



## IOT Based Smart Shopping Cart

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### I. ABSTRACT

Whenever we start shopping we always think to make this experience a little more exciting and definitely with no fatigueless. So here in this project we present a technique which is IOT BASED SMART SHOPPING CART, the cart which is smart enough to reduce our work load and will serve as an advantage to both customer and owner. All the components are combined together (1) to decrease the time consumption in the billing counters at the supermarkets. Chances of shop lifting and manpower will also decreased and increased the production & consumption.

**KEYWORDS:** Smart, time consumption, decrease

### II. INTRODUCTION

Today shopping is one of the difficult task to complete as it's difficult to spare time from the hectic schedule. Even it's just a task we all wish to neglect as roaming in all the sections to find the product keeping the account of the money which we are spending, standing in the long queue, getting to know we went over budget then removing the product so that we didn't overshoot our expense looks something which we want to get rid off. Not only the customer, but the owner of the mart also have to keep the account that whether they are getting profit or is there any employee theft going on in the mart.

So here we proposed this project on IOT BASED SMART SHOPPING CART. Since we are talking about IOT, (2) represents the system which consists a things in the real world, and sensors attached to or combined to these things, connected to the Internet via wired and wireless network structure, and allow communication between them

Every shopping mart is equipped with the shopping trolley or basket to help the customers conserve there products in it. The customers have to load the cart with the products they wish to buy and later have to move on the billing counter to pay but (3)the billing process is quite tedious and highly time consuming and has created the need for shops to employ more and more human resource in the billing section, and yet waiting time remains considerably high. So there is the need to have the technology which will help us to get rid to it. So we developed our project by considering all the flaws and implemented it accordingly.

In this cart we have used rfid card reader instead of the traditional method that is barcode scanner. The cart is having in-built features like addition of products, deletion of products and payment of the shopping done, bill generation. And even let the customer to have information about the price of the product that is scanned and total at that time only. All the customer have to follow the simple rules and they are done with their shopping along

with payment of the bill through e-payment. And simultaneously entire total will be updated on the server. In this way growth of technology in the retail world can be increased.



### III. COMPONENT USED

**A. RF Reader EM-18 Module:** It directly connects to any microcontroller using UART/R232 converter to PC. Its operating frequency is 125KHz. It is also called low frequency RFID reader.

**B. Buzzer:** It is an audio signal device. It is a sound producing device. It contain Piezo speakers and it can directly connect to Arduino.

**C. Arduino Mega(2560):** It is based on ATmega 2560 microchip technology. It includes 54 digital input/output pins, 16 analog inputs, 4 UARTs, 16MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. (5)

**D. Voltage Regulator:** It is used to maintain a constant voltage level. It also can be used as electro-mechanical mechanism.

**E. Wi-Fi Module:** All the ESP8266 Wi-Fi Modules are self-contained SOC with integrated TCP/IP protocol stack which is able to give any microcontroller access to your Wi-Fi network. This module is capable of either host an application or unload all Wi-Fi networking functions from another application processor. Every ESP8266 module comes pre-programmed with an AT command set firmware, meaning, you need to connect this to your Arduino device to induce Wi-Fi-ability. (6)

**F. Load cell:** Load cells usually comprises a spring element on which strain gauges are placed. This spring element is generally made up of steel or aluminum which means it's very sturdy and also minimally elastic. The name "spring element" suggests, the steel is slightly deformed under load, on the other hand returns to its starting position, responding elastically to each load. These extremely small changes can be obtained with strain gauges. Then finally the deformation of the gauge is interpreted by analysis electronics to calculate the load.(7)

**G. Load Cell amplifier:** It is an instrument that converts low amplitude signal to high amplitude signal, is that output of load cell.

