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A Review on Mobile App Based Self Controlled Shopping Cart with Advanced Billing System

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Abstract: ***By linking common devices, the internet of things (IoT) is transforming people's lives. Shopping in large malls is now an everyday occurrence in major cities.***
On holidays and special sale days, there is a large crowd at malls. People purchase different items and put them in carts and go to the billing counter for payments. During that time, they have to wait in a long queue to get their products scanned using an RFID reader with help of a barcode scanner and get billed. To modify that customer has to purchase smartly in shopping malls. Each product is attached with an RFID tag, and when placed into a smart shopping cart, can be automatically read by a cart equipped with an RFID reader, so that the billing can be conducted from the shopping cart itself. In this way, customers can avoid waiting in a long queue at the checkout points. Inventory management also becomes much easier, because all the items can be automatically read by an RFID reader instead of manually scanned by the customer. The uniqueness of this project is that we are making a Mobile application which includes a voice module in which we will give instructions for the movement of the cart and for the location of the particular rack in which the items are present. This innovative system will help the stores to see a rise in their sales along with delighting customers. As a result, this project is extremely beneficial and will be in high demand in the future.
Keywords: Internet of things, embedded system, RFID, Smart shopping, voice control.

I. INTRODUCTION

In this day and age, most consumers must wait in line at the supermarket because shopping is a time-consuming activity. An enormous crowd within the supermarket at the time of discount offers or weekends makes trouble to attend in long queues due to a Barcode based billing process.

In this respect, an Internet of Things (IoT)-based Smart cart is presented, which comprises of RFID sensors, an Arduino microcontroller, a Bluetooth module, and a mobile application. RFID sensors rely on wireless communication. One part is the RFID tag attached to each product and also the other is the RFID reader that reads the merchandise information efficiently. After this, each product information shows within the Mobile application. The customer easily manages the shopping list in the Mobile application in line with preferences.

Then the looking information sends to the server wirelessly and generates billing. This experimental prototype is intended to eliminate time-consuming shopping processes and quality of services issues. The proposed system can easily be implemented and tested at a commercial scale under the current scenario in the future. This is the reason why the proposed model is more competitive as compared to others. The shopping carts currently being employed everywhere around the globe are simple carrying baskets with wheels as an extra facility. These carts don't respond in any way to the user and just serve the aim of carrying the things to be bought by the person. We, by our project on Self-driven Smart Shopping Cart', are thinking of how to form this a more advanced system. we've in our project added a feature through which the person gets the bill amount of his/her products or items kept within the cart on the cart itself. The merchandise uses an RFID system which is well-known for scanning multiple items at a given time. The RFID reader is going to be mounted on each cart and as soon because the customer starts keeping items within the cart, the RFID reader starts scanning the tags on each item and displays the full bill amount on the LCD which is attached to the RFID reader upon the cart. Thus, our Smart Cart provides a true Time Response to the people using it. We are also making it self-driven using voice control so that it can reduce manual labour and also helps elderly people and specially-abled persons to move the cart without pushing it.

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II. EXISTING SYSTEM

In the being system, they've used the traditional system of barcode scanning. Using the Fig(3.1) barcode scanner we need to overlook each product and so this system becomes veritably slow to be scrutinized. A barcode anthology is associate in electronic device for reading with the barcodes. In this process we've no automatic billing system and the client has stay for the billing process in the long ranges. Thus, using the barcode process billing system is slow. This ultimately results in the long ranges. To avoid the process, we introduced types of technology is the RFID grounded billing system. User can pay the quantum through credit/debit cards or by cash. But it's the time consumption process for the billing purpose. So, the waiting time to pay the bill is increased. To overcome, the time consumption process the RFID grounded smart trolley system is proposed.While the client keeps the product in the smart trolley, the Radio frequency ID anthology automatically senses the product by surveying the label. And its corresponding electronic product law number is generated automatically. To store the item price and total billing data. microcontroller memory is used TV display. This electronic product law provides the information of the product its name and price .

III. PROPOSED SYSTEM

Through mobile app,the customer will enter the list of items to be purchased then the location of the particular item rack will be traced and the cart will move to the rack then the customer will take the item an put it into the cart which will scan the RFID tag .We can also give voice to give product name command to move the cart.After the shopping ,the total price will be displayed on the mobile app and the payment option will be generated .The user can pay the bill online.

IV. RELATED WORK

A. Human Assist Smart Cart Shopping System with RFID Interface

This study focuses on creating a bill for the shopping cart. The main idea is to save customers time by providing a digital billing system with which the customers can get the bill through their registered Email. RFID tags/cards will be affixed to a compartment containing all of the items, and purchase product information will be kept in a database. The billing will then be produced in both the LCD and the server. This system shows how RFID technology will make life easier and secure and helpful in the future. This system describes IoT by mainly concentrating on its utilization towards improving and ensuring future shopping.

