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Face Detection Based ATM Safety System DI Using Secure Transaction

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ABSTRACT: Automated teller machines (ATMs) are well known devices typically used by individuals to carry out a variety of personal and business financial transactions and/or banking functions. ATMs have become very popular with the general public for their availability and general user friendliness. ATMs are now found in many locations having a regular or high volume of consumer traffic. For example, ATMs are typically found in restaurants, supermarkets, Convenience stores, malls, schools, gas stations, hotels, work locations, banking centers, airports, entertainment establishments, transportation facilities and a myriad of other locations. ATMs are typically available to consumers on a continuous basis such that consumers have the ability to carry out their ATM financial transactions and/or banking functions at any time of the day and on any day of the week.

KEYWORDS: ATM System , FRS- Face Recognition System , Secured transaction system.

I. INTRODUCTION

With the technological advances in financial infrastructure, most bank customers prefer to use Automatic Teller Machines (ATMs) and Internet websites for carrying out their banking transactions. Financial users especially utilize ATMs for physical transactions like cash withdrawal or cash deposit. However, just like any other system, ATMs are also suffering from numerous issues caused by users. Among these problems, card and/or cash forgetting (CCF) is a common issue. The main goal of our work is to propose a computer vision framework which uses the embedded ATM camera to perform face detection and recognition in order to prevent such unnecessary losses generated by CCF. In the studied scenario, we consider the case where a customer withdraws money from an ATM in a conventional setting. After the customer inserts the card into the ATM, the proposed system starts to perform face detection and builds a temporary face database for the customer using the camera located inside the ATM. If the customer leaves the ATM without taking his/her card or cash, the ATM waits for the customer to be back instead of retracting the forgotten item. If the system finds out there is a different customer approaching the ATM before the card/cash holder, the card/cash will be retracted at that moment. This scenario is fundamentally different than biometric authentication scenarios, in which a person's image is matched to a gallery image acquired, possibly, a long time before the matching, under different conditions. In this scenario, the matching image and the gallery image are separated by mere minutes at most.

II. FACE RECOGNITION AND FACE DETECTION

Face recognition is an active research area involving different fields such as physics, psychology, biology, mathematics, computer science and several others. A wide range of problems has been approached, resulting in many interesting applications. Face recognition is a technique of recognizing faces but it is not necessary to "freeze" the user in order to take a picture. Though there is a problem with recognizing faces when the pose of the face is different, but in particular, there is a limit on face rotations in depth, which include left and right and up and down rotations. Face recognition itself is difficult because it is a fine discrimination task among similar objects. Adding pose variation naturally makes the problem more difficult. This is because the appearance of a person's face changes under rotation since the face has a complex 3D structure. A distinguish have to be made between face recognition and face detection. Many people think that these two terms are the same. Through face recognition and face detection have many similar techniques, based on the same idea and algorithms, they differ from each other. The main difference is the fact that, face recognition is detecting faces and search through a dataset in order to find an exact match.

III. RELATED WORKS

A. Fingershield ATM – ATM Security System using Fingerprint Authentication Christiawan; Bayu Aji Sahar - 2018

The proliferation of ATM Fraud case in Indonesia is still the main concern for the society especially bank customers. In March 2017, a total loss of 5 billion rupiah was recorded as a result of ATM Frauds. While the only solution which ensures security of ATM machines is a 6-digit PIN, there are still a lot of security cracks that can be used by the criminals to steal customer data and the 6-digit PIN itself. One of the most frequent method of ATM Fraud is skimming. Therefore, the authors bring the concept of Fingershield ATM, ATM Machine that implements biometric identification in the form of fingerprints which is integrated with smart card and database server. Fingerprint technology is powerful identification because of its unique characteristics of each of the minutiae. Despite the fact that customers have to add additional authentication time around 1.5 seconds for fingerprint verification, the security is much improved and guaranteed. This research will use experimental descriptive method. With this method, hopefully ATM Fraud can be minimized so that the customers can feel more secure while using ATM Machines. Based on implementation and test results which had been done before, Fingershield ATM functions run well and some security parameters have passed the test, as well as almost all specifications are met.

