International Journal of Research Publication and Reviews

SMART SHOPPING TROLLEY WITH AUTOMATED BILLING

KhushabuBelsare[1],GautamiKakuste[2],SejalKalekar[3],VaishnaviOzarkar[4]

[1,2,3,4]*U.G.Khushabu Belsare, Department of ComputerEngineering,Loknete Gopinathji Munde Institute of Engineering Education and Research ,Nashik, India*
[5]*Professor,R. M. Shaikh, Department of Computer Engineering, Loknete Gopinathji Munde Institute of Engineering Education and Research ,Nashik ,India*

ABSTRACT

Shopping is simple but waiting on a bill counter makes shopping too boring and a tedious task. Huge amount of rush plus cashier preparing the bill with barcode scanner is too time consuming and results in long ques. This innovative project consists of an automated billing system which can be placed within the shopping trolley. This automated payment system consists of a QR reader which is controlled by Arduino and Android APP.

Retail management aims at helping the customers get the necessary item or products from the retail stores without any difficulty and in the least possible time. Nowadays people are preferring e-shopping or e-cart system, as adding to a cart is much easier & convenient than carrying a cart. Hence, many retail businesses are switching towards implementing these customer- friendly methods.

The android application proposed here will act as a virtual cart to the customers. The customers will need to scan the required items from this application & the items will be added to his/her cart. Once, all the required items have been added to the cart, the customer will then have to pay the generated bill online in the customer's app and will proceed with the payment & checkout activities.

Keywords: QR reader, Shopping trolley, virtual cart, scan, arduino

1. INTRODUCTION

The internet is becoming a major information provider of emergency events with the popularity of World Wide Web and this is due to real time, dynamic and openness features. In this paper crowd sourcing based algorithm for detecting emergency event is held in order to pass information about event quickly and to help the particular social groups to process the events efficiently.

The process of acquisition, integration, and analysis of big and heterogeneous data generated by various sources in urban spaces, such as sensors, devices, vehicles, buildings , and human is called as Crowd sourcing. Referred to urban emergency events held at, or affecting specific locations can also referred from social media contents. Crowd sourcing carry ubiquitous and unobtrusive technologies, analytics models, advanced data management and novel visualization methods with the help of cloud computing, internet of things and Big Data ,to create solutions that improve urban environment, city operation systems and human life quality . For example, the urban resident may face storms, traffic jams, fires and so on. Thus, to protect the security of urban residents it is important to detect, resistant, and analyze these real time urban emergency events. To form participatory sensor networks crowd sourcing is also an emerging computing paradigm that tasks everyday mobile devices. It allows to share local knowledge acquired by sensor-enhanced devices of mobile phone users, e.g., to monitor noise level or pollution level, traffic condition, etc.

Weibo is a social network can be seen as a sensor receiver. Usually, the users of Weibo can be as "social sensors."For example she/he can be seen as a "fire sensor" or "crash sensor" if a user makes a message in Weibo about a fire or crash. The 5W (What, Where, When, Who, and Why) model is proposed in order to describe the real time urban emergency event based on crowd sourcing. Basic elements of an urban emergency event are provided by this 5W model which is summarized as follows:

a) **What**: 'What' detects what happened in the urban environment, it is the most important element of the proposed 5W model. For example, if a user posts a message about a crash or fire occurrence, so real time urban emergency event must be detected by proposed 5W model.

b) **Where**: 'Where' is needed to reveal the location information of the urban emergency event, besides detecting what happened in the urban environment. In the modern city and the center of the city the possibility of the appearance of urban emergency events is higher. For the location information of the urban emergency event the check-in information can be used.

c) **When**: 'When' has a timestamp, which can be used for revealing the time of an urban emergency event. The proposed 5W model wants to show the timeline of an urban emergency event with time of emergency event.

d)   **Who**. Different persons may plays different roles in an urban emergency event. If they are at the place of the urban emergency event then users may act as the witness of an urban emergency event. For example, if user takes a picture of a happening storm event, he can be seen as the witness of that storm event

2.   PROBLEMSTATEMENT

Shopping is simple but waiting on a bill counter makes shopping too boring and a tedious task. Huge amount of rush plus cashier preparing the bill with barcode scanner is too time consuming and results in long ques. This innovative project consists of an automated billing system which can be placed within the shopping trolley. This automated payment system consists of a QR reader which is controlled by Arduino and Android APP.

