Automatic Shopping Cart using IOT

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Abstract

The modern technology has increased the standard of living for the humans. There has been an emerging demand for quick and easy payment of bills in supermarkets. Every one of us craves for a quality in everything we use in our daily lives. This project describes how to build an automated and time saving system for the world of retail which will make shopping experience impetuous, customer friendly and secure. So, this has resulted in large crowds at shopping malls which have led to long lines at the billing counter because the cashier has to scan every product item and then enter it in to the billing record. The prevailing billing system is a bit time consuming. So, we thought of inventing a remedial electronic product to catch- up with this problem.

We call it Automated Shopping Cart Using IoT this is based on Raspberry Pi fitted with LCD and Q R scanner and a wireless technology called Bluetooth. The LCD used is a 16x2 and Bluetooth modules make the wireless network to work easily between a certain ranges. An innovative product with social acceptance is the one that aids the comfort, convenience and efficiency in everyday life. The brief description of its operation is, when you pick a product and drop it into the trolley, the QR scanner scans The product's unique code and its price. And it gets displayed on the LCD screen, so after costumer has finished with the shopping, he/ she has to visit the counter and pay the bill as displayed on the LCD screen fitted on the trolley. This will save the time that was earlier being consumed to scan each item.

INTRODUCTION

Humans these days always go for technology which is useful to the man invented a technology which will support their names. Basically, human wants to decrease the tasks using the technology in faster and easy way available. The main things where human spends maximum time in shopping. According to survey we can say human spend approximately 1 to 1.5 hours for shopping and most of the customers will always end to walk out of a cube if it is long. As we know there are two types of shopping i.e., shopping in person, online shopping, here online is the easiest way to shop as we don't have to be present physically in the shop or mall. Where shopping in person have to visit the mall or shop for shopping where customers have to wait queue for long time.
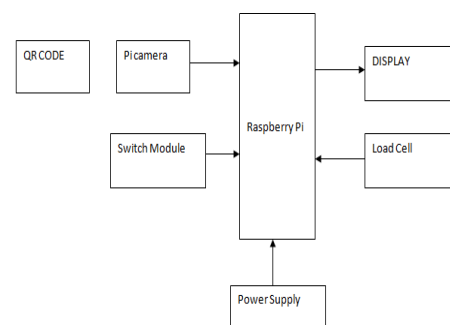

Figure 1: Flow chart for the proposed model.

1 RASPBERRY PI: A small credit- card sized computer capable of performing various functionalities such as in surveillance systems, military applications.

2 QR SCANNER:

QR code (abbreviated from Quick Response Code) is the trademark for a type of matrix barcode (or two- dimensional barcode) first designed for the automotive industry in Japan. A barcode is a machine- readable optical label that contains information about the item to which it is attached .A QR code uses four standardized encoding modes (numeric, alphanumeric, byte/ binary, and kanji) to efficiently store data; extensions may also be used. Applications include product tracking, item identification, time tracking, document management, and general marketing.

Figue 2: QR code

A QR code consists of black squares arranged in a square grid on a white background, which can be read by an imaging device such as a camera, and processed using Reed–Solomon error correction until the image can be appropriately interpreted. The required data are then extracted from patterns that are present in both horizontal and vertical components of the image.

PIO ports output high or low level without any other MCU. The PIO state acquisition version can be used to acquisition PIO ports state without any other MUC.

3 SD CARD:

Raspberry PI has no storage on board. SD/ micro SD Card stores the OS. The total memory of the SD card is about 8GB. Class 10 is preferred owing to its high speed.

Figure 3:SD card

4 NETWORK ADAPTER:

Wireless network connection is used for the process of data transfer. Wi-Fi USB Adapter that supports speed of 150Mbps is used. Edimax is a commonly used Wi-Fi USB Adapter.

Figure 4: Network Adapter

5 POWER SUPPLY:

A Micro- USB plug power supply that supplies atleast 1A of power is used. It also runs on a battery.

Figure 5: Power Supply

6 LOAD SENSOR:

Load sensor is a device which measures the weight of objects such as vehicles. If the weight of a vehicle is beyond the threshold value (here 1.5kg), the gate is closed. Thus, preventing the entry of heavy vehicles into the bridge it produces an analog output which cannot be interpreted using the in- built 10-bit ADC in ARM.

Hence a separate ADS1232/ 4 is used as a driver. The ADS1232 and ADS1234 are precision 24- bit analog- to- *digital converters (ADCs).*

7 CAMERA:

Figure 6: Camera

The Raspberry Pi Camera Module is a custom designed add- on for Raspberry Pi. I t attaches to Raspberry Pi by way of one of the two small sockets on the board upper surface. This interface uses the dedicated CSI interface, which was designed especially for interfacing to cameras. CSI

bus is capable of extremely high data rates, and it exclusively carries pixel data. The board itself is tiny, at around 25mm x 20mm x 9mm. I t also weighs just over 3g, making it perfect for mobile or other applications where size and weight are important. The camera is connected to the BCM2835 processor on the Pi via the CSI bus, a higher bandwidth link which carries pixel data from the camera back to the processor.

ADVANTAGES:

It is used in Shopping centers for complete automation. An object following robot carrying items has been designed for providing automatic billing and carry items ease of way. The robot can be used in industrial applications. The robot can do the entire task it is set to do. It can be used in carrying children in shopping mall and entertainment places. Reduces manpower required in billing section. This can reduce the expenses incurred by the management. Users can be aware of the total bill amount during the time of purchase. Reduces time spent at billing counter and Increases customer satisfaction.

RESULTS:

1 IoT:https://internetofthingsagenda.techtarget.com/definition/ IoT- device

2 Dr. Suryaprasad J, Praveen Kumar B O, Roopa D & Arjun A K " A Novel Low- Cost Intelligent Shopping Cart", 2014 I EEE.

3 Amine Karmouche, Yassine Salih- Alj, " Aisle-level Scanning for Pervasive RFI D- based Shopping Applications" , 2013 I EEE.