ISSN 2395-1621

Smart Trolley with Automatic Bill Generation using RFID

Aditya Vijay Patil, Ajay Devidas Wanekar, Shrutika Shailendra Patil
Sarvesh Santosh Wadkar

adityapatil4243@gmail.com

Department of Electrical Engineering
NBN Sinhgad School Of Engineering, Pune, Maharashtra, India

ABSTRACT

Shopping mall is a place where most people get their daily necessities products such as food product, apparels, electrical appliances and many others. The numbers of small and large shopping malls keep on increasing over the years throughout the globe due to the demand of the public. Thus, the level of advancement of shopping mall system and infrastructure also varies. We have seen long queues in the supermarket that takes most of the time. While shopping consumers face many problems like worrying that amount of money brought is not sufficient, incomplete information about of the items. Other than this they have to select the best product out of thousands of products. Also, want to revolutionize the entire shopping mechanism in the supermarket and attract number of customers reduce the labour cost.

Keywords: Smart trolley, bill generation, RFID, Shopping, Reader.

ARTICLE INFO

Article History

Received: 18th November 2021

Received in revised form :

18th November 2021

Accepted:21st November 2021

Published online :

22nd November 2021

I. INTRODUCTION

The number of different techniques is evolving day by day which reduce the human efforts and reduce the labour cost. Compared to some foreign countries shopping mall system, there are still plenty of spaces for improvement in terms of providing quality-shopping experience to the consumers. Consumers often face problems and inconvenience when shopping. These problems include worrying that the amount of money brought is not enough for paying all the items wanted, in- sufficient information of the items that are for sale and also wasting unnecessary time at the cashier. Most consumers currently face these problems. There are some existing methods to solve the problems that are stated above but the effectiveness still con- sider improvable. Examples of existing problem solving techniques are substituting the conventional way of keying item per item by hand to the cash register with the technology of barcode scanning where the price are stored in the barcode, and also set up a customer information counter to help the consumer if there are any enquiries about the items at shopping mall.
The problems stated above might eventually be solved or else improved by the implementation of RFID technology in shopping mall. This can be done by simply attach an RFID tag to all the items in shop- ping mall and attach a RFID reader with a Android device through the server application. this can solve all the above problems.

The enhanced Smart Shopping Cart System intends to assist shop- ping in-person, which will minimize the considerable amount of time spent in shopping. It is also aimed in providing the store management section with real-time updates on the inventory. The proposed system is based on four important technologies (i) RFID READER (ii) RFID tags for product identification (iii) Wifi module for achieving wireless communication with Server, and (iv) Android device for listing products and inventory management.
Radio frequency identification (RFID) is a rapidly growing technology. RFID systems consist of small tags, attached to physical objects. When wirelessly interrogated by RFID Readers, tags respond with some identifying information that may be associated with arbitrary data records. Thus, RFID systems are one type of automatic identification system, similar to optical bar codes. In this paper, we discuss about opportunities of enhancing the cart to make it into a commercially viable product as an excellent way to help customers reduce the time spent in shopping by

displaying the list of products, their cost and automatic bill generating. The system helps the store management section with an automatic update of the inventory on every purchase of a product. The Smart Shopping Cart has the potential to make the shopping experience more comfortable, pleasurable and efficient for the customer and the inventory control easier for the store management.

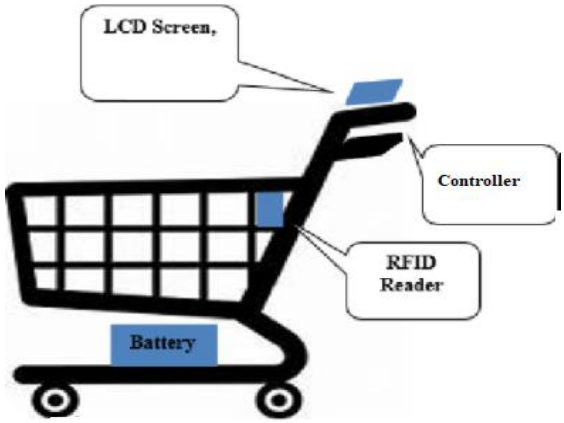

Fig 1. Sample overview

II. PROBLEM STATEMENT

To present the smart system technique for shopping mall using RFID technology instead of using barcode technology. To implement a system that attracts the consumer to use the system. Barcode Technology: Barcode can read only one item at a time. Failure rate in Barcodes are relatively high for self-checkout system. Lack of Shopping Experience: People don't have to stand in line and wait for checkout.

III. LITERATURE SURVEY

[1] Dmitry Ryumin; Denis Ivanko; AlexandrAxyonov, "Human-Robot Interaction with Smart Shopping Trolley Using Sign Language: Data Collection", The paper presents a concept of a smart robotic trolley for supermarkets with a multimodal user interface, including sign language and acoustic speech recognition, and equipped with a touchscreen. Considerable progress in hand gesture recognition and automatic speech recognition within the last years has brought to life many human-computer interaction systems.

