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Supermarket's Webcam Billing System

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ABSTRACT

Groceries are an everyday necessity, and when we shop at supermarkets, we often notice that the billing process takes a long time because it involves scanning the barcode on each product. If there are any problems with the barcode scanning, customers end up waiting even longer at the checkout. Therefore, a webcam-based billing system has been developed to address these concerns; this system complements conventional supermarket billing with a number of useful extra features. Customers should expect quicker bill production with this solution. The technology swiftly calculates the bill after capturing product photographs with the camera and providing product information like name and price. This technique allows us to cut down on time while also improving accuracy.

Search Terms: Supermarket, Webcam, Barcode.

I.INTRODUCTION

People nowadays have more money to spend and less free time. Therefore, supermarkets are usually their go-to for food shopping. People go to supermarkets to buy and pay for the things they use every day.In order to provide accurate billing to clients, it is necessary to determine the total number of items sold. It is clear that barcodes are extensively used for invoicing purposes in several food stores. Every single item sold at the supermarket has one of these barcodes. When consumers finish their shopping, they go to the checkout lanes, where employees scan the barcodes of each item to determine its final price. Scanning each product individually is a big time sink for both the business and its consumers. Especially in large businesses where thousands of goods must be scanned every day due to the high volume of consumers. Because of this, human workers have a harder time with the job, and customers still have to wait in lengthy lines at retailers. Sometimes the barcode is damaged or there are other issues with reading it (e.g., poor quality, lighting effects, etc.). The use of laser light to barcode each product adds another layer of expense to a barcode-based invoicing system. The automation of supermarkets is the focus of a webcam-based supermarket billing system. The user will be able to work more efficiently and in a more pleasant setting using this. The billing process requires much less effort and time from the clients. The local system stores

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predetermined photos of the items that arrive to the supermarket, and this system takes those images into account when it is applied. This system makes use of OpenCV and other image-recognition Python packages. The webcam will take pictures of the items when the buyer arrives to pay. The software component will determine the bill after taking product photographs by locating preset items and comparing them with the recorded images. In order to better serve their customers, supermarkets have developed a webcam-based invoicing system to speed up the calculation and display of invoices. As a result, the consumer will save time throughout the invoicing process. The goal of developing a webcam-based supermarket billing system is to make the system more dependable, user-friendly, quick, and informative.

The project's true goal is to streamline the grocery shopping experience for customers by allowing them to scan products and add them to their cart without leaving their seats, thus eliminating the need to wait in line. In a large store, customers often have trouble finding what they're looking for, end up having to ask an employee or owner for assistance, and endure long checkout lines. Since waiting in the billing line takes up more of the customer's time, it could be easier to just locate the things they need. This situation was commonplace in all of the shops, so we used it as inspiration to create a system that would be useful to customers. To design a shopping cart that guides shoppers around the aisles, helps them choose what they want, and provides information about what they're looking at. Supports invoicing and inventory updates in addition to individually identifying each product. Our smart shopping system guides the consumer to the exact aisle containing the desired item.

II LITERATURE SURVEY

A new, low-cost smart trolley system for grocery stores using field-programmable gate arrays (FPGAs) based on video processing Vijay K. Bhara, Sudhir Rao Rupanagudi, Fathima Jabeen, Vaishnav Ram Savarni, K. R. Sindhu, and Adinarayana, Sudhir The paper was published at the 2015 International Conference on Communication, Information, and Computing Technology (ICCICT). An fpga-based system was suggested in this study. The choice is made after video processing, which is done using a camera that catches the footage. However, this method is more expensive than others.

The Smart Cart System: Quick Cart Mohammed Ashique, T.; Rishin, V.; Vyshnave, K.; Sneha, T.; Subrahmanian, K. Accepted for publication in the 2018 ICETIETR International Conference on New Directions in Engineering and Technology When it comes to RFID abuse, Sensible Cart offers a centralised and automated charging solution. There will be radio frequency identification tags attached to all of the goods sold in the retail area. There is an RFID reader, LCD, and microprocessor in every go-cart. The information about the products will be read by an RFID reader and shown on a liquid crystal display that is connected to the controller. In the charging compartment, a Bluetooth module will be used to send the whole bill to a laptop.

Retail Centre Built on the Internet of Things Ameenabegum Attar, Masuda Ettinamani, and Ashok Sutagundar Publication: 2018 Second International Conference on Green Computing and the Internet of Things (ICGCIoT) Bluetooth, Wi-Fi, an Android app, an

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LCD screen, and the cloud are its components. Radio frequency identification tags will be attached to every item sold at the mall. After the customer places an item in the trolley, the RFID reader will read the item's code and show the item's name and price on an LCD screen. Using the Wi-Fi module ESP8266, data is transferred to the Amazon cloud and then to the customers' Android apps. As a whole, wireless modules handle invoicing.

Establishment of a Near Field Communication (NFC)-Based Intelligent Purchasing Platform Wang Lei, Ou Wenxing, Jiang Zhipeng, and Yu Changhong was the author. The Seventh International Conference on Measuring Technology and Mechatronics Automation 2015 was the publication destination. Users will have access to a number of features, such as product searching, pre-ordering, and online payment, all via the mobile app, and the system also provides technical assistance for mobile apps. It would be much easier to shop with NFC as customers could pay their bills without using a credit card. In line with the new O2O business model, this article also suggests a matching management platform to improve supermarket service and administration.