B. Smart Shopping Cart Based on IoT and Radio Frequency Identification

A Smart Shopping Cart containing RFID readers, an Arduino microcontroller, a Bluetooth module, and an app is detailed in this respect. RFID sensors depend on wireless communication. The RFID tag connected to each product is one component, and the RFID reader effectively scans the product information is the other. Following that, each product’s information appears on the Mobile application. The consumer may quickly manage his or her shopping list in the Mobile application based on his or her preferences. The shopping information is then wirelessly transmitted to the server, which creates invoices automatically. This experimental prototype is intended to alleviate time-consuming shopping processes as well as concerns with service quality. In the future, the suggested technology may be simply deployed and evaluated on a commercial scale in a real-world setting. As a result, the suggested approach is more competitive than alternatives.

C. Automated Shopping and Billing System Using Radio-Frequency Identification

The framework includes a trolley with Radiofrequency Identification that connects with the billing system, which is the Mobile Application. The RFID reader examines every one of the products when the product is placed in the trolley. This data is shown on the display unit that is on the trolley for the customer to confirm the product purchased and simultaneously check the cost of every item.

The trolley will be connected to the mobile application through the WiFI Module (ESP 8266), and the customer gets to see the items and the quantity of the items that have been purchased on the application. Following the customer's confirmation of the items to be purchased, the application goes to the payment screen, where payment can be made by Card or Cash. When the consumer has completed their purchase, the information is erased from the microcontroller memory, making the trolley ready for the next customer. The suggested method is simple to use, inexpensive, and effective. When the entire infrastructure becomes smarter, the need for labour will reduce, benefiting merchants. More consumers may be served at the same time, benefiting both businesses and customers.

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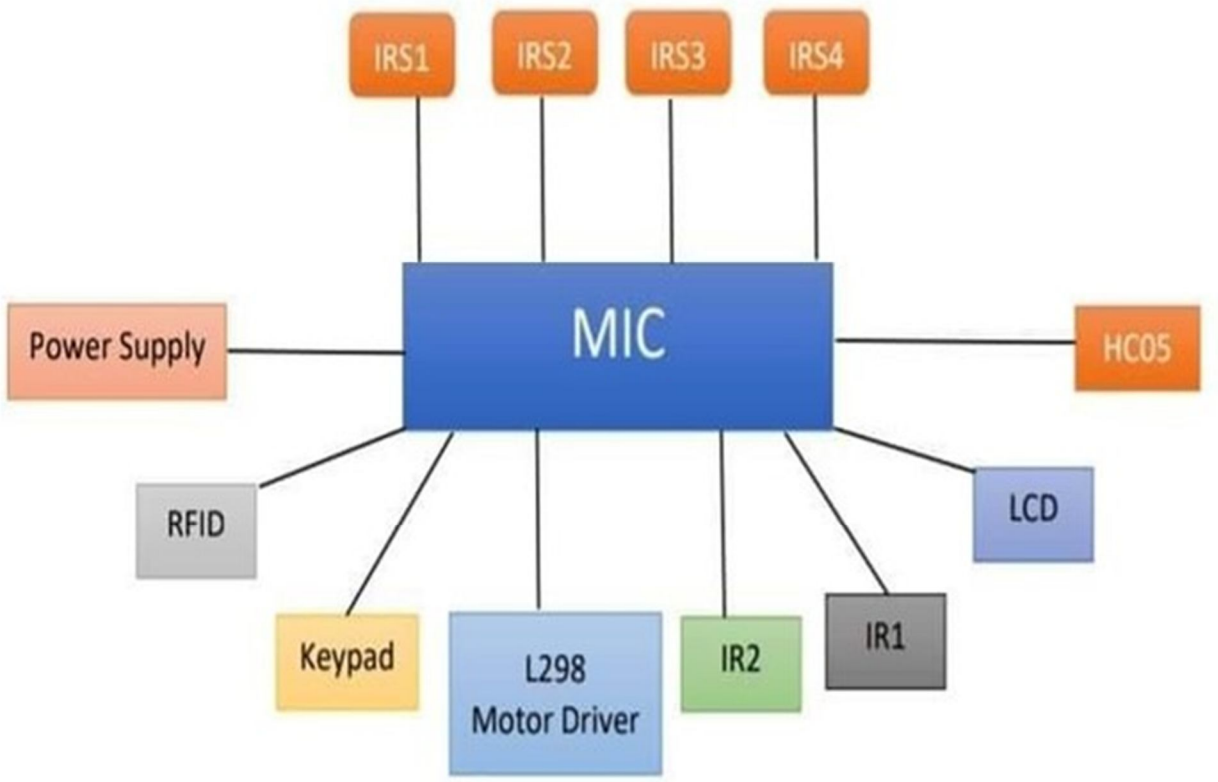
D. RFID-based Smart Shopping

