ANDROID POWERED DIGITAL BASKET FOR SMART SHOPPING

T. A.MOHAMED IQBAL
Department of Electronics and Communication Engineering
SRM Institute of Science and Technology
Chennai, Tamil Nadu, India

ANTONY FERNANDES. F
Assistant Professor
Department of Electronics and Communication Engineering
SRM Institute of Science and Technology
Chennai, Tamil Nadu, India

R.CURREN
Department of Electronics and Communication Engineering
SRM Institute of Science and Technology
Chennai, Tamil Nadu, India

S. SURYA PRAKASH
Department of Electronics and Communication Engineering
SRM Institute of Science and Technology
Chennai, Tamil Nadu, India

S. ARVIND
Department of Electronics and Communication Engineering
SRM Institute of Science and Technology
Chennai, Tamil Nadu, India

ABSTRACT- We all have seen that in Supermarkets there will be a very long queues near the bill counter where the customers have to wait there in order to make the products scanned using the barcode scanner and also to pay for it. This scenario becomes more and more critical during the weekends and holidays because huge number of people prefers to shopping during their free times. So to improvise this condition, We propose the concept of ANDROID POWERED DIGITAL BASKET FOR SMART SHOPPING. Here, We used Radio Frequency Identification (RFID) in this smart shopping system because RFID passive tags have longer and wider range from one to five meter. Previous researches on this smart shopping system is mainly based on low frequency of RFID, which has inadequate ranges. In our proposed system we mainly focused on creating a smart trolley using Raspberry pi and an Android applications to list the products and also to pay for the production digitally. Our primary aim of our project is to provide a technology oriented, time saving, reduced cost, commercially oriented system for the customers to have a tensionless and peaceful shopping experience.

Keywords - Digital basket, Raspberry pi, RFID, Android application.

INTRODUCTION- Internet of things, connects all the objects in this digital world through internet. Internet of things along with RFID and android app development is used here to digitalize the shopping experience. Digital display is used to display the cart amount and RFID tags are used for product detection. The emergence of RFID makes the traditional retail process rapidly, transparently and efficiently. So the UPC codes are replaced by the RFID tags which detects the every items in the cart and displays the cost, weight of the item inside it, then this information is transmitted to the android application which is in the customer's mobiles. This application basically list out the products cost and shows the total amount. And this amount gets subtracted from the main balance which is available in the android applications.

EXISTING SYSTEM- Previous researches on designing a Smart shopping system has used a barcode reader, and low range RFID reader. The smart shopping system with a barcode reader requires a person to read the barcode on the product and that is get displayed in the display attached in trolley. It looks somewhat better than standing in a queues but the main disadvantage is barcode scanner is not efficient and reliable. So instead of barcode reader a low range RFID reader are used.

PROPOSED SYSTEM- In order to provide a secured and digitized smart shopping system, we proposed a smart trolley connected with a display containing a raspberry pi instead of using a smart trolley connected with a display containing a arduino uno. To provide security and privacy we also proposed a android application for each and every customers which also makes the payment more and more easier. The customer has to download the application in their mobiles before starting to purchase the products from the super markets. After installing the application the customer has to credit some initial amount in that from the respective super markets. During the payment process the total amount of the purchased products will be deducted automatically from the initial amount. This system makes the customer to purchase easily and safely.

LITERATURE SURVEY

SMART TROLLEY(2016)-In this proposed system the customers can self-scan the barcodes using a ultrasonic sensors which is attached to the trolley. Products in this trolley along with the purchaser ID is linked with supermarket's database which contains the cost price and other details about the products.

RFID BASED SMART TROLLEY(2017)- Instead of barcode reader RFID technology is used. Here, RFID reader is attached in each trolley and RFID tag is available for each and every products. This reader scans each products and the scanned informations are shown in the LCD display attached in the trolley.

IOT BASED SMART SHOPPING CART FOR SMART SHOPPING(2018)-This system provides trolley to communication that helps the customer to shop with cloud based billing.

AUTOMATED BILLING SYSTEM FOR SMART SHOPPING SYSTEM USING IOT(2019)- This system is almost similar to the previous system. Here additionally a beap indicator is attached which makes sound when the product's quantity is not equal to scanned quantity. For example, if one kilogram of sugar is scanned and it is not containing one kilogram then the beap indicator will sounds automatically.

HARDWARE USED – The following components are used to set up a smart trolley basket.

1. **RFID reader & RFID tag**
   An electronic device used to gather the information from the RFID tag and it is also used to track the individual objects. It is a label that are attached to the objects to be identified.

2. **Raspberry pi 3**
   It is a credit-card sized computer that can be connected to a PC or television. It enables the people of all ages to explore computing.

3. **LCD display**
   It is a small, compact flat-panel display that uses the light-modulation properties of liquid crystals combined with polarizers.

4. **WIFI- module**
   It is a self contained SoC that are integrated with TCP/IP protocol stack that gives MC access to the available wifi network.