International Conference on Communication and Signal Processing, April 4-6, 2019—Rajesh Kannan Megalingam, Souraj Vishnu, Swathi Sekhar, Vishnu Saikumar, Sreekumar S., and Thejus R. Nair—Design and Implementation of an Android Application for Smart Shopping. The widespread use of Android apps has greatly reduced the amount of work and time we have to put in on a daily basis. The convenience and ease of internet buying has led to a sharp decline in the popularity of traditional brick-and-mortar stores, according to our surveys. This inspired us to create a smart software that makes grocery shopping easier by reducing the power required for carts and facilitating product discovery. Because of this, a growing number of individuals will return to the once-popular but now-declining supermarket experience. Barcode scanning, which relies on line-of-sight propaganda for communication, is another big problem with current retail systems. Customers may say goodbye to hours-long billing lines thanks to our RFID-based efficient solution. Our team has developed a solution that shows consumers the whole amount due right in the app.

Mr. Anal Kumar and Professor A. B. M. Shawkat present i-Shop, a model for smart shopping. The 2019 Third Asia-Pacific World Congress on Computer Science and Engineering. The preceding sections demonstrated the present tendency of purchasing goods online. Online shoppers have little say over issues like privacy protection, security, and after-sale care since the whole buying process takes place in a virtual environment on the Internet. For many, these issues are the deciding factor in whether or not they will embrace internet purchasing. People also think it's hard to personally inspect the quality of the goods while buying online and that the processing is too convoluted. Online shoppers are becoming more wary due to the prevalence of fraud. Ishop gives the suppliers a plethora of complex features. The capacity to alter client information and track the progress of orders. Order statuses may be altered, for instance, from "pending" to "delivered," and comments can be made.

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Customers have the choice to see their order progress and comments in their "My Account" section or have them sent straight from the Administration area. Manage the creation, deletion, and editing of categories, items, makers, buyers, and reviews.

III PROPOSED SYSTEM

New innovations are introduced by this method compared to the current shopping system. Providing a web-based, centralised, and automated billing system is the primary goal of this project. Included with the automated billing are a few unique features. Supermarket Basket is a new word that we're using. Our goal in developing this system was to make life easier for both the store owner and the customers. For this reason, we devised a method that allows the consumer to see their total as they make their selections. If a customer's purchase can be simply invoiced, then this Supermarket Basket is the greatest and most practical example. There will be fewer billing counters, which means fewer employees, which means lower payroll expenditures.

IV RESULTSEXPLANATION

Taking pictures of the items and teaching the system to recognise them so that it can show their data when they are brought in for invoicing. Several python libraries are used throughout the training process. Using a camera, the following system components make up a supermarket billing system:

1) Gathering Product Images: The goods' images are saved in the local system. By manipulating the size and position, images of a single product may be captured. Products' names, prices, and any applicable discounts are included.

2) Model Training: For product recognition when the product is put in front of the camera for invoicing and display of information, train the model with the aid of the opencv library.

Thirdly, create a bill by adding or removing items from the shopping cart.

V OUTPUT EXPLANATION

Here is the procedure: The first step is to launch the webcam and begin taking pictures of the items. Changing the items' orientations allows the local system to save the photos of the product. Additionally, the product's name and price are included. After gathering product pictures, you may train the model by clicking the "train model" button. Identifying the goods when they are put in front of the camera for the purpose of invoicing. Put the trained and bought products in front of the customer's camera now.When you're ready to add or delete an item from your cart, click the button. After the goods are recognised by the system, their names and prices are shown in the text box. Customers may see the grand total. Please let us know if you would want to remove this item from your shopping cart. After then, the camera is used to display the product once again. Locate the "Add to Basket" or "Remove from Basket" buttons. After then, the item is dumped from the shopping cart. Shows the final amount due to the client.

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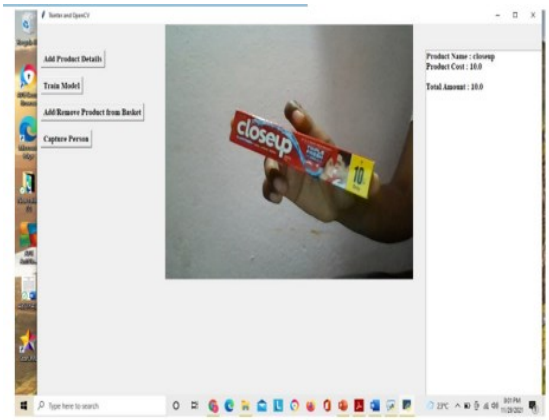

VI.CONCLUSION

The goal of developing a webcam-based supermarket billing system is to create a system that is beneficial to the retail business by decreasing the amount of time spent at the checkout counter. Installing the system in the classroom does not need any specialised hardware. All you need is a computer and a camera to put it together. Compared to barcode billing systems, this one has more benefits.There is sufficient accuracy and reliability in this procedure. This project does object identification by making extensive use of TensorFlow. Each approach has its own set of pros and cons. But we hoped that by doing this, we might fix the system that was already broken. Since we are merely altering the charging process, the suggested solution is more secure and has more benefits than the other option. An improved shopping experience for managers and customers alike is possible with this solution. It is clear from the results of the experiments that the system is capable of very accurate counting and recognition.

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