We discuss a unique concept of Intelligent Smart Shopping and Billing in this article. The main goal here is to help a person with everyday shopping by reducing the amount of time spent purchasing a thing. The main goal is to provide a technology-oriented, economical, easily scalable, and rugged system for aiding shopping in person.

E. Smart Shopping Cart with RFID and ZigBee Automated Billing System

Using RFID and ZigBee connection, this study presents a centralized and automated billing system. Each product of the shopping mall and supermarkets will be provided with an RFID tag, to identify its type. Each shopping cart is built with a Product Identification Device (PID), which includes a microprocessor, LCD, RFID reader, EEPROM, and ZigBee module. Purchasing product information will be read through an RFID reader on the shopping cart, meanwhile product information will be stored in EEPROM attached to it and EEPROM data will be sent to Central Billing System through the ZigBee module. The central invoicing system collects cart details and EEPROM data, searches the information in the database, and calculates the overall amount of transactions for that specific cart. The major purpose of this study was to give automated billing to eliminate lineups in supermarkets and shopping centers.

V. PROPOSEDMETHODOLOGY



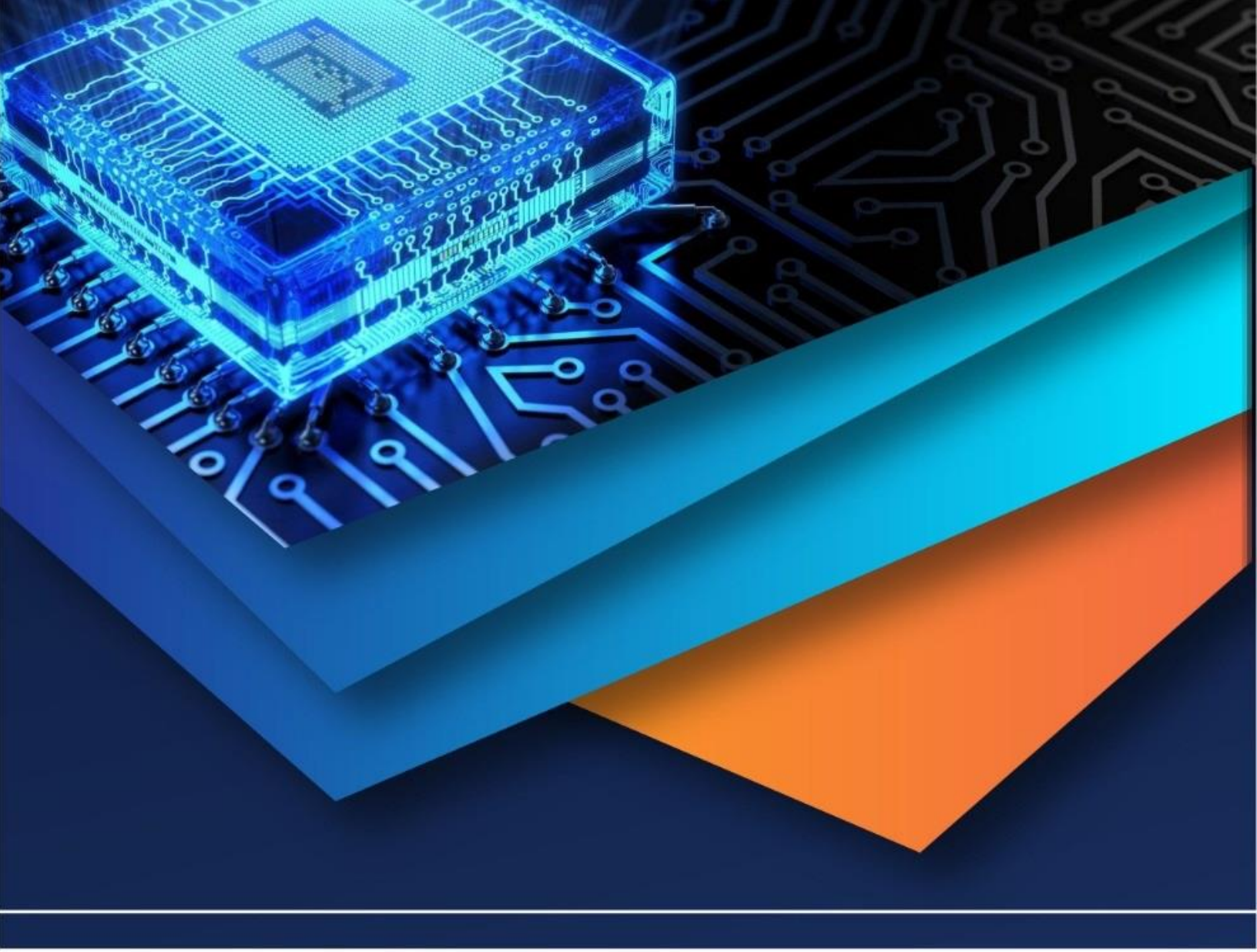
VI. CONCLUSION

In this proposed project, a secure smart shopping system integrating RFID technology is used to improve shopping experiences and security challenges. The smart cart can go to the required location where the particular item is present. The main objective is to make the cart movable by voice control. The project aims to reduce the time of billing in long queues so that the customers get benefited and at the same time inventory management becomes so easy. It can be implemented in shopping malls where they are a large crowd and a huge rush into malls. The proposed method is incredibly dependable, authentic, trustworthy, and time-efficient. There will be a reduction in larceny. Also, the system is extremely time efficient.

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REFERENCES

[1] S.Shailesh, P. Shrivastava Deb, R. Chauhan and V. Tyagi, "Smart Cart," 2021 International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE), 2021, pp. 242- 245, doi: 10.1109/ICACITE51222.2021.9404582.
