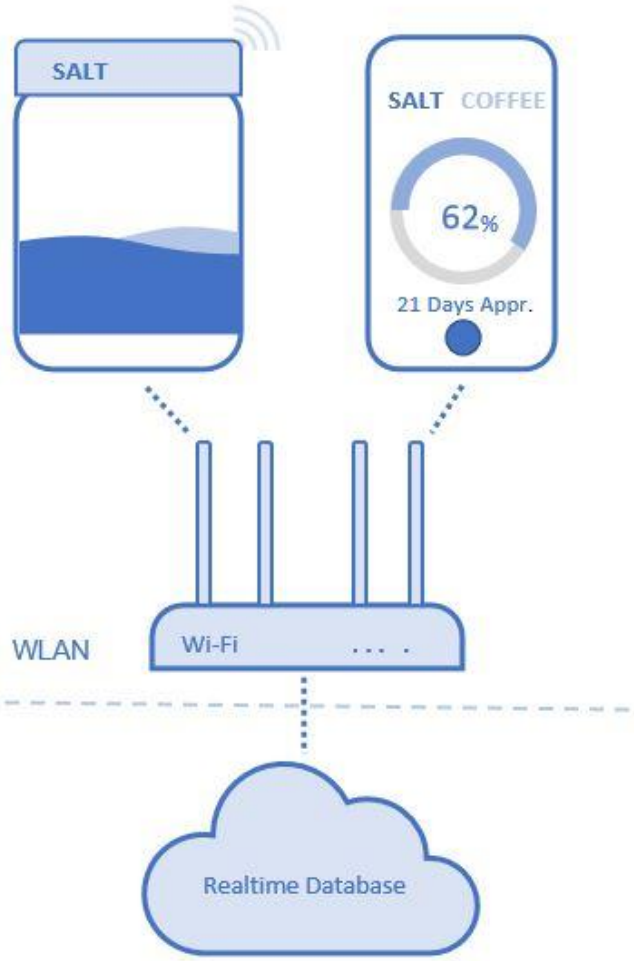
The proposed system consists of two things:

1. **Smart Containers:**
   a. These Containers are Wi-Fi enabled smart containers, which will easily get connected to our home Wi-Fi network like any other smart devices.
   b. These containers can measure the weight of item inside the containers.
   Sensing the accurate weight of a product inside the container is the most accurate way to analyze the quantity of a material inside the container.
   c. The weight of the item inside our containers will be transmitted to the real time database on the cloud server as a raw input.
   Inside the database these data are mapped with particular authenticated registered users.
   d. ESP8266 will be used in these containers as microcontroller and to provide Wi-Fi capabilities.
   This microcontroller is ideal for this project because it can works as both client and server node in the Wi-Fi network.
   e. The power consumption of these containers is very low and can relay on 9V batteries for many days.

2. **Mobile Application**:

   a. This application will show the status of the containers of the user in different graphical ways such as redial graph and percentage etc.
   b. Users can view the consumption of items in these containers in using this application.
   c. Users can set reminders and notifications for events such as when to refill, best before warnings etc.
   d. Application will notify the users if any containers getting empty.

3. SYSTEM ARCHITECTURE



The system architecture consists:

1. Containers:
   Equipped with ESP8266, load sensor and battery for power supply.
   It is connected to the Wi-Fi router through initial setup configuration.

2. Mobile application:
   Based on the user id this app will get the data of particular user from the database and show in the application.

3. Wi-Fi Router:
   In order to provide Wi-Fi connectivity to these containers, these containers must be added in to the WLAN as a client device and for this Wi-Fi outer is necessary.

4. Cloud Server:
   To provide realtime data transmission and NoSql database cloud server is used.

4. CONCLUSIONS

Here we concluded Introduction, Proposed system and Architecture on our project Smart Kitchenware -smart containers for kitchen items.

1. Using precise design for accurate measurement of items in the containers.

2. ESP8266 is used to provide Wi-Fi connectivity to these smart containers.

3. Platform independent mobile application with informative UI.

4. Status of each containers will be shown in the mobile application.

5. Usage statistics will be shown in graphical manner.

6. Estimated remaining days will be calculated and shown based on usage.

7. Users will get notified if any product passes the bet before date etc.

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