International Journal of Advance Research in Science and Engineering
Vol. No.9, Issue No. 04, April 2020
www.ijarse.com
IJARSE
ISSN 2319 - 8354

Intelligent Trolley System

Dr.C.Venkatesh M.E,Ph.d, G.Prashanth,S.Santhosh

[1]*Sengunthar Engineering College, Trichengode, Namakkal,TamilNadu*

[2]*Deparment Of Electronics and Communication Engineering, Sengunthar Engineering College, Trichengode.*

[3]*Deparment Of Electronics and Communication Engineering Sengunthar Engineering College, Trichengode,*

Abstract:
In this Paper, A scheme of Shopping Guide System and technology that we proposed is Internet of Things; Data Analytics .Them most common issues that has been faced in the time shopping is product identification and information acquirement. This system combines electronic tag with identification technique in the Internet of things. The electronic tags are applied to the product identification. The wireless technique and identification methods are employed to transfer and determine the product information automatically. The function andProperties of Shopping Guide System are analyzed. The combination of the RFID network system. And Zigbee network applications are investigated. Some middleware's in communication task and the system of the Shopping Guide System are proposed. And the problems and corresponding solutions that may occur in the system. The system is guidance on future shopping which makes it comfortable and enjoyable for clients.

1. Introduction

With the development of our society, supermarket has been part of our daily life. Due to the wide variety of commodities in the market, we can buy anything we want; the more goods there are, the more time customers will spend on shopping. Customers may waste a lot of time on searching what they need. The program is intended to allow customers to feel the convenience that the Internet of things smart supermarket brought about to people's lives and understand what is Internet of things and how does it affect people's lives really and truly.

In the smart supermarket, we will never hear customers complain about queuing up for shopping and checkout. The structure Shopping Guide System of is of great practical significance.

The appearance of electronic tag and Internet of things [1] makes industrial enterprises to achieve Internet of things System. RFID [2] is a new technology to identify items; it is based on Principles of Radio Frequency Identification.

It exchanges information with readers via radio frequency signals, and it will become the primary choice of Identification in technology in the future. Based on computer Internet, Internet of things make RFID tags[3] uniquely determine each item an EPC code, thus constituted a global Internet of real-time sharing information of goods in kind, Short form Internet of Things.

The proposal of Internet of things provides an effective way to receive original Information and make a detail list automatically. Electronic tags can conveniently and automatically identify the products and gather information. With the combination of the two, customers can buy anything they need in anywhere and anytime.

This paper is based on wireless technique and Internet of things, and proposes basic information on Supermarket Shopping Guide System, analyzes its construction and functions, and according to Internet of things, realizes a Typical Internet of things for industrial enterprise, thus greatly improving the speed of supermarkets operating flow. Not only improve the efficiency, but also reduce human operation errors. With the universal of the system, some problems may occur; here we discussed some of them.

2. Basic System Structure

This Shopping Guide System consists of active RFID tags [4,5,6] on the shelves, several readers within the supermarket range, and handheld devices in every customers hand. The device receives product information typed by the customers and communicates with readers, then guide customers to the necessary goods.

2.1 Enterprise Productions RFID System

This system is responsible for the front tag identification, reading, writing and information management. It sends information through a computer or directly through the network to a local Internet of things information service network system. Corresponding to each category of goods, install active RFID tags on each shelf containing the product information, including product name, price, manufacturer and the location of the shelf.

2.2 Middleware System

The middleware is an intermediate system between readers and computer Internet. It provides a series of calculation and data processing functions for enterprises. Its main task is to capture, filter, collect, calculate, proofread, demodulate, send, store and manage the tags data red from readers, so as to Reduce the amount of data sent from readers.

Meanwhile, the middleware also provides the platform to mutually Manipulate with other RFID support software system. Besides, it defines two interfaces for reader and application. Installing a certain amount of readers within the supermarket Range is an important part of the Middleware System.

Meanwhile configure a handheld device for every customer shopping in the market, when the customers input the name of commodity they need into the devices, the handheld device communicate with the readers in the market through Middleware operating system, send its own message, then readers send a route message to the handheld device to guide Customers to the goods they need.

