

TROLLIGENT SIMPLY INTELLIGENT TROLLEY

Sailee Kadam¹, Piyush Takawale², Sharmila Shirolkar³, Dr. Arati J. Vyavahare⁴

^{1,2,3} Student, Dept. of Electronics and Telecommunication Engineering, P.E.S's Modern College of Engineering, Pune, Maharashtra, India

⁴ Professor, Dept. of Electronics and Telecommunication Engineering, P.E.S's Modern College of Engineering, Pune, Maharashtra, India

Abstract -In the pandemic chiefly it is recommended to avoid visiting crowded places such as super markets, malls, etc. So we are preparing a system that is used to maintain social distancing and contactless purchasing of products in malls by making trolleys inside malls automated that is upgrading trolley to the smart trolley in the terms of TROLLIGENT, simply intelligent trolley so that once the list is passed to the trolley it will collect the products and deliver it at the exit point and will display the amount to be paid by the customer. By doing this it will reduce purchasing time as standing in queue is avoided at times. The purpose of this system is to help the society efficiently by saving their time and their lives.

Key Words: Barcode Reader, Smart Trolley, Line Tracing Robot, Wi-Fi, Raspberry Pi 3

1. INTRODUCTION

In recent days shopping malls have become a centre of attraction for people as all types of items are available under a single roof. Now-a-days large number of people visit shopping malls daily and huge crowd is observed on weekends and during discount offers. Time Plays crucial role in every individual's life and in shopping malls time is wasted as people need to stand in queue for billing as the person on counter scans the barcode of each purchased item which is time consuming. So we have prepared a system such that time consumed is reduced and social distancing is maintained. It is done with the help of a trolley so only two jobs are done by the customer first is to give the list of products and second is to pay the bill by scanning barcode. So collecting products and generating the final amount is done by trolley with help of controller. Once the list is passed by the customer the trolley will first prioritise it and when the trolley enters inside the mall, there are barcodes at the start of each rack it will scan the barcode and pick-up the products with help of arm and will place it in trolley, the process is continued until all the items are collected which are present in the list by doing so individuals contact with the product is not there which is again a key point during

this pandemic. Trolley follows line tracing method for moving in lanes and collecting the products.

2. LITERATURE REVIEW

Recently people visit shopping malls often as they get variety of things at one place and as they need not to wonder around for things so they prefer malls. Looking at current pandemic situation it is very much necessary to be safe and follow guidelines of social distancing such as wearing mask, washing hands and most important avoid gathering together at some place. But it is difficult when it comes to the grocery shopping and many of us now-a-days go to malls. As we know mall is such a place where there are almost all the necessary things and gathering of so many people for shopping may violate the rules of social distancing. To avoid human interference in malls it is important to take some measure step which would avoid the spread of the virus. Looking into all these aspects we are developing a Smart Trolley which will reduce the human interference, no contact with humans which will eventually lead to safety of people. So we are bringing an upgrade to the smart trolley in the terms of TROLLIGENT, simply intelligent trolley. Trolley works mainly with the help of RFID, Barcode, GSM, LCD. Here the customer can know the price of each product since each product has a barcode on it. LCD will display the price when the barcode on product is scanned. A button is provided for the confirmation of product. GSM modem is used to display short messages on LCD. Trolley is fully enclosed so a door is provided which operates with the help of RFID [1]. In [5] instead of barcodes RFID tags are used. Every Trolley is associated with a RFID tag, as the product is placed in the trolley price is scanned by the RFID tag. LCD placed on the trolley is used to display product name, amount, expiry date and total cost. The planned methodology automatically asks for a client based on RFID. In super markets and shopping malls customers are provided with RFID tags. The trolley consists of modern RFID reader, Infra-Red sensor, door with motor, relay, normal GSM module, LED, LCD, data input device and an electrical switch [4] [3]. Main aim of this paper is to reduce time consumption since when we go to the mall time flows out like water. Certain amount of time can be saved by avoiding waiting in queue so here in order to save time, billing system is automated with the help of barcode reader and scanner, LCD, keypad, Wi-Fi here customer can fix a

certain budget before starting purchasing with the help of keypad fixed on trolley all the entered values i.e. final price, budget is displayed on LCD .Buzzer makes sound when the budget gets overflow. At the billing side the data is transferred to the computer using Wi-Fi module. Using this system customer have to spent very less time at counter since they need not to stand in queue for billing. Smart trolley consists of a scanner, card reader, a printer and a tablet in which the application is available. The customer will start Smart Trolley application by clicking on "Start Shopping Button" followed by scanning the products. The application keeps adding the items in the list and the total amount is updated accordingly. There is an option for customer to remove any product if not needed. Once the customer completes scanning, he/she can proceed with payment. For payment, application will provide two options for shopper; either self-checkout or proceed to counter.[2]

