



## A Review on the E-Billing System

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**Abstract-:** *The proposal introduces an innovative solution to reduce the average time customers spend in a supermarket. Currently, the billing section uses a barcode scanner at the cash counter, which is a very time-consuming process. To address this issue, we are developing a system called the "Smart Payment and Billing Management System." This proposal involves creating an Android mobile application where customers can first create a list of items to be purchased. They then scan the QR codes of the products with their smartphones and place the items in their trolleys. At the end of their shopping, the bill is generated and payment is made through any UPI money transfer platform. To prevent theft, a camera-based detection system will use machine learning to identify theft occurrences. This system will monitor customer movements using convolutional neural networks and send a warning message with a captured image to the authorized personnel.*

**Keywords-:** *Billing, Smart System, QR*

### I. INTRODUCTION

In the current scenario, it is crucial to have a smart payment and billing management system for shopping malls, hypermarkets, and other wholesale stores. The situation becomes even more challenging during special sales and discounts. Although there are numerous billing systems like barcode scanning available in the market, these systems rely on conventional barcode scanners. To improve speed and efficiency, we propose replacing traditional barcode scanners. There is a need for advancements and automation in these systems to ensure a smooth and comfortable shopping experience, even during peak times. Thus, we propose the "Smart Payment and Billing Management System" to address this issue. Typically, customers come with a list of products they need. In our proposed method, we utilize barcode scanning, but unlike conventional systems, any smartphone can be used as a barcode scanner. Additionally, we employ image processing to detect theft and monitor shoplifters' movements in CCTV footage, eliminating the need for sensors. This system focuses on object detection and tracking, utilizing various image processing and pattern recognition techniques.

### II. Literature Survey

S. Gupta et al [1], this paper has designed a smart trolley with the help of Arduino and also implemented the feature of security in it. The outline of the trolley designed was like a mailbox when an item is dropped in it, the entry used to get shuttered. Automatically the entry will open only when the payment of the items purchased was paid, but this paper had many disadvantages such as once the product is added into the trolley and if the customer does not want to buy it, then the doors will not open unless payment is done.

Kiran Dhokale et al [2], this paper has proposed to implement SQLite as a database server for smartphones android applications. The SQLite database is not a centralized database, this tends to be a drawback for the paper. so the datasets managed in the application's database will be local to the device.

Ansar Ahmad et al [3], this paper explains the significance of Location-Based structure which will set aside our time during multiple tasks like finding specific addresses of some stores, getting and knowing about some good offers on the different items at a time. By using this mobile android application, customers can be able to search for different Shops, Stores, Groceries locations.

Priyanka S et al [4], In this paper, an automated shopping trolley can also be said as a smart trolley, which integrates a raspberry pie embedded chip with a bar code scanner and a battery kit to allow the customer to self-checkout at hypermarkets and provisional stores.

Pallav Doshi et al [5], Firstly the paper will initiate the fundamental building blocks and structures of Convolutional Neural Network. Secondly, this paper will get into object detection techniques. Finally, the paper will describe how a robbery can be detected by integrating object detection and object tracking methodologies.

Madhusree Mondal et al [6], In this paper, the image detection and identification of the car plate number image which is accomplished by Convolution Neural Network (CNN) using deep learning algorithms and approaches. The number of plate images can be obtained by a still camera. Self synthesized feature of CNN is capable of identifying the stage of the vehicle from the number board plate with a reasonably very elevated accuracy of 95% even with very less training image size.

Prakruthi K et al [7], In this paper, RFID tags have been used instead of barcodes. The RFID tag will be applied to the items in the stores or supermarkets. Whenever the customer drops an item into the trolley, it will be inspected and examined by the RFID reader and item details such as name and price will be displayed on the visual display screen.

### III. SYSTEM ARCHITECTURE

To address the challenges of the existing system, we propose a new approach that eliminates the unnecessary use of hardware and reduces system costs. The primary goal of this work is to decrease and eliminate the time spent at the billing section in hypermarkets. In our proposed architecture, all products for sale are embedded with a QR code. Customers first create a product list. Then, they scan the QR codes of the products with their smartphones as they place them in the trolley. Payment and billing information are generated and displayed on the screen. Product protection in the supermarket is enhanced in two ways. First, self-checking is done by comparing the weight of the items in the trolley with the weight generated in the bill using a load cell sensor. Second, shoplifters are detected by training the CCTV cameras using Convolutional Neural Networks (CNN). Finally, payment is made through UPI money transfer platforms via smartphones.