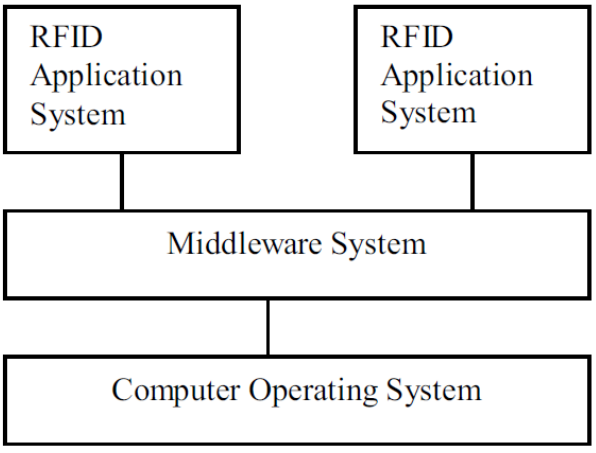


Fig.1 Middleware system

3. Main System and Operating Flow

3.1 Main System

The whole Shopping Guide System is made up of 5 parts, identification, searching and navigation, information reception, advertising, smart checkout.

(1) Identification:

Since the supermarket is an all intelligent unattended system, therefore, only those who have Public Card in hand can step into the supermarket for shopping.

(2) Searching and Navigation:

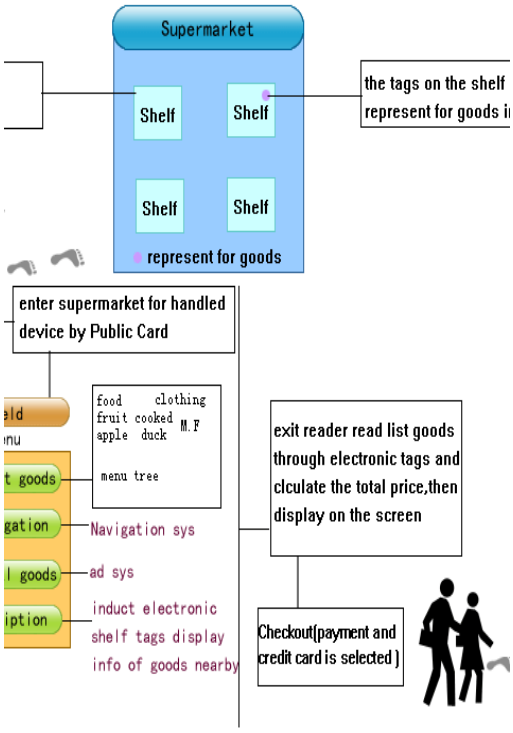
Customers can search and choose what they need at the smart shopping cart; the navigation system in the supermarket will read customers current location information, and guide customers to the corresponding purchase area.

International Journal of Advance Research in Science and Engineering
Vol. No.9, Issue No. 04, April 2020
www.ijarse.com
IJARSE
ISSN 2319 - 8354

(3) Information Reception:
When the customer is interested to a certain product, the device will show the corresponding advertising information of this product to the customer.

(4) Advertising:
The smart shopping cart can send messages about special price or ex-gratia of the goods near the customer.

(5) Smart Checkout:
There is no need to scan bar codes of the goods one by one. Instead of it, the intelligent system can read the information of the whole cart directly, then calculate the consumption, and debit from Public Card automatically.



3.2 Special Operating Procedures

(1) Customers with smart Public Card enter into the supermarket should firstly be authenticated; those who don't have Public Card are not allowed enter, if he or she forces to enter, the alarm will be given.

(2) Customers choose a smart shopping cart and use their handheld device to browse and purchase goods.

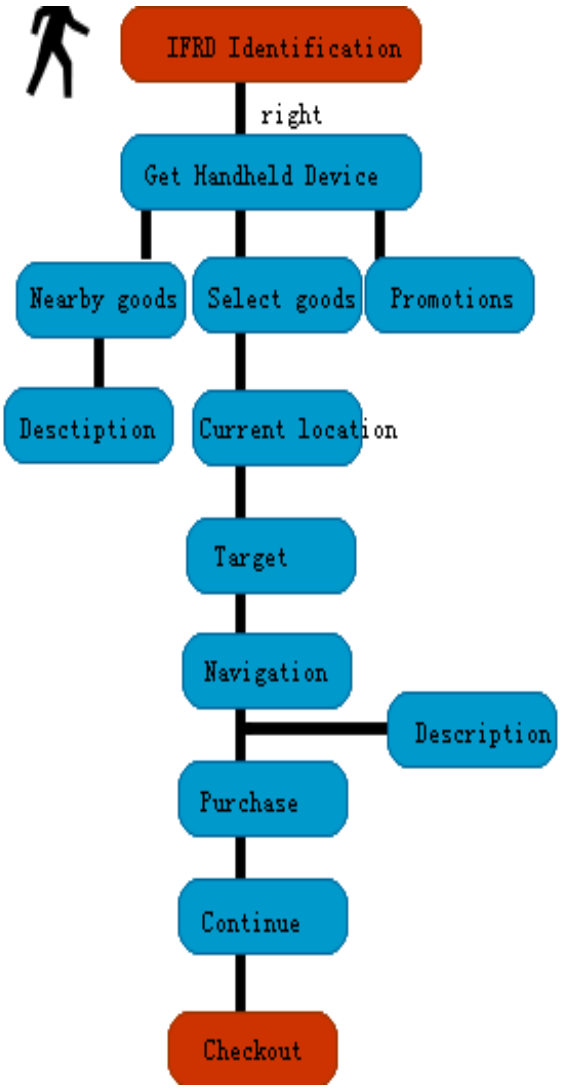
(3) If the customers need to purchase goods, then shows the goods information (include the product name manufacturer, price) near the customers through handheld devices. When the customers show their interest in one kind of goods, some other corresponding information such as buy rate and others will display onthe handheld.

