

Shopping Redefined: An Innovative System with Barcode Scanning and Bill Display

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Abstract: *This paper presents the development of automated shopping cart for supermarkets. This automated shopping cart reduces the shopping time of customer. This project works on Arduino UNO microcontroller, bar code scanner for scanning the products and LCD to display the billing. Hence it works with low cost, low power consumption. So that customers can enjoy shopping without pushing trolley themselves.*

Keywords: Arduino UNO microcontroller, LCD Display, Bar code scanner

I. INTRODUCTION

The modern human lifestyle has changed and gotten busier. Time is money, they say. People don't have much time to spend shopping, which is a natural occurrence. Because they can find everything in one location, they prefer shopping in malls. This saves people from visiting numerous stores to get a small selection of goods. Even though people can save time by shopping at malls, they can only see these facilities on the weekends. The growing number of customers causes difficulty at the cash register. customers frequently spend a lot longer in the billing queues than they do actually buying. To overcome this problem, we've developed a cart that has a scanner and billing system attached to it. The purpose of motorized shopping carts, which come with interfaces for making shopping lists and scanning products, is to make shopping more convenient. The interface of the cart allows customers to pay, doing away with the necessity for conventional checkout counters. Despite not being extensively used, developments in AI, robots, and sensors point to the possibility of a revolution in the way we shop. A dependable, affordable Smart Shopping Cart that uses Wireless Sensor Networks (WSN) to automate billing and enhance the shopping experience is described in another study. It is fair to buyers and sellers because it can identify dishonest customers' dishonesty. The outcomes demonstrate its viability for implementation in supermarkets. The idea of a "Smart Electronic Shopping Trolley" in commercial complexes and retail outlets is presented in another paper. The cart has a barcode reader, an internet connection, and LCD panels for consumer information. It attempts to cut down on shopping time and increase productivity. Both studies show how automated shopping carts and smart trolleys have the potential to improve convenience, free up labor, and improve the shopping experience. In order to make these solutions possible, wireless technologies are essential. Currently, there is no fully automated system that scans the entire shopping trolley using a high-frequency RFID scanner due to its high cost. However, in this research area, computer vision technology remains unexplored. By leveraging artificial intelligence and machine learning, computer vision has the potential to revolutionize smart trolleys. Instead of relying on barcodes or RFID, computer vision can identify items based on visual characteristics like shape and color. This would provide a more flexible and cost-effective solution. Equipping smart trolleys with cameras and implementing computer vision algorithms would enable seamless item detection and improve the shopping experience. Additionally, computer vision could offer additional functionalities, such as detecting low stock levels or identifying perishable items. Exploring computer vision in the context of automated smart trolleys opens up exciting possibilities to enhance efficiency, accuracy, and overall performance in retail environments.

II. METHODOLOGY/EXPERIMENTAL

The project is based on a simple basic shopping cart that enables users to keep track of their expenses. It also saves customers time by preventing them to stand in long queues.

The steps followed (methodology) are described below:

1) QR Code Scanning:

When the user insert a product in a trolley the Bar code scanner scans the code present on the product. Upon scanning, the information will be directed to the Arduino UNO board fitted into the cart itself.

2) LCD Display :

The directed information present in Arduino UNO board will be sent to LCD Display through connections made between Arduino UNO board and LCD Display.

3) Products Cost:

After choosing the product and placing it into the cart the customer will be able to see the current total cost of the products on LCD Display.

4) Payment:

After all the shopping is done the bill displayed on the LCD Display will be checked by the shopkeeper. The customer can pay the bill through his employment card or atm , it completely depends on the choice of the customer. The screenshot of the successful payment is to be shown to shopkeeper to prevent any malpractice.

III. RESULTS AND DISCUSSIONS

After the customer selects the product to know the detail of the product, Bar Code Scanner is used, that tag contains cost of the product. And Bar Code Scanner scans the code which is present on selected product. The information will be given to the microcontroller. Now the product information will be displayed on the LCD. Hence the customers come to know about product cost. After scanning the product detail, product will be placed inside the trolley. Once the shopping is completed using their employment card or Atm card. For this purpose LCD Display will showcase the final price. Hence the customer can use their employment card to pay the money and a message will be sent to both customer and shopkeeper about the final payment of the bill.

IV. FUTURE SCOPE

In future we can use different sensor through which it can detect malpractices. We can also make a trolley which has its motion under control so that the trolley can be moved easily. Also, we can use more number of DC motors to carry more and more stuff. Future advancement is to solve issue regarding power supply of cart. Mobile application can be developed to avoid smart card and GSM.

V. CONCLUSION

Automated shopping cart developed in this paper works with low cost, low power consumption. So that customers can enjoy shopping. The bar code scanner will scan the code present on the product and send the information to Arduino UNO Microcontroller to display the final amount on LCD Display. The customer will keep the track for the total amount and can pay their bill automatically without waiting in the long queue.

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