SMART MOTORIZED TROLLEY

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ABSTRACT

The super shops are the places where people go to buy their daily using products and also pay for that. So the need to calculate the number of products sold and generation of bill for the customer. When people go for the shopping in a shop, we have to select the right product. After that, it's a hectic to stand in line for billing purpose. Hence, we are going to propose the "Smart Motorized Trolley System" that will save the track of products which are purchased and calculate the bill using RFID reader and Transmitter and Receiver.

The system will also provide suggestions for products to buy based on user purchase history from a centralized system. In "Smart Shopping Cart System" every product in Mart will be attached with RFID tag, and every cart will be having RFID Reader, LCD display and Transmitter and receiver attached to it.

I.   INTRODUCTION

Nowadays, many supermarkets offer convenience for shopping, one of which is a shopping trolley. It is used by customers inside the store to transport goods to the cashier during shopping and designed not to leave the store. One of the first shopping carts was introduced by Sylvan Goldman, He receives many complaints from his customers because they have difficulty in carrying groceries from his shop. He put the basket on a carriage with small wheels to help customers carrying groceries. To facilitate and satisfy his customers, he asked an engineer to design a modern shopping trolley and patented this invention. To this day, we find many shapes of shopping trolleys in a modern supermarket.

The concept addresses the expectations of customers whose basic demand is to reduce the various problems in the way of making their purchase. By initiating the idea of an RFID based shopping cart, people would easily understand the bill of products themselves, irrespective of the presence of staff of the shop as details of product would be readily available and would be displayed on the trolley as they add the product in the trolley. This outcome of this project will not only be in favor of the customers but also the mall owners who can make a one-time investment which can lead to long-term benefits in terms of business as well as customer satisfaction.

II.   LITERATURE SURVEY

People have consistently imagined and built up an innovation to help their needs as far back as the start of humanity. The fundamental reason for headway in innovation has been in limiting errands and making regular tasks simpler and quicker, regardless of the different spaces accessible. A significant task on which people are discovered spending significant measure of time is shopping. For this at start we used Barcode system but after some years it also started to have issues like LOS (line of sight),increasing queue etc. so overcome

this issues a concept of smart trolley with RFID technology was proposed

The implementation of AOT (Android of Things) based automated trolley system was reported in [1]. Framework is utilized to ease lines in shopping centre by utilizing RFID module. The RFID reader will peruse the RFID Tag set on the item when the item fall in the trolley. In the event that, the client needs to expel any item then he should expel that item from the trolley. The LCD will show the subtleties of the expelled item like name, cost and the absolute bill and with the help of server the bill will be send to the cashier.

Paper[2] designs a shopping cart by taking inspiration from a shopping basket which is under development by Panasonic, in which each item is tagged using UHF RFID [range: 916-924 MHz] Two Circular Polarized(CP) Patch antennae used to read RFID tags in different orientations. They also include a factor for measuring effectiveness of function called as RSSI (Return Signal Strength Indicator) RSSI measurement plays a significant role in this smart trolley application as RSSI measurement indicates the directional gains that are needed for the antenna development. CSL468 RFID reader used having 16 ports and scan speed of 300 tags/sec.

Paper[3] proposes a cart to provide billing services using a combination of RFID and HC05 systems. However, both are not used together. An option is provided at the beginning, when the trolley is put to use by the customer, to choose whether to use RFID or HC05 for scanning purposes. This system uses PIC Microcontroller along with RFID module (tags and reader)and HC05 transmitter and receiver. If RFID option is chosen, the RFID reader is activated and on adding items into the cart, RFID tags are scanned. Otherwise, on choosing HC05 option, HC05 receiver is activated. Work f low in both cases remains the same.

In Paper[4] the authors h ave designed a construct of shopping trolley by using PIC Microcontroller, infrared sensors, RFID Module, LCD display, Wi-Fi modem and added a DC gear motor to enable trolley automation. It uses Ethernet Shield to connect to the Internet using Ethernet Library. The idea is to connect trolley to cell phones using Wi-Fi/Bluetooth and an Android app, in which a map of the mall is displayed. If customer wants to go to food section, select food section on map, and the trolley moves automatically to the food section. Uses RFID module (combination of tags and reader) to scan products.

In Paper[5] authors employed the method for the automatic billing system for supermarkets. The basic idea behind this project is that to decrease the hassle in the supermarkets so that no one has to wait in queue for hours and no one h ave t o waste their time in billing. In the proposed system the authors h ave used the RFID technology for billing the items which in then integrated with PIC Microcontroller. In this project they have not the mentioned the ARDUINO type. Also the final bill will be then send to the cashier with the help of USB and the bill can be printed on the spot. For making the making the circuit they have used Dip Trace. Dip Trace is an open source software that enables us quick and easy designing of circuits. For making the admin portal they have used Visual Basic software and with the help of Java programming language they have created the GUI for the system. So as soon as you keep something in the cart it gets scanned by the RFID reader and the bill generation starts. When the shopping gets over the customer has to press the bill button and then connect the trolley to with the computer and transfer the bill.