B. Advanced ATM System Using Iris Scanner IndranilBanerjee; Sijivangam Mookherjee-2019

Nowadays we are experiencing a radical increase in skimming in the Automated Teller Machine (ATM) systems. So, actuation in advancement and security of the ATM machines is required. An automated teller machine (ATM) is an electronic telecommunications device that helps customers of banking departments in transactions and transfer of money in their accounts. The customer enters their unique personal identification number (PIN), i.e. stored in the chip of the card. Due to an increase in the installation of ATM and the number of ATM cardholders, the number of cases of fraudulence has also increased radically. The advancement in technology has resulted in an increase in various skimming activities. So, developments are incorporated in the existing systems to make it more secure, convenient and reliable. The employed secured system must have high speed and must be durable. The presented design is unique because of biometric scanners such as Iris scanner and the two-way check with fingerprint scanner makes it more reliable. The iris scanner being the primary security check lets the system access the further steps for transaction. Fingerprint scanner embedded in the ATM card acts as the secondary security check for the system. The transaction procedure is successful only if the input data by the card holder matches with the database. It consumes less energy that makes it suitable for use. The suggested modified system is pragmatic moreover economical when correlating to the alternative existing classification and affirmation processes of ATMs.

IV. PROPOSED SYSTEM

- The study is focused on Design and Implementation of Face Detection based ATM Security System using Embedded Linux Platform.
- The system is implemented on the credit card size Raspberry Pi board with extended capability of open source Computer Vision (Open CV) software which is used for Image processing operation.
- High level security mechanism is provided by the consecutive actions such as initially system captures the human face and check whether the human face is detected properly or not. If the face is not detected properly, it warns the user to adjust him/her properly to detect the face. Still the face is not detected properly the system will lock the door of the ATM cabin for security purpose.

V. SYSTEM ARCHITECTURE

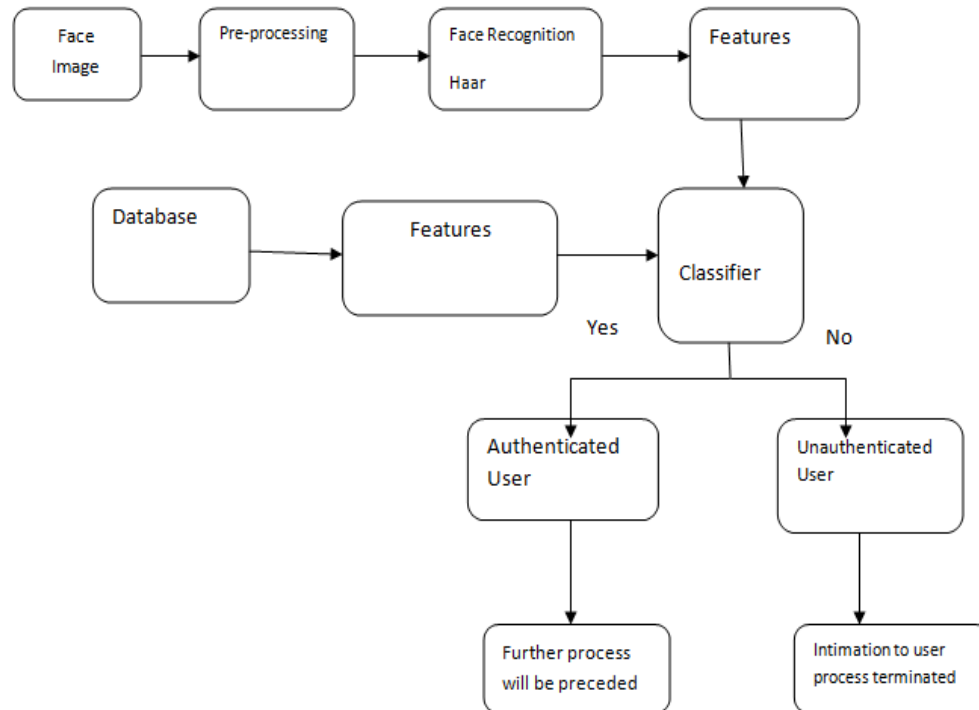
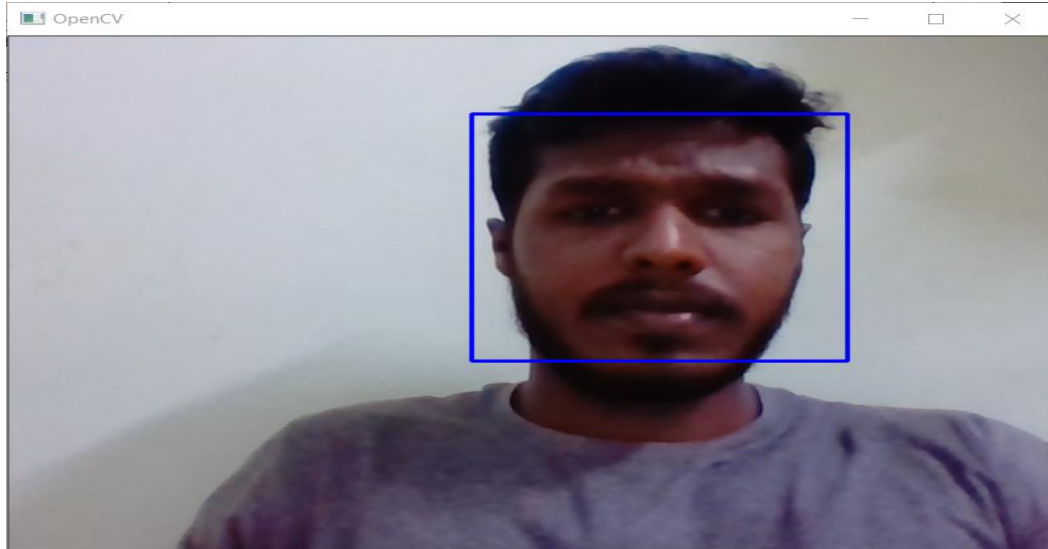


