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IoT Based Food Inventory Tracking System for Domestic and Commercial Kitchens

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Abstract:

A main component in effective kitchen management is inventory control. Keep the track of the kitchen inventory leads to more informed planning and decision-making. Using advanced technology in a fast pace and everything around us becoming automated, people prefer to monitor and perform their day-to-day activities by using the smart devices they carry everywhere rather than manually recording and monitoring things. In various households, restaurants and food chains maintaining and keeping track of everyday common food inventory is becoming one of the major problems. The major concern is replenishing the containers at the right moment and also knowing the expiry of foods. Busy restaurants and working people find it difficult to keep track because it requires human intervention at the right time. Hence, it is easy to keep an eye on potential problems related to waste and pilferage. In this problem statement we propose an IOT (Internet of Things) based food inventory tracking system, which ensures real time monitoring of the kitchen inventory. To understand the daily or weekly consumption collected data can be analysed in real time and also predict usage/consumption patterns. There is also provision to check the real time status, history of consumption through a application. The system contains a Microcontroller, load cell and wireless Module, MQTT broker, a hybrid application through which real time inventory tracking is performed. The proposed solution is absolutely wireless and reliable for both domestic and commercial purposes.

Keywords **—Microcontroller, load cell and wireless Module, MQTT broker**

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I. INTRODUCTION

Kitchen inventory management becomes more advantageous for more informed planning, decision-making. On every day the modern people expect new device and new technology to simplify their day to day life. The resembles and innovators are always trying to find new things to satisfy the people but the process is still infinite.

At this movement, kitchen automation became modern and precise to monitor the fields. In the 2000s, Internet connectivity became the type for many applications and today is expected as part of many enterprise, industrial and consumer products

to provide access to information. After all, these devices are still primarily things on the interaction and monitoring through apps and interfaces. With the advancements in Internet technologies, and wireless sensor network (WSN), a new trend in the era of ubiquity is being realized. The huge increase in users of internet and modification on the internet working technologies enable networking of everyday objects. Our system finds a wide application in areas where physical presence is not possible all the time. This system offers a complete low cost, powerful and user-friendly way of real-time monitoring and remote control of kitchen. To keep track it requires human intervention at the right time when working people and busy restaurants find it difficult. Using this, it is easy to keep an eye on potential problems related to waste and pilferage. In this system we propose an IOT (Internet of Things) based food inventory tracking system, which ensures real time monitoring of the kitchen inventory. The collected data can be analyzed in real time to understand the daily or weekly consumption and also predict usage/consumption patterns. There is also provision to check the real time status, history of consumption through a application. The system contains a Microcontroller, load cell and wireless Module, MQTT broker, a hybrid application through which real time inventory tracking is performed. The prospective solution is completely wireless and reliable for both domestic and commercial purposes.

II. LITERATURE SURVAY

A. *Smart Home Monitoring And Controlling System Using Android Phone*.

In this project, it describes a zig-bee module and android based home monitoring system for security, safety and healthcare for human. This system is flexible and can be implemented in many research areas. This paper describe a smart home system which could surprise household appliances remotely and realize real-time monitoring of home security status through mobile phone. To monitor the various parameters in the proposed system the personal computer is used. The android phone is main advantage compared to personal computer for using any place.

B. *Smart Kitchen Cabinet For Smart Home.*

This paper describes a conceptual design of a smart kitchen cabinet. This system describe grocery item identification, inventory management of grocery items and automatic generation of shopping list. The are two different sections in smart kitchen cabinet which is leveraging two sensing mechanisms: weight sensing section consist of fixed size container having RFID tag defining container size with product description RFID tag reader, and ultrasonic level sensor for measuring the level of contents in the container. The RFID tag reader, and weight sensor meaning all the contents on that shelf. To measure the weight or the level of the items which in updated to the database whenever grocery items are placed or taken out for cooking we can use embedded sensor. The system generates the automated shopping list when the items reach the predefined threshold level.

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Respective resources (or ingredients) is linked to each food item and as each product is sold the ingredients utilized in making that product are also utilized. To utilize the database these changes in inventory are kept track of through utilizing a database.

We suggest to keep track of each and every ingredient by dynamically linking it to the product and as a result create a dependent relationship to that product. At a particular time period (typically the end of the week); if the inventory is below the threshold level, order forms to the specific vendors are generated in order to restock the required items for the next week. This project solution also makes smart predictions on required inventory for the following week based upon the predicted climate and possible occasions or events that may influence near future sales.

III. CONCLUSIONS

This function demonstrates how easily one can leverage IoT to eliminate human intervention and automate manual processes. For a large hotels or restaurants, this can make a big difference. A further enhancement of this application would be to automatically place an order with suppliers when inventory falls below a critical level. The possibilities are boundless, and with cloud state of the art data warehousing and the 99.999% reliable messaging infrastructure of MQTT, building such solutions is fast, secure, and highly scalable.

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