(4) After the customer selects one product, this handheld device will shows the location of both the customer andthe product, and choose the best route to guide the customer.

(5) After the customers all products, the system provideintelligent checkout through RFID calculate passage Deduct the money from Public Card automatically, if the amount of money in the card is not enough, then thecustomer is not allowed to pass, otherwise call the police.

(6)Customers without purchasing can leave through the normal exit, if the customer who purchases the goods leave without passing the checkout passage, the alarmwill be given.

International Journal of Advance Research in Science and Engineering
Vol. No.9, Issue No. 04, April 2020
www.ijarse.com
IJARSE
ISSN 2319 - 8354



4. Principle of Corresponding Technical System Module

The shopping guide system consists of modules of identification, searching and navigation, information reception, Ad push, smart checkout.

4.1 Identification Module

Its function is built on shared platform application sub function, on the basis of the expo centres smart Public Card to indentify, it only need expo configure the proper equipment. By the installed Public Card reader, the supermarket can obtain identification and send to the application sub function to identify immediately.

4.2 Searching and Navigation Module

Configure a handheld device with reading function for the shopping cart, then the customers can browse and purchase goods. The handheld devices are embedded RFID reader; you can achieve a 2m read. Handheld device is our handheld devices display window, 6 is the operating interface for navigation.

International Journal of Advance Research in Science and Engineering
Vol. No.9, Issue No. 04, April 2020
www.ijarse.com
IJARSE
ISSN 2319 - 8354

Fig.4 Handheld device Fig.5 Display window of handheld

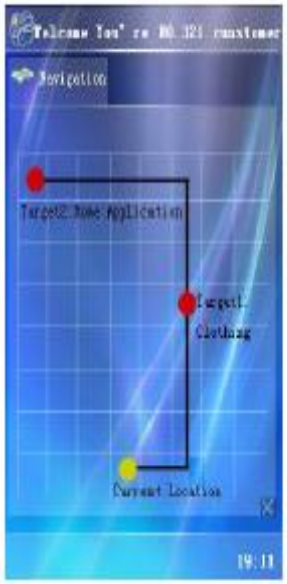


Fig.6 Interface of searching and navigation

When a customer chooses a commodity, handheld device will send information to the reader node, the reader node acquire tag information within the detection region. If one reader nodes region excludes the commodity, messages will be sent to another node, until find the relevant commodity; system will choose the best route to guide the customer.

International Journal of Advance Research in Science and Engineering
Vol. No.9, Issue No. 04, April 2020
www.ijarse.com
IJARSE
ISSN 2319 - 8354

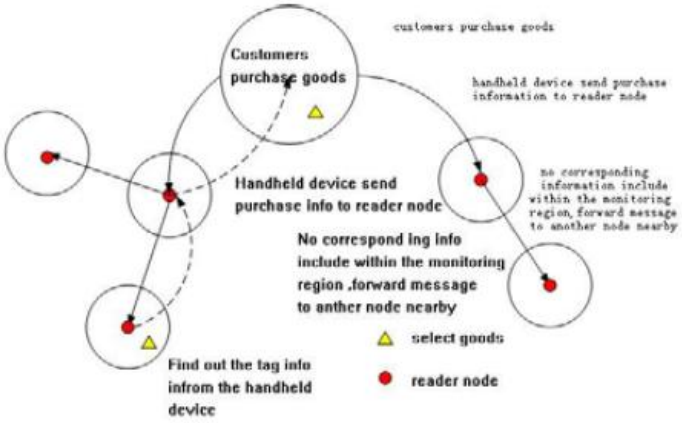


Fig.7 Flowchart of searching and navigation

4.3 Information Reception

Handheld device receive information of the goods nearby. Customers can browse product information through option of product description on the handheld device. When the customer is interested in one product, related information about the product will be displayed.

4.4 Ad Push Module

When the customer enters a certain commodity area, relevant product promotions and the purchase situation will bePresented to customers through special products recommended option. Its interface and flow chart of information reception and Ad push.

