Smart Shopping Cart in Super Market

Keerthana.S[1], Kiruthika.P[2], Jenita .E[3], Harioriya.A[4], Ramjan Begum.M[5]
BE Student [1, 2, 3, 4, 5]
Department of Electronics and Instrumentation Engineering
Valliammai Engineering College, Chennai, India

Abstract:
Electronic Shopping trolley is a necessary tool for shopping in supermarkets or grocery stores. However there was a shopping trolley abandoned everywhere in the supermarket after being used. In addition, there were also shopping trolley safety issues such as sliding down from an escalator. On the other hand it is inconvenient and time wasting for customers who are in a rush to search for desired products in a supermarket. Therefore an automatic human following shopping trolley with a smart shopping system using "KINECT SENSOR "was developed to solve the problems. The shopping trolley was equipped with ultrasonic sensor for obstacle avoidance. A line following portable robot was installed under the trolley to lead the user to item's location that they plan to purchase in the supermarket. The QR codes are attached for the readymade accumulation of data within the cloud service systems. A QR reader is used for cost estimation for customer. Besides they can track the purchased items easily. In conclusion users can enjoy shopping and pay more attention on their children during shopping without the need of pushing the shopping trolley.

Keywords: QR scanner, Smart shopping, Retail, Kinect sensor.

I.INTRODUCTION

One third of major shoppers buy groceries on a budget. They also worry about going over it. A new study in Atlanta grocery stores shows that smart shopping carts – carts that display the total price in a shopping cart – increased both a budget shoppers' confidence and how much they purchased. When shoppers know exactly what they spend, they are more likely to reduce on brand names, and even though they spent an average of almost 22% more, they left the store happier than others who did not receive this feedback. But this real-time shopping feedback actually leads non budget shoppers to be more frugal. On average, they spend 19% less, and purchase fewer national brands and more of the less-expensive store brands. The smart shopping cart looks like a normal one except for an interactive screen and scanner mounted near the shopper. Once the shopper swipes his store card, his shopping history is available for all kinds of purposes, from presenting a suggested shopping list to alerting him to discounts or reminding him about perishables purchased a month ago. Although interest in smart shopping carts is increasing, retailers and consumer groups have concerns about how real-time spending feedback will influence shopping behaviour. Real-time spending feedback stimulates budget shoppers to spend more. In contrast, this feedback leads high budget shoppers to spend less. Furthermore, smart shopping carts increase intentions for budget shoppers while keeping them stable for high budget shoppers. These findings underscore fundamental unexplored differences between budget and high budget shoppers. Moreover, they have key implications for both infra and online retailers as well as app developers. [1]

II.TECHNOLOGY

QR SCANNER is becoming preferable technology as an alternative to barcode systems. QR SCANNER systems provide an automatic identification method, relying on storing and remotely retrieving data using QR SCANNER tags or transponders. An QR SCANNER tag is an object that can be attached to or incorporated into a product, animal, or person for the purpose of identification using radio waves. Chip-based QR SCANNER tags contain silicon chips and antennae. In this paper, we have developed a smart shopping cart system that allows customers to manage their shopping list while shopping and only pay the bill at the checkout counter. The shopping cart has the ability to calculate automatically and display the total prices of all the products inside it. This makes it easy for the customer to know how much he or she has to pay while shopping and not at the checkout counter. This way the customer can receive faster service at the checkout. The advantage for the shop owners is that they would need a less cashiers, which would result in a large cut in their costs. The Kinect sensor is a horizontal bar connected to a small base with a motorized pivot and is designed to be positioned lengthwise above or below the video display. The device features an RGB camera, depth sensor and multi array microphone running proprietary software which provide a full body 3-d motion capture, facial recognition and voice recognition capabilities.

III. EXISTING METHOD

Shopping trolley is a necessary tool for shopping in supermarkets or grocery stores. However, there was shopping trolley abandoned everywhere in the supermarket after being used. In addition, there were also shopping trolley safety issues such as sliding down from an escalator. On the other hand, it is inconvenient and time wasting for customers who are in rush to search for desired products in supermarket.

IV. DEVELOPED MODEL

An automatic human and line following shopping trolley with a smart shopping system was developed to solve the problems. The shopping trolley was equipped with ultrasonic sensor for obstacle avoidance. The beauty of all this system is that it uses all of these sensors in the most effective way to help it react. Unmanned operation requires sensor system for target position,

sensors for load position, and control and communication equipment on the trolley and remote consoles for control signals. Now a day, automatic trolley has become popular especially in localization scheme. A QR code scanner is also attached with the cart to get the total amount of purchased items to be displayed in the LCD screen, which is placed in the cart itself.

V.CONCLUSION

The desired objectives were successfully achieved in the prototype model developed. The developed product is easy to use and economical. Though the project showcases the proof of concept, there are a few aspects that can be included to make the smart shopping cart more robust. To begin with, in this project the latency time of the wireless communication with the server may need to be considered. Secondly, the communication is not very secure. Another ZigBee module operating at the same frequency can easily intercept the transmitted data. This issue will have to be resolved specifically with respect to billing to promote consumer confidence. Further, a more sophisticated micro-controller and larger display system can be used to provide better consumer experience.

IV. REFERENCES

[1].http://www.retailsolutionsonline.com/doc/the-age-of-grocer ysmart -carts-creeps-closer-0001

[2]. An efficient QR SCANNER solution to expedite services. Tarek R. Sheltami, ElhadiShakshuki MoMM'2009 Kuala Lumpur, Malaysia; 01/2009

[3]. Mining paths and transactions data to improve allocating commodity shelves in supermarket. Hong-Bo Li, Wei Wang, Hong-Wei Ding, Jin Dong. Service Operations and Logistics, and Informatics (SOLI), 2012 IEEE International Conference on; 01/2012

[4]. Evaluation of the Shopping Path to Distinguish Customers Using a QR SCANNER Dataset. Takanobu Nakahara, Katsutoshi Yada. IJOCI. 01/2011; 2:1-14

[5]. Dr.Suryaprasad J, Praveen Kumar B O, Roopa D Arjun A K, A Novel Low-Cost Intelligent Shopping Cart, Proceedings of the 2nd IEEE International Conference on Networked Embedded Systems for Enterprise Applications, NESEA 2011, Perth, Australia, December 8-9, 201

[6]. Zeeshan Ali, Prof.ReenaSonkusare,"QR SCANNER Based Smart Shopping and Billing", International Journal of Advanced Research in Computer and Communication Engineering, Vol. 2, Issue 12, December 2013