Two-way Credit Card Authentication With Face Recognition Using Webcam

Asma Shaikh[#1],Aditi Mhadgut[*2], Apurva Prasad[#3] , Bhagyashree Shinde[#4] , Rohan Pandita[#5]

[#]*BE, Computer Engineering, MMCOE, SPPU*
Pune, India

Abstract *— The paper proposes a model for credit card authentication using face recognition and face detection. In this model, Local Binary Pattern (LBP) algorithm has been used with OpenCV framework for accurately recognising the user's face. In traditional method, user faces a lot of vulnerabilities related to security like the credit card user gave the details to unfamiliar person or the card is lost. . This model based on two way authentication provides high security. In the first step, OTP is verified followed by Face recognition. If both the conditions are satisfied, then the transaction will be allowed else transaction will be terminated. Local server is used for storing the images.*

Keywords — *Credit card, face recognize, webcam, transaction, verification, authentication, OpenCV, Local Binary Pattern.*

I. INTRODUCTION

The most common modes of payment during an online transaction are credit and debit cards[1]. Customers don't have to carry huge amount of cash and can purchase anything, anywhere without being worried about having enough money. The EMI schemes provided by banks makes it easy for user to afford all the luxuries, and hence, attracts more and more users for credit card usage. Bank does the task of validating the transactions and deduction of money on time. Also, the cashless transactions are beneficial to business and also to the society helping us to grow digitally.

But the biggest problem faced during online and credit card transactions is frauds. Although the credit card companies provide high security still frauds might happen, which may lead to a great loss. Scenarios are where the user give their details to unfamiliar person or the card is lost. The bank doesn't take the responsibility for loss in such cases.

The proposed model provides a solution to eradicate frauds. Here two way authentication model is integrated with face recognition system using LBP algorithm..

II. PROPOSED MODEL

The idea behind this project is to implement a system which uses face recognition to validate a user for successful transaction. The system is developed to reduce the chances of frauds that may take place during an online transaction and to ensure reliability and user-friendliness. The user has to enter card details, then the OTP will be sent to the registered email address. On successful verification of OTP, the webcam screen will appear, capture the image and match this image with the image stored in the local server[5]. The system has authority to restrict the transactions if face is not matched with the stored image or if any of the condition fails. On success, the user's credit card limit will be checked. The programming language used is Python with OpenCV framework. LBP algorithm is used for face authentication, the XML files and libraries are integrated in OpenCV framework.

A. OpenCV:

OpenCV (Open Computer Vision) is the leading open source library for computer vision, image processing and machine learning and now features GPU acceleration for real-time operation. OpenCV is used for all sorts of image and video analysis, like facial recognition and detection.

B. LBP:

LBP s a type of visual descriptor used for classification in computer vision. It has been found to be a powerful feature extraction and classification purpose.[4].

C. TenserFlow

TensorFlow is an end-to-end open source platform for machine learning. It has a comprehensive, flexible ecosystem of tools, libraries and community resources that lets researchers push the state-of-the-art in ML and developers easily build and deploy ML powered applications.

III. LITERATURE SURVEY

	Literature Survey		
Sr No.	**Paper**	**Authors & Date of Publishing**	**Algorithm/ Technique used**
1	Human Face Recognition Application Using PCA and Eigenface Approach	Anissa Lintang Ramadhani, Purnawarman Musa, Eri Prasetyo Wibowo, February 2018	Cascade Classifier method
2	Authentication of Credit Card Using Facial Recognition	Tison Varghese, Vidya Nambiar, Pushkar Dandekar, Gayatri Hegde, April 2018	Fisherfacs
3	Secured Credit Card Transactions Using Webcam	Janani.S.R, Sivaparthiban. C.B, Lekha T. R, April 2016	Key point Detector and SVM Classifier
4	Credit Card Transaction Using Face Recognition Authentication	Akshay Prakash, G Mahesh, Maram Gowri,Muzameel Ahmed, June 2016	Haar Cascade and GLCM algorithm used

IV. SYSTEM ARCHITECTURE

Credit cards are widely used all over the world. People mostly use credit cards for huge transactions, as it provides great benefits, hence attract more people. But with these pros, there exists some cons as well, one of them is frauds. The purpose of frauds is to obtain the goods without paying for it. As per the survey, India was ranked among the top 5 companies in credit card frauds[6]. In last 2 years, more than 2000 credit frauds have been filed.

The traditional method of credit card transaction uses OTP for verification. The security of this system can be enhanced using face recognition. Various algorithms have been proposed for face recognition like Eigenfaces, Local Binary Patterns Histograms, Fisherfaces, etc.

In the proposed model, we have used Local binary patterns for face recognition[3]. The user had to enter credit card details. Then the OTP will be sent to user's registered email address. On successful verification[2], the webcam will turn on and twenty images of each person will be clicked automatically and a folder will be created on his name and images will be stored on local server.

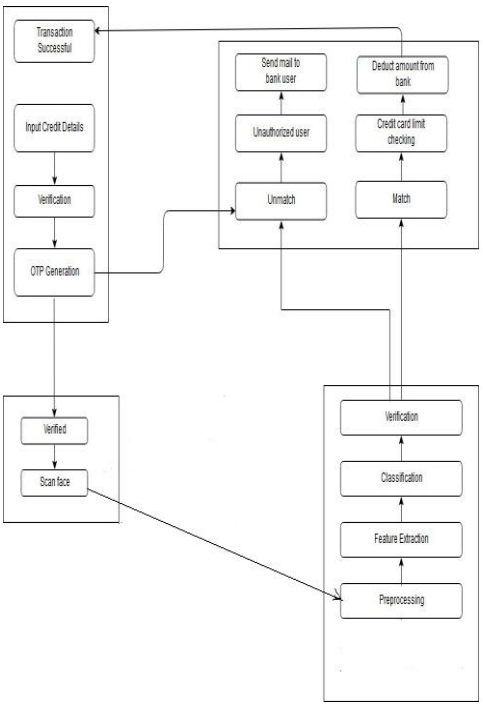

FIG. 1. System Architecture

V. RESULT ANALYSIS

The output of the implemented model is shown here. The image captured by webcam in real time is compared with the image stored in the database.

A. The given screenshots shows us the face captured using webcam.

B. The given screenshots shows us the face of the user is captured in real time and it is compared with the training set in the database. If the face matches, the transaction will be successful.

VI. CONCLUSIONS

Our proposed model- credit card authentication with Face recognition using webcam will provide high security using two way authentication process and will help to reduce frauds that may occur during an online transaction. The proposed system is integrated with two way authentication module, OTP generation and face recognition of the user for securing the online payment. Only the legitimate user can make transactions. The system is very user-friendly and reliable. This system will help to reduce the fraud rates and will help to promote online payments.

VII. FUTURE WORK

Although the system provides high security during online transactions but there are some limitations which needs to be overcome. The system cannot differentiate between the similar faces like twins and also, it fails in case of accidental faces.

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