SMART SUPERMARKET BILLING SYSTEM USING PYTHON

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Abstract: Unstaffed retail stores have become more popular in recent years, and they have had a huge impact on traditional shopping habits. Unmanned retail containers play an important role in this area; they can have a significant impact on the consumer shopping experience, while conventional methods based on weighing sensors are unable to detect what the customer is taking. This paper proposes a smart unstaffed retail shop scheme based on image processing, with the goal of determining if the unstaffed retail shopping style can be implemented. An end-to-end classification model trained by the method is developed for SKU counting and recognition based on a data set of images in different scenarios containing different types of stock keeping unit (SKU), and the proposed solution in this study is able to achieve 97.7% counting accuracy and 98.7% recognition accuracy on the test dataset, indicating that the system is efficient.

Keywords:- Cashless Economy, Security, Distributed Database, Visual Cryptography, Hash Algorithm, etc.

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I INTRODUCTION

India is a country in South Asia. We're going to automate the billing system in supermarkets in this project. There will be several predefined shapes in the database. The camera will take a picture, it will look for pre-defined items, compare it to the database, and the programme will calculate the bill number. If the user is licenced, the balance can now be deducted directly from his account. T:3D Object Recognition Systems can be extremely useful in creating an automated billing system that requires little human intervention. Many object recognition algorithms have been developed, with varying levels of accuracy, computation time, and other factors. A realistic computer vision system for automated billing must be easy and accurate, as a mismatch will result in incorrect billing, which will have a significant financial impact. Many grocery supermarkets, such as Big Bazar and Easy Day, use barcodes for billing and statement generation. In such shops, laser bar-code readers are used at check-out counters, but the distance between the sensor and the object should be close to zero when the reader is applied. Either the reader or the items must be manipulated by the billing staff. The job becomes boring for the human worker as a result of this. Each item must be scanned individually, which takes a long time and is tedious for the billing staff, particularly in large stores where hundreds of customers visit each day and thousands of items must be scanned.

People in the modern age have more money to spend and less time to spare, so they choose to shop at supermarkets rather than local stores for groceries and other products. Actually, the consumer has the freedom to choose from a wide variety of items, which attracts a large number of customers, especially in large cities, where long lines of customers can be seen at these stores. In certain cases, the barcode is either damaged or difficult to read due to lighting effects, occlusion, low resolution, and other factors. A bar code billing system is also expensive because it necessitates the bar coding of all goods. Human capital is a valuable commodity that should be used in more analytical rather than manual, monotonous tasks as the world moves into an age of automation. High-speed computers with excellent processors and storage space have resulted from technological advances. Robotics and 3D Object Recognition concepts can be used to create a real-time automated billing programme that will make laborious human work easier. The human operator must be excluded from the process in order to automate it. Computer vision-based systems may be built and implemented for automated billing applications that require minimal human intervention and have shorter wait times, resulting in increased customer satisfaction. Nearby tangle, fractional obstruction, orientation change, and scale change must not impact identification in tangled real-world scenes. Since they are insensitive to fractional obstructions, largely unaffected by variations in vision, and can be computed

efficiently, local descriptors are commonly used in real-world applications such as image retrieval and object recognition. When using local descriptors, there are two things to keep in mind. First, the interest point must be selected in terms of location and scale in order to protect only those points that are most likely to stay stable through transformations. Second, the interest point descriptor should be distinct, succinct, and transformation invariant. The computation of local interest points, computation of descriptors, and indexing/matching are the key steps in object recognition. During the feature Some operators are used in the detection stage to identify typical key points that match well in other images. During the feature definition level, the detected features are given a name based on the pixels that surround them. During the matching stage, each requested feature is matched to features that are identical to the referred one. Different types of local feature detectors and descriptors have been developed, but using various descriptors interest point algorithms for detection, definition, and matching yields different recognition rates, performance, computation times, and memory requirements. The task at hand is to identify algorithms that are appropriate for an automated billing programme, as well as to strike a balance between different parameters to better fit the application. Corner detectors detect the intersection of two or more edges, which is known as a corner.

