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European Journal of Advances in Engineering and Technology, 2022, 9(4s):137-139
International Conference on Tech Trends in Science & Engineering (ICTTSE) 2022
Suryodaya College of Engineering & Technology, Suryodaya Polytechnic, Nagpur, Maharashtra, India

Review Article ISSN: 2394 - 658X

A Review Smart Shopping Trolley using IOT

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ABSTRACT

A shopping mall is a place where wide varieties of items are available. Many shopping malls use barcode scanning systems. As this system is time-consuming, people have to wait in a long queue at the billing counter. To overcome this problem, a smart shopping cart is introduced. This proposed system uses RFID technology. Every product is attached with Radio Frequency Identification (RFID) tag. For scanning, this tag RFID reader is used which is attached to the cart. As a result, a bill is generated in the cart itself and is displayed on the LCD which saves the time of the customer.

Key words: Radio Frequency Identification, Liquid Crystal Display

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INTRODUCTION

IoT is a network in which all physical objects are connected to the internet through network devices or routers and exchange data. IoT is a very intelligent technique that reduces human efforts as well as gives easy access to physical devices. “Things” in the IoT sense, is the mixture of hardware, software, data, and services. It also refers to a variety of devices. These devices gather useful data with the help of varying existing technologies and share that data among other devices. IoT has many applications in different fields such as healthcare, smart homes, wearable devices, etc. In this paper, we discuss on smart shopping cart system which is based on RFID technology. Now a day, shopping at big malls is becoming daily activity in metro cities. The best ways to help the customers are to reduce the time spent in shopping, reduce the cost of items, and automate billing. Ease of Use

EXISTING SYSTEM

In the world of the Internet of Things (IoT), interactions among physical objects have become a reality. Day-to-day items would now be able to be outfitted with computing power and communication functionalities, permitting objects everywhere to be associated with one another. This has brought a new revolution in industrial, financial, and environmental systems and triggered great challenges in data management, wireless communications, and real-time decision making. Also, numerous security and protection issues have risen and lightweight cryptographic techniques are in high demand to fit in with IoT applications. There has been a lot of IoT experimentation on various applications such as smart homes, e-health frameworks, wearable gadgets, and so on. This paper centers around a smart shopping framework based on Radio Frequency Identification (RFID) technology. All things available to be purchased are joined with a RFID tag, so they can be tracked by any gadget outfitted with a RFID reader in the store.

This brings the accompanying advantages:

1) Items put into a smart shopping cart (with RFID perusing capacity) can be read by default and the billing information is generated. Subsequently, clients do not have to hold up in long lines at checkout.

2) Smart racks that are likewise outfitted with RFID readers can screen every single loaded item and send item status updates to the server. At the point when items wind up sold out, the server can tell representatives to restock. The utilization of ultra-high frequency (UHF) RFID technology is proposed in the smart shopping framework, as UHF passive tags have a more drawn-out range from 1 to 12 meters. Past research on the design of smart shopping frameworks principally centered around utilizing low/high-frequency RFID, which have insufficient ranges and leaves clients to physically check items with an RFID scanner. In this proposed framework, each smart cart is furnished with a UHF RFID reader, a microcontroller, an LCD touch screen, a GSM/GPRS module, and a load cell. The smart cart is able to automatically read the items put into a cart via the RFID reader. A microcontroller is installed on the cart for data processing and an LCD touch screen is equipped as the user interface. In order for the smart cart to communicate with the server, we have chosen GSM/GPRS technology. We also have a load cell (weight scanner) installed on the smart cart for weighing items. The weight scanner also helps do a security check. For example, if a malicious user peels off one item's RFID tag and puts it into the cart, extra unaccounted weight will be added. When shopping has been done by a customer, the payment can be made at the checkout point using the billing data generated on the smart cart. An RFID reader is kept before the exit door in order to check if all the items in the cart have been paid for. Security and privacy issues related to smart shopping system are considered. Wireless communications among the server, smart carts and items are vulnerable to various attacks. If there is no proper security method, an adversary can easily intrude with the communication process. Privacy issues also exist ie., the competitor of a store might get easy access to the circulation of commodities for financial strategy and customer preferences can be inferred by easily collecting the product information in shoppers' shopping carts.