In Paper[6] EM-18 RFID scanner module has been used. It uses a RFID reader which will read 125 kHz tags. So, it will be known as a low frequency

RFID reader. It offers out a serial output and contains a range of approximately 8-12 cm. There is an inbuilt antenna and is connected to the laptop with the assistance of RS232. This module is capable of handling multiple tags at a time also the range is very less so it will not get contact with other trolley. The RFID Readers here used are big tags with range of 125KHZ which can be detected by EM-18 Module. It shows the real time billing and you can even delete the item you don't want by pressing the delete button. In this author has used PIC Microcontroller which one of the cheapest and most efficient model in the market. It contains everything required to support the microcontroller merely connect into a laptop (or applicable wall power adapter) with a USB cable or power it with an AC-to-DC adapter or battery to get started. Once the item is scanned it will start billing and you can remove the item if you want however they have not mentioned how the receipt will be transferred to the billing section as they also want to keep the databases updated for refilling the stock.

In Paper[7] the authors designed a system for shopping mall. The system is placed in the trolleys. It consists of RFID reader and each product has RFID tag. The billing is done in smart trolley itself. Product name and its price is displayed on LCD screen. At the cash counter the total bill is relocated to Cashier Computer by wireless Radio Frequency module. The disadvantage of this scheme is after completion of shopping, a key is pressed indicating the final promoting amount of the entire item, and we cannot add or remove the product.

III. WORKING AND METHODOLOGY

The key target of future framework is to convey a skill worried about, ease, effectively available, and an even framework for supporting shopping. The RFID control driven electronic shopping trolley is worked to improve the total shopping understanding for PC gadgets store shoppers. After enrolling a thing in the shopping trolley, the shoppers can permission assortment of thing data.

At first the customer goes into the mall and takes the Smart Motorized Trolley, which will be Automatically move when customer given a instruction, then it will be equipped with an RFID scanner. Then he/she must shop as he/she does regularly. While the customer will be shopping, RFID scanner assembled on the cart will be generating the invoice simultaneously. Whenever the customer adds an item with RFID tags into the cart, the cart recognizes it and adds in the billing section. In this way, whenever the customer will add or remove anything the scanner will detect this, and accordingly the invoice will be generated.

Some of these technologies have been used while some are still in experimental phase. So basically what this project does is that it enhances customer shopping experience. The bill is generated simultaneously, so you need not stand in a queue, waiting for people in front of you to unload their items so that the cashier could scan them and generate invoice. Also when the bill is being generated, you can keep track of your budget and by this you can also save money and time

FIGURE AND FLOW CHART
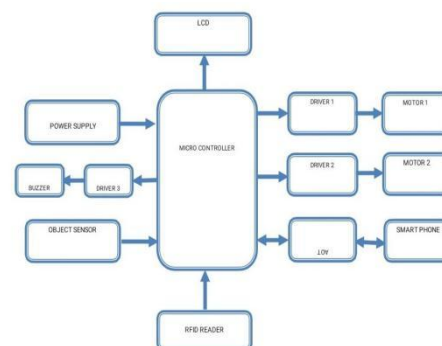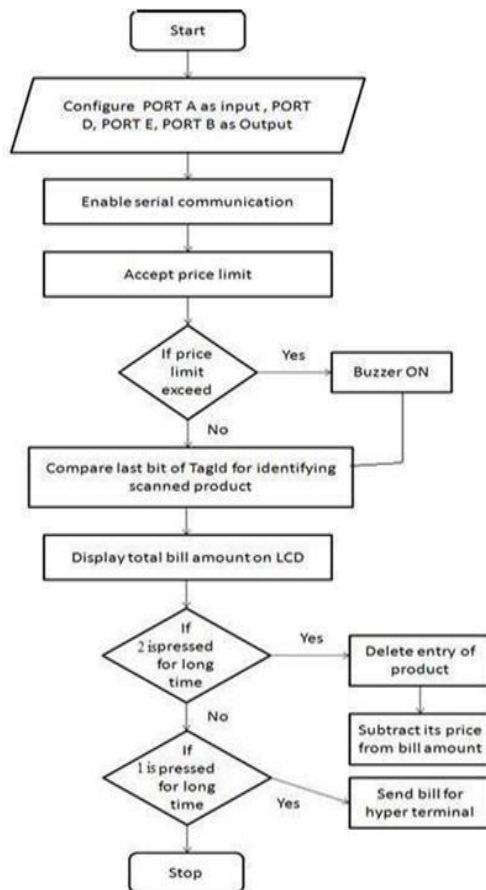
IV. CONCLUTION AND FUTURE SCOPE

While there are many papers that propose an idea for shopping carts, none of them have been able to produce an economical version of the same. However, there are many options that can be used to increase the productivity of this project. Author could have provided autonomous shopping carts which move to the section as customer click on a map on either the cart screen or on a mobile application. Also, the stock of all products could be updated in real-time, so that customers get to know which products are not available at the moment, saving their time. Future advancements could also include use of enhanced RFID readers that operate in high frequency which can read multiple tags simultaneously.

In a supermarket or mall are totally change in smart way,When this SMART MOTYORIZED TROLLEY sucessfully worked. Because this trolley well known about product in supermarket or mall, So the customer known all things in that super market application. In this trolley consist so many features that's are AUTO BILLING, ONLINE PAYING and GUIDE THE ROUTE OF PRODUCT PLACED. Auto billing and online payment method was already existing one, new method is Guide the route of product placed. In the guiding working method is, If you select one product in the supermarket app that trolley can move automatically where the product are placed so the customers easily identify the product in supermarket without any worker help, It can help to the customer time.

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