SOFTWARE USED

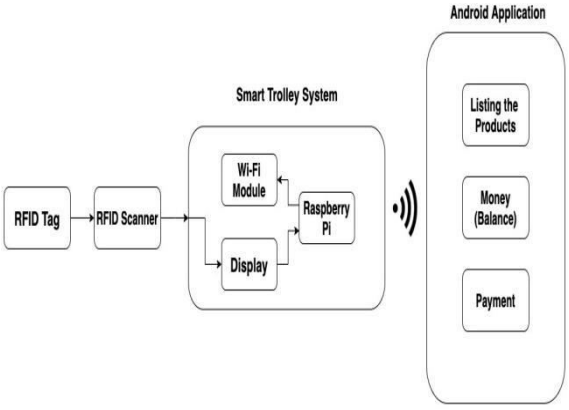
MAKING OF SMART TROLLEY

1. Python Open CV

CREATING AND FUCTIONING OF ANDROID APPLICATIONS

S.NO	NAME	PURPOSE
1	Eclipse IDE	Creating Android Application
2	Net beans	For creating web server
3	MySQL	For creating a data base
4	Java	For designing the applications

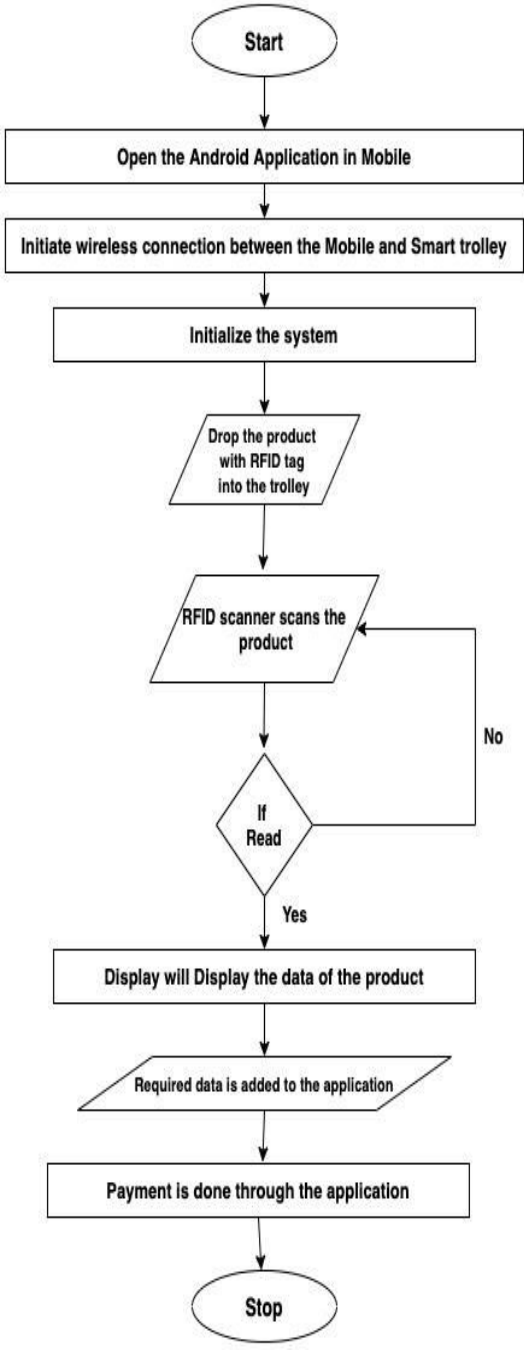
BLOCK DIAGRAM



The block diagram consist of RFID tag, RFID reader, smart trolley system consisting of a LCD display, a raspberry pi 3 and a wifi module.(In order to connect the mobile and smart trolley wirelessly this module is used) and an android application used to list the products along with the cost and also to make payment easily

The mobile application and the smart trolley system is connected using wifi. The RFID reader reads the RFID tag from the product and the details such as cost and quantity of the product gets displayed in the LCD display and this in turn gets added to the application. After the completion of purchase the customer can see the products listed along with the total amount of the purchased items and the payment can be paid by the payment option that is available in application itself. The one main thing is, the customer has to put some initial amount in the application so that the amount that has to be paid will get deducted from this initial amount.

WORK FLOW



ADVANTAGES

It saves the customer time rather than standing in a long queue for making payment. It is a user interactive system. It provides high security. It minimizes the payoff given for workers. It has the possibility to rewrite the RFID tags. It doesn't requires line of sight.

FUTURE SCOPE

The future scope of the project is to make a digitized shopping facilities for the customers who visits the supermarkets to buy products on weekly or monthly basis and also to make the super market system more efficient and also to bring an ease on the customer side too.

CONCLUSION

The ANDROID POWERED DIGITAL BASKET FOR SMART SHOPPING have the advantage of real time interactions, greater efficiency, convenience of installation and maintenance. The usage of android application plays a major role in creating a cloud based data base and also in saving the customer time. There are some challenges to be resolved in order to make the proposed system more robust, but there is no doubt that the RFID technology has a very wide scope in supply chain management, this system has the potential to improve and ease the basic retail experience to a great extent.

ACKNOWLEDGEMENT

We would like to express our sincere thanks to our guide and project coordinators in the Department of Electronics and Communication Engineering, **SRM Institute of Science and Technology**, for providing their invaluable guidance, points and suggestions during the entire course of project.

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