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SMART STORAGE SYSTEM AND IMAGE DETECTION

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Abstract

In Existing System Development of Smart Kitchen Cabinet is an effort towards kitchen automation using ubiquitous computing technologies. The system find available grocery items in the kitchen store. The Cabinet is embedded with Load Cell to measure the weight of an item which is updated to direct software application whenever grocery items are placed or taken out for cooking. Based on the software information the various services recommend by Kitchen Cabinet such as inventory management and automatic shopping list preparation are useful and helping us to manage the kitchen activities effectively. The optimal of RFID antennas are analyzed for the particular cabinet and the results are presented. The smartness of the cabinet can be further extended by adding more functionality like Nutrition-aware cooking and personalized cooking.

I.INTRODUCTION

Nowadays, many people busy on work. Some of them don't know the meals they want to cook later need prepared what ingredient. It is normal to think that couples or family members who work or a person who lives alone want to cook food for themselves as quickly as possible and don't need to worry about what to cook while they are in rush. However, if every day having same food, then they will get bored. They need an easy way to get more recipes. What to cook is also a problem. To attract children liking, parent need to exchange the different dishes every day. Parents not only think to what recipe to changes, they also need to consider the healthy that their children taken. Besides that, sometimes people will forget buy ingredients to stock in their kitchen. The problem will arise when they want to prepare meal within short time. It is difficult to think what to cook with limited ingredient that available in the kitchen.

II. EXISTING SYSTEM

In Existing System Development of Smart Kitchen Cabinet is an effort towards kitchen automation using ubiquitous computing technologies. The system find the grocery items in the kitchen store. The Kitchen Cabinet is embedded with Load Cell to measure the weight of an item which is updated to a software application whenever grocery items are placed or taken out for cooking. Based on the database information the various recommendation offered by Kitchen Cabinet such as inventory management and automatic shopping list preparation are useful and helping us to manage the kitchen activities effectively. The smartness of the cabinet can be further extended by adding more functionality like healthy cooking and personalized cooking.

III. PROPOSED SYSTEM

In SMART STORAGE SYSTEM AND IMAGE DETECTION Hardwiring the devices on Breadboard which includes the sensor and the Arduino Board and Programming the sensor and Arduino to function the way desired then assigning values to the outlets of the Arduino and the sensor i.e. Vcc , ground etc. Then the Load cell and display will be connected to Arduino and Connecting the Arduino to the load cell, Load cell will calculate dropping weight When container weight is reduced to specific weight then system make list of that groceries and order is placed to shopkeeper after the user's approval to the list. For recipe recommendation and image detection we install camera in the fridge to detect items in the fridge then system recommends the recipes depend on available items in the fridge.

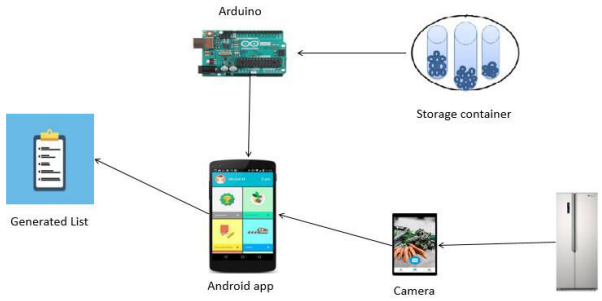

Fig. Architecture of the System

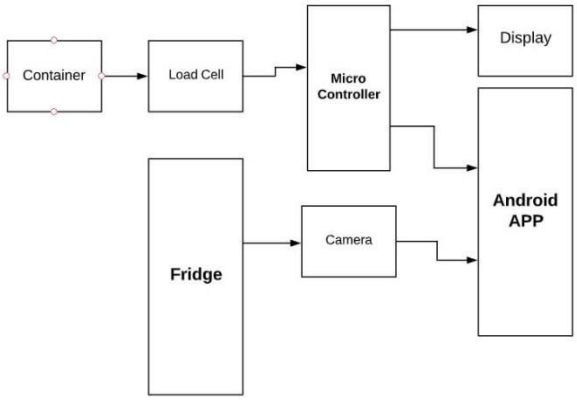

Fig. Block Diagram of the System

IV. METHODOLOGY

The different solutions find out for single problem. This considers the performance parameters for each approach. Thus, considers the efficiency issues. Get the list of finish product and recipe of available material using image processing Use Load cell sensor to calculate weight, Camera use to detect item in fridge, Arduino will use increment & decrement counter, System will calculate weight when groceries in container decrease, reduce effort of making list of groceries