<p>IOT APPLICATION BASED ADVANCED SHOPPING TROLLEY</p> <p>International Journal of Engineering and Advanced Technology (IJEAT) ISSN: 2249 - 8958, Volume-8 Issue-4, May 2019,</p>	<p>Using RFID tags smart and secure system is built. It also consist of LCD, it is used to display cost, amount and count of items.</p> <p>Records are recorded in database which is used of analysis purpose.</p>
<p>SMART SHOPPING USING SMART TROLLEY</p> <p>International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056 Volume: 05 Issue 05, May 2018</p>	<p>Aim behind this project is to automate billing system and saving time at billing counter. The trolley operates with the help of RFID tags, LCD.</p>

Table -1: Literature Review

Paper Title	Remark
<p>SMART ELECTRONIC TROLLEY FOR SHOPPING MALL.</p> <p>2018 3rd IEEE International Conference on Recent Trends in Electronics, Information & Communication Technology (RTEICT-2018), MAY 18th & 19th 2018 978-1-5386-2440-1/18/\$31.00 ©2018 IEEE 2422</p>	<p>The objective behind this project is to reduce human efforts. The project operates with the help of RFID tags, LCD. Products are scanned using RFID tags and total count of products and total amount is displayed on LCD. This technique is useful for mart holders as they can keep the record of products.</p>
<p>SMART TROLLEY FOR SMART SHOPPING</p> <p>International Journal of Engineering Research in Computer Science and Engineering (IJERCSE) Vol5, Issue 5, May 2018,</p>	<p>Motive behind this project is to save customers time by avoiding standing in long queue. The trolley has tablet placed on it with the help of which products are selected and purchased.</p>
<p>SMART TROLLEY FOR BILLING SYSTEM</p> <p>International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056 Volume: 06 Issue 03, May 2019</p>	<p>This system is also prepared in order to save human time. System primarily consists of LCD, Buzzer, Barcode scanner. At start customer can set a budget and when the budget gets overflow buzzer is on. System is flexible since adding and removing of products can be easily carried out.</p>

3. CONCLUSIONS

From survey it has been observed that there are few limitations which can be eliminated by working on it. The primary and one of the most important limitation is that shopping is automated only at billing section that is only billing part is automated but human interference is there, products are supposed to be collected by human. As in pandemic it is suggested to avoid gathering together in order to maintain social-distancing.

It is also observed that mostly in projects so far done, billing is carried out with the help of RFID tags that is, items are scanned using RFID tags while adding to the cart. RFID tags compared to barcode scanner are not much reliable as they can easily get damaged and are a bit costly. Another limitation noticed is that as the projects where done for shopping malls they were designed in such a way that they are not adaptable to changes in field i.e. they can only be used for and by the shopping malls they are not flexible to work in other fields such as agriculture, libraries, medical shops, etc.

REFERENCES

- [1]2018 3rd IEEE International Conference on Recent Trends in Electronics, Information & Communication Technology (RTEICT-2018), MAY 18th & 19th 2018 978-1-5386-2440-1/18/\$31.00 ©2018 IEEE 2422 SMART ELECTRONIC TROLLEY FOR SHOPPING MALL.
- [2]International Journal of Engineering Research in Computer Science and Engineering (IJERCSE) Vol5, Issue 5, May 2018, SMART TROLLEY FOR SMART SHOPPING

[3]International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056 Volume: 06 Issue 03, May 2019 SMART TROLLEY FOR BILLING SYSTEM

[4]International Journal of Engineering and Advanced Technology (IJEAT) ISSN: 2249 - 8958, Volume-8 Issue-4, May 2019,IOT APPLICATION BASED ADVANCED SHOPPING TROLLEY

[5]International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056 Volume: 05 Issue 05, May 2018 SMART SHOPPING USING SMART TROLLEY

BIOGRAPHIES



Sailee Kadam

Student at Dept. of Electronics & Telecommunication, P.E.S. Modern College of Engineering, Pune, Maharashtra, India



Piyush Takawale

Student at Dept. of Electronics & Telecommunication, P.E.S. Modern College of Engineering, Pune, Maharashtra, India



Sharmila Shirolkar

Student at Dept. of Electronics & Telecommunication, P.E.S. Modern College of Engineering, Pune, Maharashtra, India



Dr. Arati J. Vyavahare

Professor at Dept. of Electronics & Telecommunication, P.E.S. Modern College of Engineering, Pune, Maharashtra, India