Retail management aims at helping the customers get the necessary item or products from the retail stores without any difficulty and in the least possible time. Nowadays people are preferring e-shopping or e- cart system, as adding to a cart is much easier & convenient than carrying a cart. Hence, many retail businesses are switching towards implementing these customer-friendly methods. The android application proposed here will act as a virtual cart to the customers. The customers will need to scan the required items from this application & the items will be added to his/her cart. Once, all the required items have been added to the cart, the customer will then have to pay the generated bill online in the customer's app and will proceed with the payment & checkout activities.

SCOPE

Electronic Shopping Trolley For Shopping Mall Using Android Application generates bill. The customer scan each and every product he want to buy and proceed for payment using online option or paying at counter. So that customers no need to wait in a long queue. It is trustworthy, highly dependable and time efficiency

3.   LITERATURE SURVEY

The H. Anandakumar et al, illustrates the design and implementation of a smart shopping application attached to the smart cart. The application consists of two parts: Navigation being the first part which is further subdivided into two modes, manual mode which lets the user manually navigate the smart cart to the product's located place, and a fixed mode that has a map showing the actual area where the products are placed in the supermarket.

The second part of the application is the automatic billing of purchased products. However, the automatic billing system provided by the application only deals with the automatic creation and updation of the records of commodities brought by the customer rather than the integration of payment gateways within the application itself. RFID readers are used for scanning the products. One of the major drawbacks to adopting this method is that an RFID reader needs to be attached to each cart and every item needs to have RFID labels that are troublesome to append to and withdraw from everything. An additional problem is that the system doesn't have any authentication feature to prevent malicious buyers from putting the items inside the cart without scanning them which makes the technology employed in this study inappropriate for marketing in India.

In R. Arulmurugan et al, the researchers have presented the utilization of a smart shopping cart containing a barcode scanner to scan and read the product information before putting the products into the cart, a Raspberry Pi touch screen display to show the information about the quantity and cost of the products, a Raspberry Pi board with SD card inserted and power bank to provide power supply, and a digital push button can be used if the buyer wishes to decide to eliminate an unwanted item from the smart basket.

Their attempts to make a smart shopping cart using these components are cumbersome, unnecessarily complicated, and financially unfeasible. In addition, after scanning the Barcode that is mounted to the cart, this device offers a facility for producing and sending e-bills to the buyer's phone, however, the buyer has to opt for conventional payment methods available in supermarkets. Our smart shopping application bears a close resemblance to the one proposed in the paper Haldorai, A. Ramu et al, wherein the design of a smart shopping basket using IoT applications is highlighted. The smart basket has a load cell to verify the exact rates involving the items put in the container.

To allow the self scan of the barcode of the items that each client wants to purchase, a barcode reader is mounted at the top of the shopping basket on a mobile device. When the total weight of the cart equals the total weight of the scanned items, the payment operation is followed. However, this research only examined the generation of automated bills instead of initiating the payment process from the app. So, our project extends and builds on the works of M. Suganya and H.

Anandakuma providing a facility to the customers to self scan as well as pay the bill through our application. And during the scanning process, personalized recommendations based on each users' previous purchase and top sold items are also given in previous paper by . Haldor et. al.

4.   METHODOLOGY OF IMPLEMENTATION

- Start the process.

- Initialize the system.

- Scan an item.

- Put the item in trolley.

- If the weight and product match, proceed with product.

- Display the billing amount.

- Once the bill is paid, unlock the trolley.

- Send the total amount in the billing system.

- Print the bill.