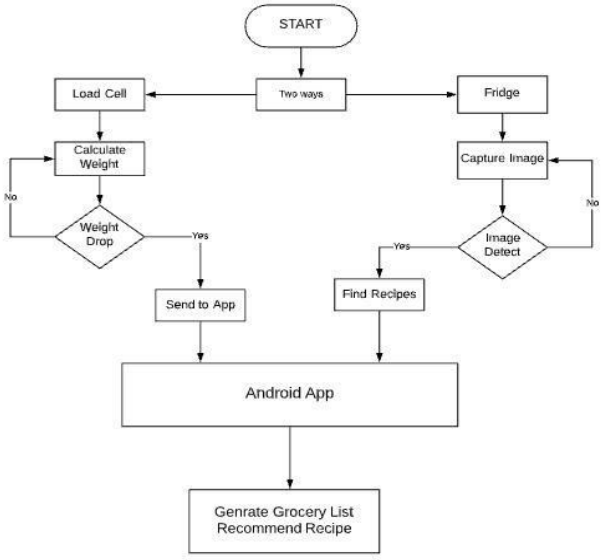

Fig. Flowchart of SMART STORAGE SYSTEM AND IMAGE DETECTION

V.IMPLEMENTATION

We have used Hardware model containing several hardware components as well as communication capability.

The major components of this device are:

Hardware Components:

1. Load cell:
   A load cell is a force transducer. It converts a force such as tension, pressure, or torque into an electrical signal that can be measured and standardized. As the force applied to the load cell increases, the electrical signal changes proportionally and display result

2. Arduino:
   Arduino UNO board widely used for microprocessor and controller.The boards are equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to many expansion boards 'shields' and other circuits. The boards feature serial communications interfaces, including USB on some models, which are also used for loading programs from computers. The microcontrollers can be programmed using the C and C++ programming languages, using a standard API which is also known as the

"Arduino language". In addition to using traditional compiler toolchains, the Arduino project provides an integrated development environment (IDE) and a command line tool developed in Go.

Software Components

1. Android Studio:
   Android Studio is integrated development environment (IDE) for Google's Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development. It is available for download on Windows, macOS and Linux based operating systems or as a subscription-based service. It is a substitution for the Eclipse Android Development Tools E-ADT as the primary IDE for native Android application development.

2. Visual Studio:
   Microsoft Visual Studio is an integrated development environment (IDE) from Microsoft. It is used to develop computer programs, also websites, web apps, web services and mobile apps. Visual Studio uses Microsoft software development platforms such as Windows API, Windows Forms, Windows Presentation Foundation, Windows Store and Microsoft Silverlight. It can produce both original code and managed code.

3 Wamp Server:
   WampServer refers to a solution stack for the Microsoft Windows operating system, created by Romain Bourdon and consisting of the Apache web server, OpenSSL for SSL support, MySQL database and PHP programming language

4 Java:
   Java is a general-purpose programming language that is class-based, object-oriented, and designed to have as few implementation dependencies as possible.

VI. ALGORITHM

1. Connect Load cell to storage container
2. Calculate weight of container
3. When weight drop to specific limit
4. It creates list of less quantity item
5. Camera detect vegetable in fridge
6. Recommend recipe depend on available items
7. Application generate list and send to shopkeeper
8. Application Recommend recipe

VII. ADVANTAGES

Main Advantage of this system is when container weight reduces to specific weight system generate list of grocery.

Recommend recipes from available ingredient

VIII. CONCLUSION

The User and shopkeepers can directly access the data using this android application using hardware we automatically calculated the Organic split pea box. Using image processing we can identify the things. The data set are collected by web scraping which is preprocessed on the basis attributes. The data are then used to model the system. This application is extremely handy and useful for cooking variety of recipe with minimum search effort from internet. This app also provides ability to user to create recipe and save it for later reference. It will help people to save their time and energy in finding recipes for daily routine as well as for special occasions.

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