PROPOSED SYSTEM

In the current system, bar codes are used for scanning the product details where the customers tend to wait in long queue for generating the bill followed by payment. At times, the bar codes would have been damaged and that particular product cannot be scanned by a barcode scanner leading to confusion. Also, each and every product has to be scanned manually. In order to solve the problems previously identified and save consumers time, money and help the retailers to win loyal clients, in this proposed system, each product will have a passive Radio Frequency ID tag which is bearing a unique Electronic Product Code. This Electronic Product Code provides the information about the product i.e. its name and price. When the customer puts the product in the Smart Trolley, the Radio Frequency ID reader scans the tag and the Electronic Product Code number is generated. Radio Frequency ID reader passes the Electronic Product Code to the microcontroller. The name and price of the product obtained by the controller gets displayed on the LCD of the Smart Trolley, where the client can see the item data. To store the item price and total billing data, microcontroller memory is used. LCD is interfaced with the microcontroller in 4bit mode. It is used to indicate the purchaser, the action taken by the purchaser that is inserting of an item, removal of an item, item's price, and total billing cost of items in the trolley. At the billing counter, the total bill data will be transferred to PC through GSM/GPRS module. As per the test, when putting an item into the smart cart or expelling an item from the cart, the smart cart is able to precisely read it. One astonishing outcome is that the metal outside the cart obstructs the signal to a high degree that when the reader is inside the cart, no item outside the cart can be read. This clearly indicates that an item put into a smart cart will not be perused by a nearby cart accidentally. An RFID reader is installed at the checkout point so that the items in the cart can be meticulously read. As shown in figure-1, the smart trolley system architecture involves two sections as embedded and Java. In the embedded section, the microcontroller is used to coordinate with the RFID reader, weight scanner, LCD touch screen, GSM/GPRS module to perform computing functions. Via serial communication, the information is passed to the GPRS module and then under the Java section, the data is retrieved and viewed on the website using cloud access.

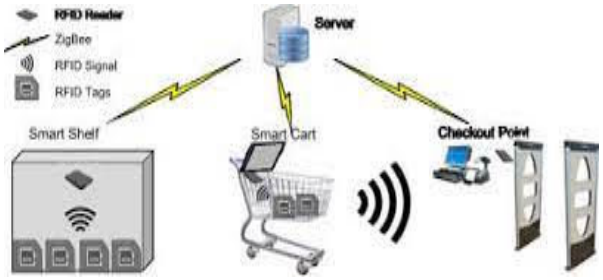

Fig. 1 Working of shopping cart

In the modern era, when the customer wants to purchase an item then the customer has to put the product in the shopping cart then cart's RFID reader read the RFID passive tag which attached to every product. Corresponding data regarding the product will be display on the Mobile application that is in front of the customer attached to the shopping cart [2].

Customers can easily interact with the interface and use different services of the proposed system. By using the proposed services, customers can select the efficient product put the product into the cart and the cost will get added to the total bill. After complete shopping, the billing will be done by the customer and details will be sent to the central server. The map given in the proposed system will locate the product present in the mall with the sectional specification for the ease of the customer. By using this system, customers can buy a large number of products in very less time with fewer efforts. Smart Shopping Cart consists of 4 basic elements hardware integration, software interface, wireless communication, and network database [2].

LITERATURE REVIEW

G. O. Young, "Synthetic structure of industrial plastics (Book style with paper title and editor)," in Plastics, The RFID is a rapidly developing technology. It's used in many applications such as logistics, ticketing, security, employee attendance record, and others. Also, fractal technology is used in many areas, and recently in antenna design because it allows making multi-band and wide-band antennas.

Abhilash C B, srinidhi Karjol, Anusha K. Holla in An IoT Based Smart Shopping Cart for Smart Shopping proposed today's world has a fast-growing population with a wide range of demand from a variety of domains. Customers who need to purchase different products in Walmart or supermarkets need a lot of time and patience in coordinating among themself for successful shopping.

Pritha, Sahana, Selvin Stephy, Shiny Rose, Annamalai in a "Smart Trolley System for Automated Billing Using RFID And IOT" - An automated smart shopping system is formed by introducing the concept of IoT to connect all items in the grocery shop. In this system, an inexpensive RFID tag is embedded within each product. When the product is placed into a smart cart, the product detail is automatically read by the cart equipped with an RFID reader.

Dr. suryaprasad jayadevappa in a novel Low-Cost Intelligent Shopping Cart proposed to low-cost shopping cart an innovative product with societal acceptance is the one that aids the comfort, convenience, and efficiency in everyday life.

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