[2] Sarala T, Sudha Y A, Sindhu K V, "SMART ELECTRONIC TROLLEY FOR SHOPPING MALL", In this paper we discuss on innovative concept of "Smart Electronic shopping Trolley used in commercial complex which many individual retail stores". The main purpose here is to assist a person in shopping to reduce time while purchasing a products. Electonic trolley is fitted out with Barcode reader that scans the identification of outcome and internet connection with shop's server.

[3] Prasiddhi K. , Dhanashri H. Gawali, "Innovative Shopping Cart For Smart Cities", The main objective is to provide a robust technology with lowcost, high efficiency and easily adaptable system for making the process of shopping effortless. The system consists of 4 key modules (i) Product Detection (PD) (ii) Product Recommendation (PR) (iii) Budget Setting (BS) and (iv) Automatic Billing (AB).

IV. PROPOSED SYSTEM

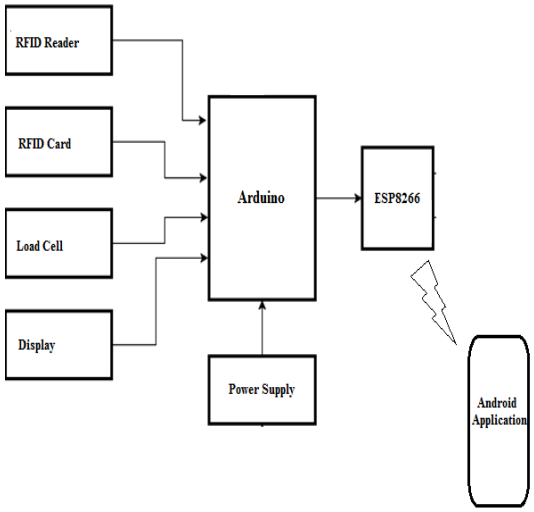

Fig 2. Block Diagram

In our Smart Trolley system, each product will have the passive Radio Frequency ID tag, which is bearing a unique Electronic Product Code. This Electronic Product Code provides the info like name, price etc about the product. When the customer will put the product in the Trolley, the Radio Frequency ID scans the tag and Radio Frequency ID reader knows the Electronic Product Code number. Radio Frequency ID reader passes the Electronic Product Code to the ESP8266 micro-controller where ESP8266 compares the Electronic Product Code with the database of the system containing various products. The ESP8266 microcontroller also passes the data obtained from the database to the RF transmitter from where the data is wirelessly trans- mitted to the billing computer. The master computer receives this data through RF receiver using Max 232 interface. Max 232 interface is the interconnection media between the RF receiver and the computer.

V. CONCLUSION

The Smart Trolley was designed to function as a system providing users the flexibility within the retail store. It is designed to be highly efficient and fully synchronized with the retailer's current system.

REFERENCE

[1] Dmitry Ryumin; Denis Ivanko; AlexandrAxyonov, “Human-Robot Interaction with Smart Shopping Trolley Using Sign Language: Data Collection”, IEEE, 2019.

[2] Sarala T, Sudha Y A, Sindhu K V, “SMART ELECTRONIC TROLLEY FOR SHOPPING MALL”, IEEE, 2018.

[3] Prasiddhi K., Dhanashri H. Gawali, “Innovative Shopping Cart For Smart Cities”, IEEE, 2018.

[4] Mr.P.Chandrasekar, Ms.T.Sangeetha, ”Smart Shopping Cart with Automatic Central Billing System through RFID and ZigBee”, 2014IEEE.

[5] ZeeshanAli, ReenaSonkusare, RFID Based Smart Shopping and Billing,International Journal of Advanced Research in Computer and Communication Engineering Vol.2,Issue 12,December2013.

[6] RajuKumar , K.Gopal a krishna,K.Ramesha, Intelligent Shopping Cart , International Journal of Engineering Science and Innovative Technology(IJESIT) Volume2 , Issue4 , July 2013.

[7] SatishKamble, SachinMeshram , Rahul Thokal,RoshanGakre, De- veloping a Multitasking Shopping Trolley Based On RFID Tech- nology , International Journal of Soft Computing and Engineering (IJSCE) ISSN: 2231-2307, Volume-3 , Issue-6 , January2014.

[8] VarshaJalkote, Alay Patel, VijayaGawande ,ManishsBharadia , Gitanjali R . Shinde , Aaradhana A Deshmukh Futuristic Trolley for Intelligent Billing with Amalgamation of RFID and ZIGBEE, International Journal of Computer Applications (0975/8887) International Conference on Recent Trends in engineering Technology-2013(ICRTET’2013).

[9] J.S.Awati, S.B.Awati, Smart Trolley in Mega Mall, International Jour- nal of Emerging Technology and Advanced Engineering(ISSN 2250-2459,Volume2,Issue3,March2012).

