Smart Pantry

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Abstract: **This paper provides associate insight into the event of associate IOT primarily based on the grocery levels at homes and supermarkets. A compatible and reasonable wireless sensor network is implemented. Serving as an asset for research in the food industry, this implementation can be used to observe the food consumption patterns. What goes together better than the net and food? But there's more to this delicious combination than just posting photos of last night's meal on Instagram. Continuing our theme around the "Internet of Things," we present another possibility from this game-changing tech., we're going to use to application that will transform any dumb kitchen by enabling automatic inventory tracking. You'll never run out of bacon again! This application relies on sensing the weight of a kitchen storage container to trace food consumption. This data can provide valuable insights around consumption patterns and facilitate chefs predict and refill their inventory simply in time. One thing when a person can inter a food menu item then the app can show required item list for this food menu**

Keywords**: grocery, compatible, serving, consumption, dumb, chefs, refill.**

INTRODUCTION:

We are developing a project on smart pantry using Sensing the weight of a kitchen storage container. Your pantry will reflect your cooking style. Organize your pantry according to varieties of foods so you can notice things. Grains: Rice, pasta, bread, beans, oatmeal, etc. Root vegetables: onions and potatoes, yams, and the likewise can go in your pantry and we can find out the actual storage and remaining item quantity for a specific time period and notify In order to produce the desired strain for determining the container's weight, the load cell needs to be mounted between two flat surfaces with the help of the two rib holes on each side of it. Once mounted, the flat surface can act as a scale for measuring the weight of a storage container on our mobile application and Track food consumption. We are Generating list of items of remaining item quantity and also generate a notification alerts replenishment and expiry.

Existing system:

There is no such a system implemented in our country yet, other country has implemented this type of system but this system can't generate pantry list automatically and can't classify with images, data.

Propose system:

A weighing station module will enable communication with small weight sensors that can be placed under strategic commodities that will be tracked by weight.

A module can be added to allow simple manipulation of the current shopping list (adding and removing items as well as a scheduling mechanism).

Goals and Objectives

Sensing the weight of a kitchen storage container.
Track food consumption.
Generating list of items.
Getting timely alerts for replenishment and expiry.

Literature survey:

1. "A Smart Kitchen Infrastructure", 2012 IEEE International Symposium on Multimedia.
Author- Marcus St¨ander, Aristotelis Hadjakos, Niklas Lochschmidt, Christian Klos, Bastian Renner, Max M¨uhlh¨auser. Descreption-In the future our homes will be more and more equipped with sensing and interaction devices that will make new multimedia experiences possible. These experiences will not necessarily be bound to the TV, tabletop, smart phone, tablet or desktop computer but will be embedded in our everyday surroundings. In order to enable new forms of interaction, we equipped an ordinary kitchen with a large variety of sensors according to best practices. An innovation in comparison to related work is our Information Acquisition System that allows monitoring and controlling kitchen appliances remotely. This paper presents our sensing infrastructure and novel interactions in the kitchen that are enabled by the Information Acquisition System.

2. "Implementation of RFID tags in food containers in catering business", ITG-Fachbericht 224 - RFID Systech 2010. Author- Beatriz Bordetas Bravo, Javier Cuadrat Fernandez, Mario Monsreal Barrera, Jesus Royo Sanchez.

Discreption-- Radio frequency identification (RFID) is an alternative technology with a potential to replace traditional universal product code (UPC) barcodes. RFID enables identification of an object from a distance without requiring a line of sight. RFID tags can also incorporate additional data such as details of product and manufacturer and can transmit measured environmental factors such as temperature and relative humidity. This article presents key concepts and terminology related to RFID technology and its applications in the food industry. Components and working principles of an RFID system are described. Numerous applications of RFID technology in the food industry (supply chain management, temperature monitoring of foods, and ensuring food safety) are discussed. Challenges in implementation of RFID technology are also discussed in terms of read range, read accuracy, nonuniform standards, cost, recycling issues, privacy, and security concerns.

3. "Smart Kitchen Cabinet for Aware Home", SMART 2012.

Author- Karuppiah Pal Amutha, Chidambaram Sethukkarasi, Raja Pitchiah.

Discreption- This paper presents the design and development of a "Smart Kitchen Cabinet" which identifies the grocery items in the kitchen store. The Kitchen Cabinet is augmented with sensors to measure the weight of an item which is updated to a database whenever grocery items are placed or taken out for cooking. The jars in the kitchen cabinet are tagged with Radiofrequency identification (RFID) tag for identifying and tracking the location. The optimal placement of jars (containing different ingredients) attached with RFID tags and antennas are tested for maximum read performance and the experimental results are presented. The system also generates automated shopping list when an item reaches the defined threshold level, which is based on requirement and consumption pattern of family members.

4. "Smart Tupperware: Active Containers for Kitchen Automation", SICE Annual Conference 2008.
Author- Richard Voyles, Jaewook Bae, Bret Smith, David Kusuma and Ledu Nguyen,

Discreption -Smart Tupperware is an example of a personal task assistant (PTA) for kitchen automation. The system is intended to automatically maintain inventory status of kitchen foodstuffs for the purpose of updating the userpsilas shopping list. A variety of system configurations were investigated ranging from an active system with microcontroller-based kitchen containers instrumented with sensors to passive systems with only identification tagging on the containers. A base station provides network connectivity if the application warrants.

