Secure Bank Transaction Using Facial Identification System

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Abstract- *Facial Recognition software has a liveness detection which prevents hackers from using a picture of the customer for impersonation purposes. It also applies to other biometric modalities such as fingerprints where the liveness detection does exactly that – it assesses the 'liveness' of the facial image as it is known. The recognition system also allows customers to access their bank accounts from computers. Facial recognition is one of numerous ways banks can decrease friction in their customers' experience and increase efficiency and accessibility.*

Keywords- Face Detection, Face Recognition, Haar Cascade, Pin Generation.

I. INTRODUCTION

Over the last decade, we have seen an increase in the use of technology in many business sectors to simplify and better engage customers. This is especially true in the banking and finance sector. Since the start of the digital revolution facial recognition has been gaining prominence over touch and type based interactions due to the convenience it offers without compromising on the security of transactions.Despite an increase in the use of EMV cards (Europay, MasterCard,Visa) coupled with password creation policies, there has been a surge in banking fraud cases. As a result of the billions that are lost by major banking institutions, there has been a call to switch to biometric facial recognition to curb this issue. It means that banking software will rely on face scans which it then compares with similar ones that were uploaded by the bank's personnel into their system so as to verify the customer's identity. The aim is to authenticate the identity and only allow a transaction to go through if the account owner's identity is positively identified. This customer ID authentification process is known as KYC (Know Your Customer).

Facial recognition is one of numerous ways banks can decrease friction in their customers' experience and increase efficiency and accessibility. This project make Identity Verification and Account Withdrawals Allowing customers to make withdrawals from their bank accounts.

The biometric facial recognition software helps minimize fraud where online hackers unlawfully use passwords and other data to steal from banking institutions. The software verifies a person's identity before processing any transaction. Our goal is to provide an extremely frictionless, personalized experience with a focus on security.

In addition to this, we have proposed a next level of security by providing the pin that is generated through an E-mail instantaneously once recognition of the face has been completed successfully. If the face features that has been recognized does not match with the registered face of the banking customers, then the transaction process cannot be proceeded further since the recognized face is unauthorized.

II. EXISTING SYSTEM

In previous days, they used only single level authentication like OTP generation. It was not more secured. Secure electronic transaction (SET) It involves many levels of encryption, using many combinations of symmetric cryptography, asymmetric cryptography and hashing. It does not assume that each agent has his own private key so that the only problem which is remained is the distribution of the public keys, but allows cardholders to decide their asymmetric key.

III. PROPOSED SYSTEM

This uses machine learning techniques to get a high degree of accuracy from what is called "training data". Haar Cascades use the Adaboost learning algorithm which selects a small number of important features from a large set to give an efficient result of classifiers. Initially, the algorithm needs a lot of positive images (images of faces) and negative images (images without faces) to train the classifier. Then we need to extract features from it. For this, haar features shown in below image are used. They are just like our convolutional kernel. Each feature is a single value obtained by subtracting sum of pixels under white rectangle from sum of pixels under black rectangle.

IV. SYSTEM ARCHITECTURE

The proposed system involves various techniques used in the machine learning with the set of positive and negative classifiers.

Initially, the details of the account holders are stored as datasets. When the user needs to proceed with the transaction, the pin is generated via mail only when the face of the existing user matches with the datasets.

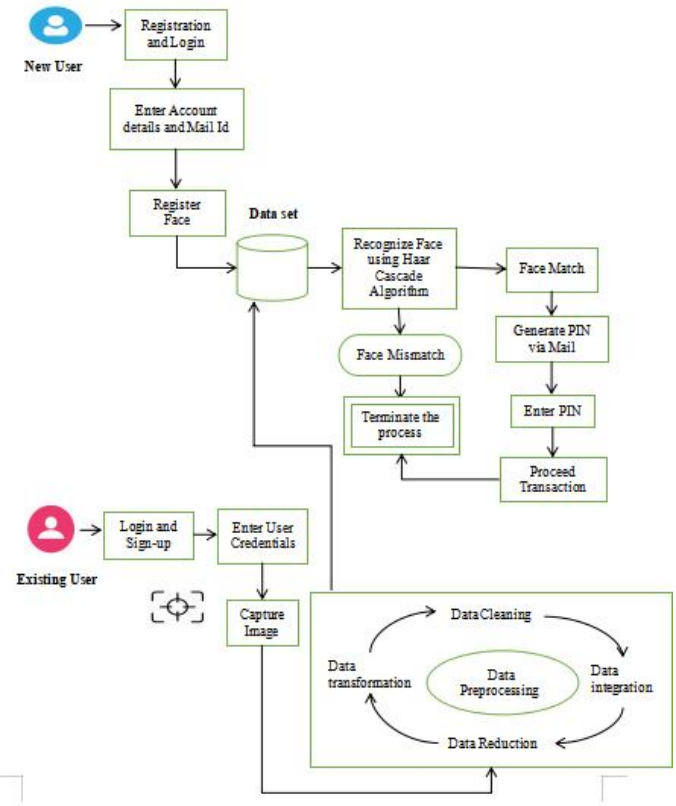

Fig.1: System Design

V. LIST OF MODULES

There are four different modules involved in this banking transaction technique using facial recognition :

- Registration
- Face Detection
- Face Recognition
- Pin Generation
- Transaction

VI. REGISTRATION MODULE

In this module new user should register their face to get account number. For that they need to fill their personal details like Username, Password and Mail ID.

