
EASYBILLS

Proposed Project Summary:

We are proposing to have a smarter malls checkout with proper verification of items customer has billed, hence removing the need for guards to verify the bill during checkout.
We propose to have cameras in the mall that will detect and recognize the person giving each one of them a unique ID. Similarly, for the products present in stores, we manage the log of it. It helps us recognize which customer has picked up which product. A mapping between the customer's unique ID and the scanned items of store is managed as a log. We aim to develop using Faster RCNN network for object detection and using haarcascades algorithm for face detection. Also, real time tracking of multiple objects in a video sequence can be done using Sort algorithm. The database would be updated for any event that includes picking up the item, placing it back or during billing. Now, at the billing time it would be matched in the database if number of items for that person's ID (which are ideally the items one has picked up) is equal to the number of items the customer is billing for.
So every person, entering the mall, is given an ID that is kept saved till the time he/she is inside. He/she may be some staff member or customer. Hence, there would be proper log of who has the an extra item when he/she is leaving the supermarket and thus wouldn't be allowed to checkout.
Various add ons can be done in the malls by installing a camera at the checkout that checks no customer has anything left in his/her log that was getting maintained and accordingly allow them to checkout (using some automatic doors if feasible) and destroys the ID to reallocate it to some new customer. For the customers whose log is not clear, he will be stopped at the door and not allowed to exit the supermarket. It is important to have camera at the checkout as some customer may keep items after the billing or even don't bother to pay bills. An alarm system can be installed in case any customer don't pay the bill for all the items he/she has picked up, and the alarm will go off if he/she exits or runs from the store without his Id being destroyed.
This system will also be time-efficient as the customers will no longer have to wait in the queue to get their bills checked with the number of items he/she is carrying. Once his/her ID is cleared, he/she will simply be allowed to leave. Hence, it has a real life importance in the malls wherein an efficient system would ensure that there are no mistakes by guards that may or may not be intentional.

Problem Statement:

In a supermarket, keeping track of the items or products that the customer has picked is difficult. In cases, the customer may try to steal any item or product from the store. He/she may check out from the supermarket before paying the bill. The problem of unrecognised theft even when security guards are on duty. This problem arises when there is not enough staff available. It is also time consuming for the guards to check everyone's bill & items according to bill and for customers to wait in the queue to have their bill checked at the time of check out. Even with the current security techniques, the problem of theft has not much resolved.

Expected Project Outcomes:

A trained model which will be able to generate an RFID as soon as a person enters a supermarket or a mall. It also associates the Id's of the items he picks up from the shelves.When the person returns back at the billing counter ,we are able to see the list of items he has picked up besides the things he/she is carrying. If the total list matches the number of items as shown by him/her on the counter, then his/her account will be cleared. If he/she is unable to clear his account due,it would suggest that either the user has missed out something or there might be a case of theft detection.

References:

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