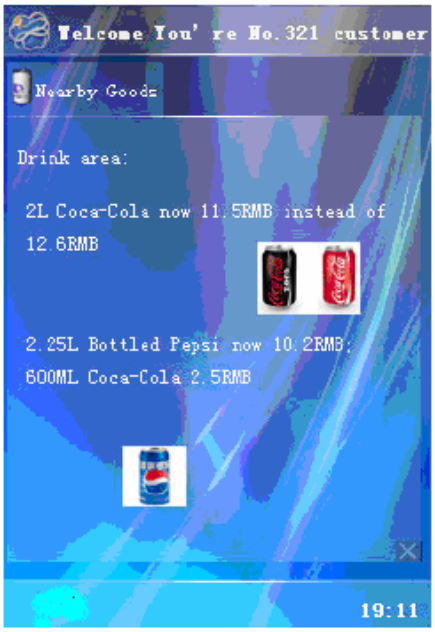


Fig.9 Ad push interface

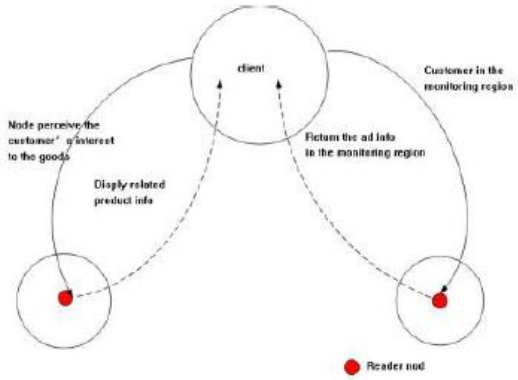


Fig.10 Flow chart of information reception and Ad push

4.5 Smart Checkout Module

Establish RFID receiving channel, after the purchase of goods ,the customer only needs to push the cart through the checkout export installed of RFID readers, system will immediately one-time scan all RFID-tagged goods, and automatically deduct the amount from the Public Card and print the shopping list. The entire checkout process maycomplete in just several seconds. For security purpose, we use collect the information twice, when the customer puts the product into the cart, record product information, and return to the terminal settlement system. If some product are taken out from the shopping cart, the corresponding information will be removed from the terminal. When the customer pass through the RFID receiving channel, settled in matching and the two terminals list agrees, then the whole settlement complete.

5. Conclusion

Based on wireless technology this paper proposes an Internet of things Shopping guide system design. Upon completion, this design will facilitate peoples shopping, greatly improve efficiency, save the customers time. Finally, the System can make the supermarket more intelligent and human, promote business sales, and provide shoppers personalized service, and this application has good prospects. Of course, the cost problems such as electronic tags, formulation of relevant standards and norms for the application of electronic tags and Internet of things, information security are key factors to the universal application of this system.

Reference:

[1] Ning Jia, "Design of Fast Supermarket Shopping Based on Internet of Things", Robots & Intelligent System (ICRIS) 2017 International Conference on, pp. 112-115, 2017.

[2] Sudhir Rao Rupanagudi, Fathima Jabeen, Vaishnav Ram Savarni K R, Sindhu Adinarayana, Vinay K Bharadwaj, Karishma R, Varsha G. Bhat, "A novel video processing based cost effective smart trolley system for supermarkets using FPGA", Communication Information & Computing Technology (ICCICT) 2015 International Conference on, pp. 1-6, 2015.

[3] Giovanny Mauricio TarazonaBermúdez, Jordán Pascual Espada, Edward Rolando Núñez-Valdéz, "Using Collaborative Virtual Objects Based on Services to Communicate Smart Objects", Innovative Mobile and

Internet Services in Ubiquitous Computing (IMIS) 2013 Seventh International Conference on, pp. 456-461, 2013.

[4] P. Karunakaran and C. Venkatesh, "Traffic and Security using Randomized Dispersive Routes in Heterogeneous Sensor", International Journal of Distributed and Parallel Systems (IJDPS) Vol.3, No.1, pp. 219-228, January 2012.

[5] Anandamurugan S. and Venkatesh C. "Power saving method for Target Tracking Sensor Networks to improve Life Time", International Journal of Recent Trends in Engineering (IJRTE), Vol.1, No.1, pp.594-596, 2009.

[6] P.Ponmurugan, V.Naveen, R.Sivaramakrishnan, K.Sivasubramanian, K.Sureshkumar, "Remote streamlined observing and control utilizing advanced mobile sensor stage", International Journal of Pure and Applied Mathematics, Vol.118, No.20, 2018, pp.1437-1444. (Scopus Indexed)