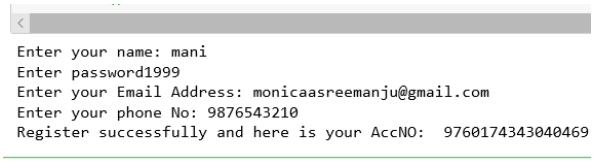

Fig.2: Registeration

VII. FACE DETECTION

Face detection is a great tool that can be used in different fields such as security and human resources. OpenCV provides the Haar Feature-based Cascade Classifiers for face detection. This method apply series of classifiers to every subwindow of input picture, the first one classifier eliminates a large number of non-faces examples with very little processing. The other classifiers eliminate additional negatives but require additional computation. After several stages of processing the number of sub-windows have been reduced radically. Filters are used to extract features from image, and those filters became more and more complex in each stage from one to n.

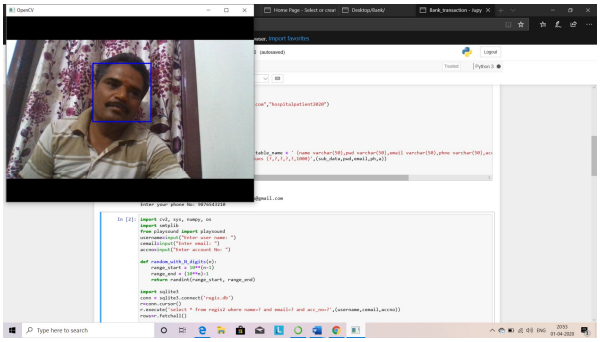

Fig.3: Face detection

Fig.4: Account Creation

VIII. FACE RECOGNITION

Facial recognition is a way of recognizing a human face through technology. A facial recognition system uses facial features from a photograph or video. It compares the information with a dataset of known faces to find a match.

Steps Involved

1. A picture of your face is captured from a photo or video. Your face might appear alone or in a crowd. Your image may show you looking straight ahead or nearly in profile.
2. Facial recognition software reads the geometry of your face. Key factors include the distance between your eyes and the distance from forehead to chin.
3. Your facial signature — a mathematical formula — is compared to a dataset of known faces.
4. A determination is made. Your face print may match that of an image in a facial recognition system dataset.

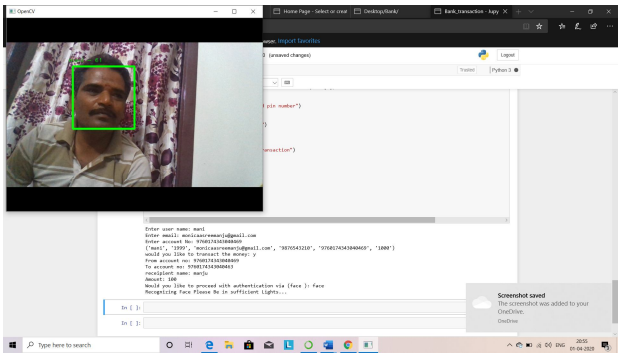

Fig.5: Face recognition

IX. PIN GENERATION

In this module pin will be generated face security purpose. Initially we will set our pin we can transact amount through pin or face. If the pin matches transaction will be done. Still, pin generation via E-mail is made instantaneously once when the authorized face is recognized to proceed with the transaction process.

Fig.6: Pin Generation

X. TRANSACTION MODULE

In this module transaction will be done where user need to enter their details like From account, To account, Amount then face recognition will be done if the face matched and generated pin is entered when it will be authorized user or transaction will not be done.

Fig.7: Transaction

XI. CONCLUSION

Realized a reliable, real-time face recognition system on machine learning. According to the new technical era, some advancement has taken place and some techniques of facial recognition have achieved popularity. We are using Haar cascade algorithm for face recognition. Capture module deals with the configuration of video interface and performs the real-time video capture. Face Detection module analyses each captured frame and extracts valid faces from each frame. Face Identification deals with face recognition and verification of the detected face.

REFERENCES

[1] Facial-Recognition Payment: An Example of Chinese Consumers, Wen Kun Zhang ; Min Jung Kang, IEEE Access, Year: 2019
[2] Secure multifactor authentication payment system using NFC, Anirudhan Adukkathayar ; Gokul S Krishnan ; Rajashree Chinchole, 2015 10th International Conference on Computer Science & Education (ICCSE)
[3] Biometric Face Recognition Payment System , Surekha. R. Gondkar Saurab. Dr. C. S. Mala International Journal of Engineering Research & Technology NCESC - 2018 Conference Proceedings
[4] Facial Recognition in Banking – Current Applications, Niccolo Mejia,2019 Conference Proceedings
[5] "Face Detection and Recognition for Bank Transaction ", International Journal of Emerging Technologies and Innovative Research , Sudarshan Dumbre ,Shamita Kulkarni ,Devashree Deshpande ,P.V.Mulmule Journal of Emerging Technologies and Innovative Research 2018

[6] Continuous User Identity Verification Using Biometric Traits for Secure Internet Services, Dr.Shaik Adbul Muzzer, Gosala Subhasin
[7] Skin color based Face detection Method, Devendra Singh Raghuvanshi,Dheeraj Agrawal
[8] Face Detection system based on retinal connected neural network (RCNN), Rowley, Baluja and Kanade
[9] Combining Skin Color based Classifiers and HAAR Feature using VJ Algorithm, N.Gobinathan, Abinaya and Geetha. P
[10] Transaction Authorization from Know Your Customer (KYC) Information in Online Banking; Prakash Chandra Mondal, Rupam Deb and Mohammad Nurul Huda