II LITERATURE SURVEY

A novel video processing based cost effective smart trolley system for supermarkets using FPGA

Sudhir Rao Rupanagudi ; Fathima Jabeen ; Vaishnav Ram Savarni K R ; Sindhu Adinarayana ; Vinay K Bhara

Published in: 2015 International Conference on Communication, Information & Computing Technology (ICCICT)

This paper proposed a system based on fpga. It uses a camera which captures the video , after video processing the decision is taken. But the cost of this system is comparatively higher.

Quick Cart: A Smart Cart System

T Mohammed Ashique ; V Mohammed Rishin ; V K Muhammed Junaid ; K Vyshnave ; T Sneha ; Subrahm

Published in: 2018 International Conference on Emerging Trends and Innovations In Engineering And Technological Research (ICETIETR)

Sensible Cart provides a centralized and automatic charge system mistreatment RFID. Every product within the shopping precinct are going to be given an RFID tag. Every go-cart is enforced with microcontroller, LCD, Associate in Nursing RFID reader. The merchandise info is going to be browse by an RFID reader and it's displayed in liquid crystal display that is interfaced to the controller. In the charge cabin, the whole bill is going to be transferred to a laptop by Bluetooth module.

Iot Based Smart Shopping Mall

Ashok Sutagundar ; Masuda Ettinamani ; Ameenabegum Attar

Published in: 2018 Second International Conference on Green Computing and Internet of Things (ICGCIoT)

It consists of RFID tag, LCD display, android application, Wi-Fi and cloud. All products present in the shopping mall will be tagged with RFID. Customer's required products will be put in the trolley, where its code will be detected using RFID and name of the product and cost will be displayed on the LCD. Data is pushed to the amazon cloud using Wi-Fi module ESP8266 and the data is sent to Android App of the Customers. Total billing is done by wireless modules.

Implementation of Smart Shopping System Based on NFC Technology

Ou Wenxing ; Wang Lei ; Jiang Zhipeng ; Yu Changhong

Published in: 2015 Seventh International Conference on Measuring Technology and Mechatronics Automation

This system includes technical support of mobile applications, and users will be able to conduct a series of actions like product searching, pre-ordering and online payment on the mobile app. With NFC users can even pay the bills without credit card which would simplify the purchasing process. This article also proposed a corresponding management platform aiming to optimize the service and administration of the supermarket, which fits the emerging trend of O2O business mode.

RFID-Cloud smart cart system

Yerlan Berdaliyev ; Alex Pappachen James

Published in: 2016 International Conference on Advances in Computing, Communications and Informatics (ICACCI)

This project focuses on developing the electronic smart cart device itself. It involves an embedded electronic hardware that consists of an OLED display, Arduino Mega 2560 board, a specifically designed PCB, a Wi-Fi module, 13.56 MHz HF RFID reader, a power supply and a shopping cart

III PROPOSED SYSTEM
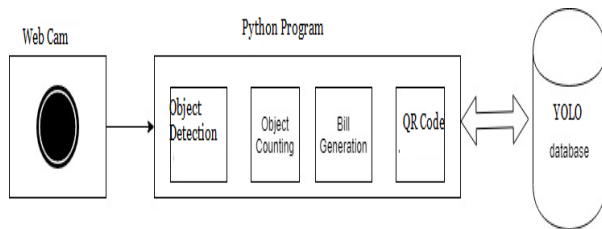
Applications:

1. Government organizations.

2. Enterprises

3. Farmers

4. Common Man

IV CONCLUSION

As a result, we'll use Java to build a framework that automates the billing process in supermarkets. This framework would aid India's digital transformation. Customers and management would have a better shopping experience with this device. The framework will be built using the Java programming language and a MySQL database. This system would be beneficial as well as time-saving.

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