

International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)

International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal

Volume 3, Issue 2, June 2023

Revamping the Retail Experience with Smart Carts

Boiri Sai Prashanth¹, Shaik Abdul Rahman², Eguri Richard Prajwal Das³, Tavanam Venkata Rao⁴

UG Scholar, Department of ECE^{1,2,3} Associate Professor, Department of ECE⁴ Sreenidhi Institute of Science and Technology, Hyderabad, Telangana, India

Abstract: In metropolitan areas, the issue of overcrowding due to a high number of shoppers at malls during peak hours, such as holidays and weekends, is a common occurrence. To address the problem of long billing queues in shopping malls, this project proposes an innovative solution that utilizes RFID technology and the Internet of Things (IoT) to enable automatic billing within shopping trolleys. The system involves equipping all mall products with RFID tags and outfitting the trolleys with an RFID reader and an LCD screen. As customers place products in their trolleys, the system automatically detects the RFID tags, displaying the item name and cost on the LCD screen, and adding them to the total bill. If a customer decides to remove a product, the system deducts the cost from the bill and sends the information to the central billing unit. By allowing customers to complete their billing directly in the trolley, this proposed system significantly reduces waiting times and enhances the overall shopping experience. The objective of our project is to develop an IoT-based shopping system that leverages RFID technology. Unlike barcodes, which have limitations such as line-of-sight requirement, limited range, and lower security, RFID provides unique identification for products and offers more extensive information. Each supermarket product is attached with an RFID tag containing details such as the product ID, brand name, price, manufacturing date, and expiry date. The shopping trolleys are equipped with RFID reader modules. When a registered user arrives at the supermarket, they log in to their designated trolley using a mobile application installed on their phone. As items are placed in the trolley, the RFID reader automatically reads the tags and adds the products to the shopping cart. Consequently, the billing process can be directly conducted from the shopping cart itself. In summary, this project aims to implement a technology-driven and scalable system to facilitate in-person shopping. By utilizing RFID technology, automatic billing within shopping trolleys offers a streamlined and efficient shopping experience for customers, alleviating the issues caused by long queues and reducing waiting times.

Keywords: RFID, Reader, tags, shopping cart, IOT.

REFERENCES

- [1]. Suraj.S, Vishal Guruprasad, Udayagiri R Pranava, Preetham S Nag, "RFID Based Wireless Intelligent Cart Using ARM7," International Journal of Innovative Research in Science, Engineering and Technology, Vol. 5, Issue 8, 2016.
- [2]. Komal Ambekar, Vinayak Dhole, Supriya Sharma, "Smart Shopping Trolley Using RFID," International Journal of Advanced Research in Computer Engineering & Technology (IJARCET), Volume 4 Issue 10, 2015.
- [3]. Satish Kamble, Sachin Meshram, Rahul Thokal & Roshan Gakre, "Developing a Multitasking Shopping Trolley based on RFID Technology," International Journal of Soft Computing and Engineering (IJSCE), ISSN: 2231-2307, Volume-3, Issue-6, 2014.
- [4]. Galande Jayshree, Rutuja Gholap, Preeti Yadav, "RFID Based Automatic Billing Trolley,"InternationalJournal of Emerging Technology & AdvancedEngineering 2014.
- [5]. PaxalShah,Ms.JasmineJha,NiravKhetra,ManmitsinhZala"ALiteratureReviewImproving Error Accuracy and Range based on RFID for Smart Shopping," *InternationalJournal for Scientific Research &Development(IJSRD)*,2015.
- [6]. Amine Karmouche, Yassine Salih-Alj, "Aisle-level Scanning for Pervasive RFID based Shopping Applications," IEEE.

Copyright to IJARSCT www.ijarsct.co.in DOI: 10.48175/568



126

IJARSCT



International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)

International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal

Volume 3, Issue 2, June 2023

- [7]. Suryaprasad J, Praveen Kumar B O, Roopa D & Arjun A K, "A Novel Low-Cost Intelligent Shopping Cart," IEEE, 2014.
- [8]. Lynn A. DeNoia, Anne L. Olsen, "RFID and Application Security,"Journal of Research and Practice in Information Technology, Vol. 41, No. 3, 2009. Mayur Subhash Chaudhari, "A Review on Electronic Shopping Cart Based RFID," International Journal & Magazine of Engineering, Technology Management & Research, ISSN No: 2348-4845.
- [9]. K. Gogila Devi, T.A.Kaarthik, N.Kalai Selvi, K.Nandhini, S.Priya, "Smart Shopping Trolley Using RFID Based on IoT," International Journal of Innovative Research in Computer and Communication Engineering. Vol. 5, Issue 3, 2017.
- [10]. Molnar, D. & Wagner, D. (2004). Library RFID privacy and security: Issues, practices, and architectures. 11th ACM Conference on Computer and Communications Security. ACM Press