[2] R.R. Vallabhuni, S. Lakshmanachari, G. Avanthi and V. Vijay, "Smart Cart Shopping System with an RFID Interface for 7 Human Assistance," 2020 3rd International Conference on Intelligent Sustainable Systems (ICISS), 2020, pp. 165-169, doi: 10.1109/ICISS49785.2020.9316102.
[3] M.Shahroz, M. F. Mushtaq, M. Ahmad, S. Ullah, A. Mehmood and G. S. Choi, "IoT-Based Smart Shopping Cart Using Radio Frequency Identification," in IEEE Access, vol. 8, pp. 68426- 68438, 2020, doi: 10.1109/ACCESS.2020.2986681.
[4] R. Chadha, S. Kakkar and G. Aggarwal, "Automated Shopping and Billing System Using Radio-Frequency Identification," 2019 9th International Conference on Cloud Computing, Data Science & Engineering (Confluence), 2019, pp. 693-697, doi: 10.1109/CONFLUENCE.2019.8776944.
[5] Zeeshan Ali, Reena Sonkusare," RFID based Smart Shopping: An Overview" in International Conference on Advances in "Communication and Computing " Technologies, Issue in 2014.
[6] Prasiddhi K. Khairnar, Dhanashri H. Gawali, "Innovative Shopping Cart For Smart Cities " in IEEE International Conference On Recent Trends in Electronics Information & Communication Technology (RTEICT), May 19-20, 2017, India.
[7] Mr.P. Chandrasekar, Ms.T. Sangeetha, "Smart Shopping Cart with Automatic Billing System through RFID and ZigBee" in IEEE S.A.Engineering College, Chennai, Tamil Nadu, 2014, India.
[8] Akshay Kumar, Abhinav Gupta, S. Balamurugan, S. Balaji and Marimuthu R., "Smart Shopping Cart" in School of Electrical Engineering, VIT University, Vellore IEEE,2017.
[9] Ruinian Li, Tianyi Song, Nicholas Capurso, "IoT Applications on Secure Smart Shopping" in International Conference on Identification, Information and Knowledge in the Internet of Things,2017.
[10] M. A. Sarwar, Y. -A. Daraghmi, K. -W. Liu, H. -C. Chi, T. . -U. İk and Y. -L. Li, "Smart Shopping Carts Based on Mobile Computing and Deep Learning Cloud Services," 2020 IEEE Wireless Communications and Networking Conference (WCNC), 2020, pp. 1- 6, doi: 10.1109/WCNC45663.2020.9120574
[11] Hubert, M. blut, C. Brock,C.Backhaus and T.Eberhardt "Acceptance of smart phone based mobile shopping: mobilebenefits, customercharacteristics, perceived risks and the impact of application context", IEEE 2018
[12] A conference paper on "Iot Based Smart Shopping Mall" by 1 Ashok Sutagundar, Masuda Ettinamani, Ameenabegum Attar
[13] . A conference paper on "Internet of Things (IOT)Based Smart Shopping Center " RFID, by Ajay Kumar, shlok Srivastava and U. gupta.



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