Fig : System Architecture

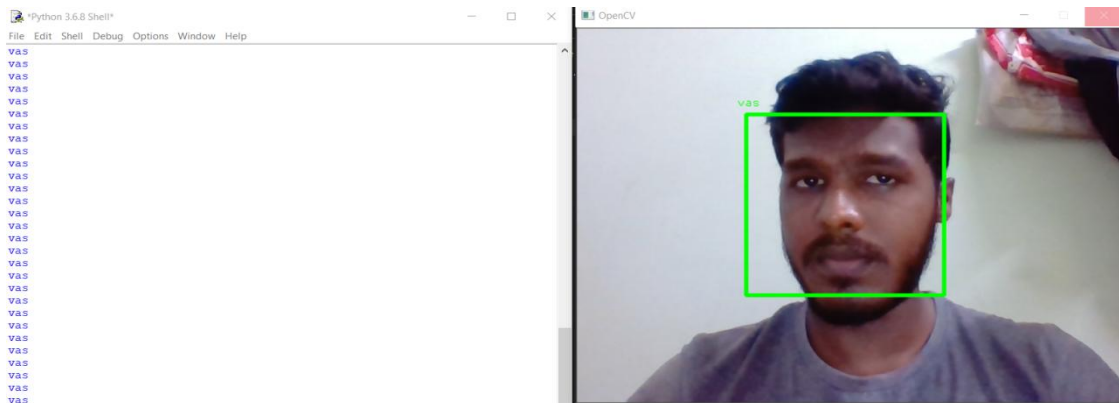
VI. ADVANTAGES OF PROPOSED SYSTEM

- Forged transactions can be avoided by implementing facial recognition system –FRS
- Unauthorized financial operations can be reduced by implementing the FRS system.
- By using this system,we increases the security and also the system captures and saves the image of the card-user for the future purposes.
- Increasing security to the ATM machines
- Illegal transactions can be reduced.

VII. EXPERIMENTAL RESULTS



(1)



(2)



iotdemopan@gmail.com

to ▾

SECURITY ALERT!!! UNKNOWN FACE WAS DETECTED



(3)



```
unknown person
smtp.gmail
ehlo
starttls
reading mail & password
from
successfully sent the mail
Enter the pin:

unknown person
smtp.gmail
ehlo
starttls
reading mail & password
from
successfully sent the mail
Enter the pin:1234
Correct user
```

(4)

VIII. CONCLUSION

To avoid ATM robberies and provide security for ATM, To secure such a complex system will be even more difficult than design it. And now people just begin to discuss some issues of ATM security. It will provide some experience for us to implement security services in ATM network.

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