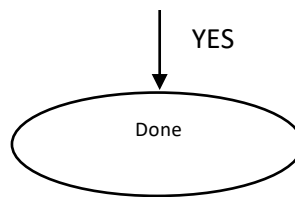- The process is ended The process is ended

YES

Done
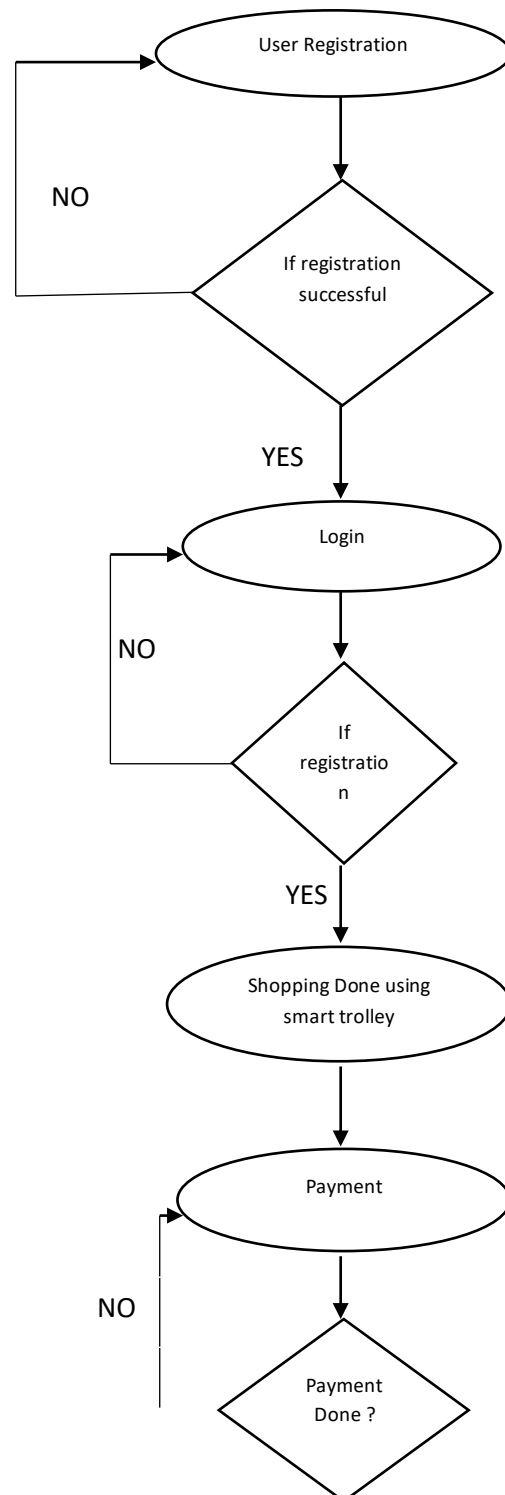
Fig. Flow Chart

5.   TECHNOLOGYUSED

- Frontend: Xml

- Database: Firebase

- Language: Java

- Editor: Android Studio

6.   CONCLUSTION

Electronic Shopping Trolley For Shopping Mall Using Android Application generates bill. The customer scans each and every product he want to buy and proceed for payment using online option or paying at counter. So that customers no need to wait in a long queue. It is trustworthy, highly dependable and time efficiency.

This project reviews and exploits the existing developments and different types of technologies that are used for product scanning, billing, etc. in supermarkets. Thus, the project studies and evaluates research insight in smart shopping systems from a big picture first. It also educates about the architecture of the system that can be used in the shopping systems for intelligent and convenient shopping in the supermarkets to save time and energy for the consumers. By just making use of the smart shopping application on their smartphone or tablet, buyers will be able to use the framework outlined in this paper to manage all their shopping needs inside the store.

All purchased items, their weight, cost, and personalized recommendations could be seen while scanning. It allows users to keep track of their expenses while they shop.

Applying this form of smart shopping system would therefore provide customers with a highly beneficial way to prevent the hassle they currently experience when shopping, particularly during the holidays.

7.   FUTURE SCOPE

1) Tracking/ Searching of any product: The system should be generated that reduce the customers time in searching the location of the product. The customer just types the name of the product he/she want to purchase on android device. The trolley will automatically guide them to the location of the Product.

2) Buzzer: The system can be attached with buzzer, if the weight of trolley exceeds ten kg then it can help old customers of the malls

3) Announcing: Products name and its cost can be announced using headset.

4) Payment Option: More payment option can be provided such as online banking, mobile banking, . eWallets, PayPal,etc.

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