5. 2017 ASEE Annual Conference & Exposition Senior Project Design: A Smart Pantry System

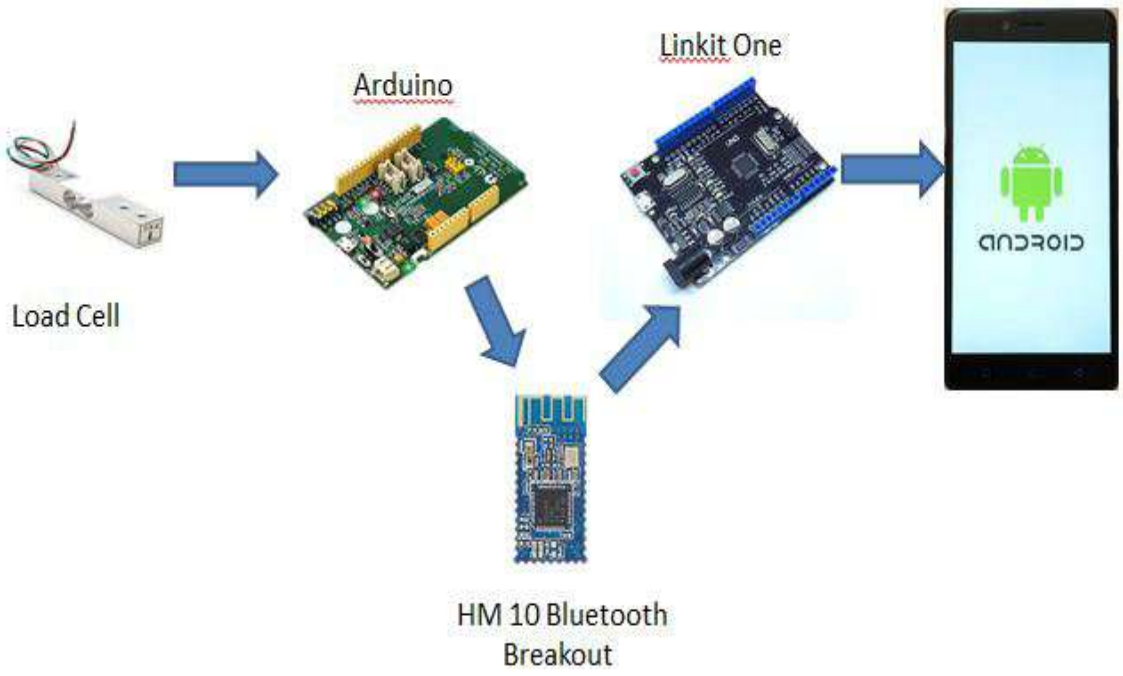
Author- Dominik Sobota, DeVry University, Addison

Discreption -This paper describes a senior design project in the scope of technical design and implementation of a concept incorporating an automated inventory selection system based on scanned items through the use of a user interface. The system, known as Smart Pantry, is designed to help average consumers organize purchased pantry items both by physical location and itemized inventory as well as purchase routine groceries more efficiently. Through incorporating elements of software integration in the user interface and a motor control structure, the development of this project encompasses a wide range of the team members' acquired skills. The unit allows a user to scan an item and add it to a specific physical location which is then stored in a database on the microcontroller. When retrieving said item, the user simply makes a selection on the generated list on the touch screen display causing the motor to drive the carousel to the location in which the item is stored. The data is stored in an SQL database which is also available on a developed smartphone application to facilitate the organization factor for the end user. The automated portion expands upon techniques for motor control systems. In this project, a driven stepper motor is used while providing live feedback to the microcontroller which ultimately optimizes the precision of the rotation resulting in accurate alignment for item retrieval. The project was undertaken by three students who are pursuing BSEET degree at DeVry University, Addison, IL. The concepts involved in software application development as well as database management were widely expanded upon within the development of this project. The specific focus of this paper is to describe the overall methodology in this product's development from the perspective of technical design and prototype development. The papers also describes in detail the structured approach in combining hardware with software processes, constructing relevant solutions to the technical

Application:
There are three main use cases of this application:

- Track the current status of inventory
- Expiration Notification
- Access historical inventory usage data

Architecture:



Conclusion:

This application demonstrates how easily one can leverage IoT to eliminate human intervention and automate manual processes. For a restaurant or large hotels and big family, it can also be used.
A further sweetening of this app would be to automatically place an order with suppliers when inventory falls below an important level. The possibilities are endless, and with IBM Bluemix's state of the art data warehousing and the 99.999% reliable messaging infrastructure of, building such solutions is fast, secure, and highly scalable.

FUTURE SCOPE:
WE CAN SEND OUR PANTRY LIST TO STORE.
We can share food to needy people using notification or message.

Mathematical Model:

Let S is the Whole System Consist of

S= {I, P, O}

I = Input.

I = {U, Q, A, S,}

U = User

U = {u1,u2….un}

Q = Query Entered by user

Q = {q1, q2, q3…qn}

A = Algorithms

S = Source

P = Process:

OUTPUT
Mass of particular container will be initiated if weight of container goes beyond the set threshold .And recorded mass will send to android device application and list of particulars will be generated.

REFERENCES

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[3] Karuppiah Pal Amutha, Chidambaram Sethukkarasi, Raja Pitchiah. "Smart Kitchen Cabinet for Aware Home", SMART 2012.

[4] Richard Voyles, Jaewook Bae, Bret Smith, David Kusuma and Ledu Nguyen, "Smart Tupperware: Active Containers for Kitchen Automation", SICE Annual Conference 2008.