

Product Recommendation and Billing System Using Smart Trolley Based on IOT

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Abstract: In this modern twenty-first century almost all families like to spend time shopping in malls, shopping complexes, and retail stores. In all these shops people usually carry trolleys on their own in which they collect the desired items and then locomote the trolley to the billing counter where they have to wait in long queues, but nowadays there is a need to convert the old traditional trolley with a modern automatic trolley, which is exactly our project. The main idea of the project is to automate the process of shopping in such a manner that we will scan the products using RFID attached to the products and an RFID reader attached to the trolley as well as display the total amount on the Android mobile screen. We also have included a feature to send a message to the customer's registered mobile number. This process not only helps in reducing the waiting time in the long queues and moving the trolley automatically but also helps in managing and checking the budget while shopping which indeed provides a huge difference in their shopping experience as well.

Keywords: Smart Trolley, IOT

I. INTRODUCTION

Technology has been an enlightening path for innovative new ideas and connecting the world. The modern world has brought us many possible ways of connecting people with technology such as IoT and industrial automation. Right from the start when innovations started in the world of technology the meaning was to reduce unnecessary hardship and increase the productivity of humans. One of the most important modern world leisure activities is spending time shopping in malls, shopping complexes, etc. Thus, an upbringing innovation in the field of shopping and retail stores can be the inclusion of smart shopping trolley systems in which the person has to just register with the help of his/her phone number and enjoy shopping with a personalized billing system which helps the customer to view his total amount anytime while shopping which helps to maintain the budget, as well as automatic billing, helps in did you see the hardships required for waiting and standing in long queues in the shopping malls.

Our project consists of RFID tags that can be attached to the required products, an RFID reader that is used for scanning the products after putting them in the trolley while dropping them in the trolley the product will be scanned by EM-18, an LCD that will be used to show the items added in the trolley along with the total. Also, automated the movement of the trolley with the help of ultrasonic sensors, Arduino, and motors. Using a GSM module which helps us in connecting the mobile phone of the registered customer with the trolley and after the billing is done a message will be sent to the registered customer's mobile number with the total description of the bill.

II. LITERATURE SURVEY

Name of Author	Year	Title	Description	Gap identified
Vaibhav Tyagi	2021	Smart Trolley	Product weight and product quantity will be displayed, with price details. Smart Shopping Cart	Bill is not generated. Users have to wait in queue for billing.
Mobeen Shahroz	2020	IoT-Based Smart Shopping	It has an RFID reader which scans the product which has an RFID tag in it. The billing is	This doesn't generate a bill and the price is not shown on screen.

		Cart Using Radio Frequency Identification	done in the queue.	
Sushi and Zhang	2019	Smart Trolley using Arduino UNO	will generate the shopping bill in the shopping cart itself with the help of an RFID reader. Smart Cart with Automatic Billing	The addition of products is possible, but if you remove the product price will not be changed.

III. SYSTEM ARCHITECTURE

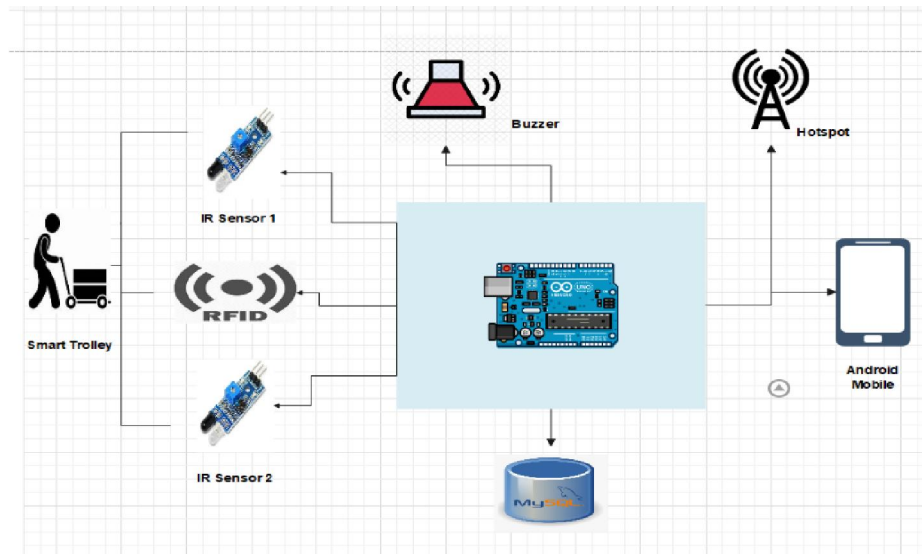


Fig 1. System Architecture

- We will use Arduino Uno which will be connected to an Android app using Bluetooth
- Hardware will be developed using an IR sensor and RFID scanner/reader. Whenever the user puts the product in a trolley it will send a notification to the Android app.
- The Android app will update the price and provide a recommendation
- At the time of registration in the Android app, we will ask the likes of the user and based on that we will recommend the products.
- When the user checkout Google Pay will be open for payment.

IV. PROPOSED SYSTEM

A. Customer Registration and Login

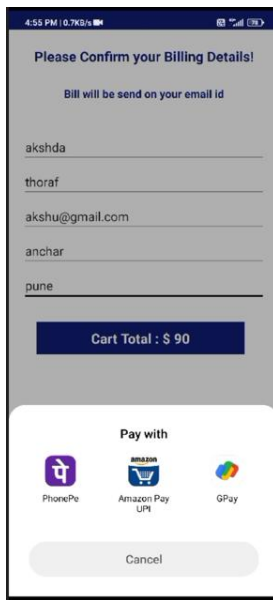
The customer has to first create his account on the app. The customer details will be saved on the web server.

B. Shop Database Maintenance The shop database will contain all the data regarding each component. This is where the information about the product will be stored and manipulated. The customer's account data as well as the billing data will also be stored here.

C. Shopping Trolley Selection Once the user logs in to the mobile app they will have a prompt to scan available shopping trolleys. The shopping trolleys will be identified with an SSID with a specific pattern. Once the user has scanned all the trolleys he can select a specific one. Once selected the mobile phone will be connected to that shopping trolley Bluetooth enabling them to communicate with each other.

D. Shopping with the Shopping Trolley and the Mobile App Once the mobile app and the shopping trolley are connected through Bluetooth the customer can start with the shopping operations.

V. RESULT



VI. CONCLUSION

This process not only helps in reducing the waiting time in the long queues and moving the trolley automatically but also helps in managing and checking the budget while shopping which indeed provides a huge difference in their shopping experience as well.

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