**H. Servo Motor:** It is a mechanism which control angular and linear position. A servomotor is a closed loop servo mechanism which uses position feedback to manage its motion and final position. The input will be either analog or digital signal which will represents the position commanded for the output shaft. (8)

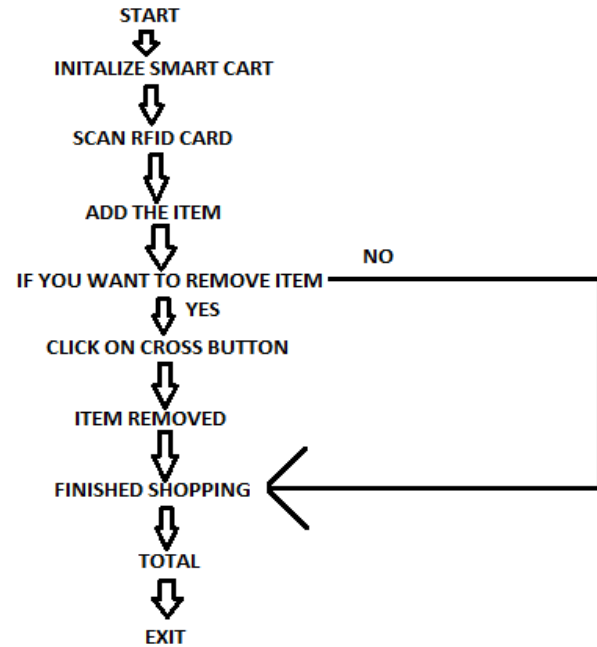
**I. RFID Card:** It is used to get information stored on a tag on which it is connected.

#### IV. WORKING

First we have to give the power supply to the INTELLIGENT SHOPPING CART. In this cart we used the Arduino mega microcontroller. ESP8266 WiFi module is also used so that the complete updation will be made on the server simultaneously without any disturbance and it also helps to the microcontroller to access the Wi-Fi network. We used RF reader EM18 module is used to reads the RFID tag. Every product have their different RFID tags which includes the every information of product. And servo motor is used for opening and closing of flap. LCD screen is the one which will act as the user interface. With the help of this customer will be able to get the information about the item added or removed and other general information like price, total and number of items.

If customer wants to buy any product, customer has to scan the product to the RF reader EM18 module so that the flap will get open and customer will be able to add the product in cart. They have to add their product within 5sec after that flap will be closed. If they wants to add more products same procedure will be followed. And the list of the added product will show on the LCD screen. If the customer wants to remove anything from the cart then they can remove that product easily by clicking on the cross sign available on the screen just in front of the item . By doing so the flap again will get opened again for 5 sec and the customer can easily eliminate the product . The moment they are finished with their shopping they have to click on the total which is on the display on the screen . And they will get there total along with the price and name.

There is weight sensor which is at the lowest point on the cart and is used to crosscheck the weight of the product present in cart and weight of products scanned by the reader. And buzzer is also there so that it will make a beep sound when both the weight will not matched. And if the customer is not been able to understand the beep sound, shop lifting message will be displayed on the screen. It helps to reduces the robbery in store.



#### V. CONCLUSION

Techniques are transforming regularly which are just for making the life of the human comfortable. Every time we adopt the technique we first look at that how it will benefit us. So here in this technique we had taken all the prevention for making the life of the people easy going. As there is a famous saying that time is money and by decreasing the time they spent on the billing counter they are just saving their money and definitely that time they can spent in doing other task. Moreover they get the benefit of knowing the expenditure they have to disburse during that interval. Workforce will also get reduced on the billing counter which is healthy for the keeper. Now the customers can enjoy their shopping experience and sale will also get increased during peak hours and festive seasons.

#### REFERENCES

1. DESIGN OF AN INTELLIGENT SHOPPING BASKET USING IoT by K.Lalitha<sup>1\*</sup>, M. Ismail<sup>1</sup>, Sasi Kumar Gurumurthy<sup>1</sup>, A. Tejaswil Sree Vidyanikethan Engineering College, Tirupathi, India.
2. Internet of Things Applications, Challenges and Related Future Technologies Zeinab Kamal Aldein Mohammeda, Elmustafa Sayed Ali Ahmedb Electrical and Electronic Engineering Department, Red Sea University, Sudan
3. S. Sainath, K. Surender, V.Vikram Arvind, on Automated Shopping trolley for super market billing system, Hindustan University, Chennai
4. Arduino official Website
5. Spark Electronics since 2003(.com)
6. Spark Electronics since 2003
7. Wikipideia "IABotManagementConsole", Cyberpower678, 2018