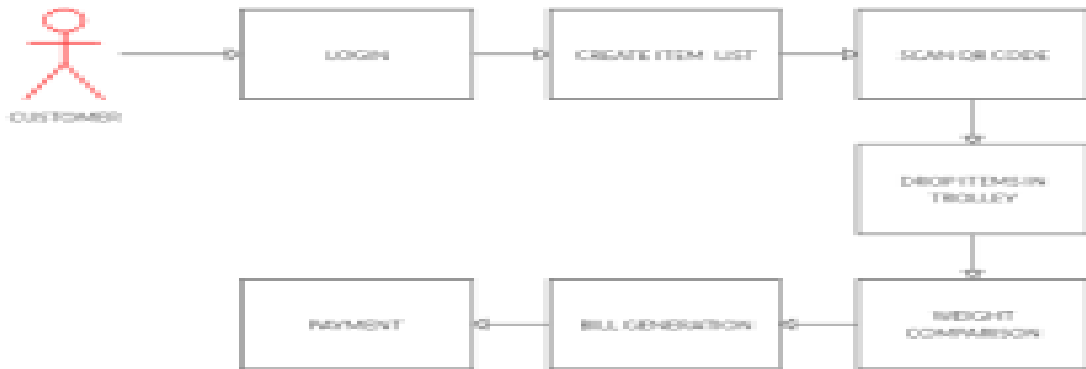


Figure 1. Detail System architecture

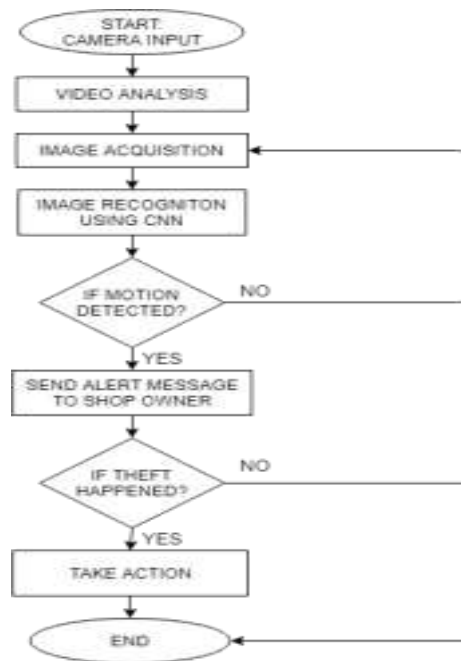


Figure 2. Flow chart explaining the numerous process involved in the module

Security against robbery is a major concern in today's modern and digital world. We propose enhancing an anti-theft module capable of detecting robbery using motion-sensing cameras and machine learning. This system notifies the owner with a warning message and an image captured at the moment of suspicious activity. Utilizing a machine learning library, the security system employs convolutional neural networks to analyze image frames and detect potential theft. Once the CCTV video stream starts, video analysis begins as well. The trained CNN network identifies suspicious activities by inspecting the trolleys and individuals in the frame. It monitors customer

movements and verifies if their actions match predefined patterns. If a mismatch is detected, the system alerts authorized personnel by sending a warning notification about the potential robbery or suspicious activity.

This application can be productive if used in retail stores, supermarkets, and hypermarkets. This application can be commercialized and sold to those stores, shops, and hypermarkets. This can also be used by the customers which will reduce the average time a customer spends at a supermarket and prevent robbery.

### **CONCLUSION**

Technology is a light that dispels darkness and improves lives on earth. Enhancements and advancements in the shopping experience are necessary so that every customer can feel comfortable and at ease, even in crowded environments. This application addresses the challenges and inconveniences of long, slow checkout lines in hypermarkets, particularly during holidays. Implemented at a minimal cost, the application uses simple logic but holds great potential.

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