CREDIT CARD AUTHENTICATION USING FACIAL RECOGNITION

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Abstract - *Nowadays, online payments are concerned about security. This is mainly due to hacking of OTPs or PIN codes by the hackers. This paper proposes a method for credit card system used in transaction system which will integrate with the face detection. The problem faced by credit card users is lot of privacy issues. This may commonly occur when users give their credit card numbers to unfamiliar individuals or when cards are lost. Our Solution proposes a technique by which the image clicked by using webcam during the registration process image captured detect the face and with feature extraction face stored into the database. At the time of payment made by the user on E-commerce portal will be compared to the features from the dataset of the respective user. Face Features extracted from the images stored in administrator main database. Our goal is to compare the similarity of faces embedded in the credit card and respective user.*

Key Words: **Webcam, Transaction, Verification, Face recognize, image processing.**

1. INTRODUCTION

Nowadays, credit cards are used worldwide. Credit cards are fast becoming the most common payment method of big purchasers. People use credit cards for online transactions in shopping malls. Credit card fraud is becoming the biggest risk in credit card transactions. Credit cards and the pin codes of the credit card can be stolen or lost. The proposed solution provides a secure method for credit card authentication using Local Binary Pattern algorithm. Face recognition technique is a both challenging as well as important recognition technique. We have implemented ideas for "Credit card authentication" based on facial recognition in which it imbibes large applications. The applications includes face identification which saves time and eliminates chances of credit card lost or stolen. Face recognition has been the earliest of the application derived from this technology, which is one of the most fool proof methods in human detection. The facial recognition process can be divided into two main categories: processing before detection where face detection and alignment take place and afterwards recognition occur through feature extraction and matching.

1.1 Purpose Of Image Processing

The purpose of image processing is divided into following 5 groups.

1. Visualization- Observe the objects that are not visible in the images.

2. Image sharpening and restoration- To create a better image in the dataset.

3.Image retrieval- Seek for the image of interest for images.

4.Measurement of pattern– Measures various objects in an image for training purpose.

5. Image Recognition– Distinguish the objects in an image and recognition the images or faces.

2. RELETED WORK

The credit card transaction is an very important application where the data given by the various types of user can be traced and accessed over the network and they are deleted which is a major problem in the world.The digital Image processing that can secure the overall credit card system by using face recognition and face detection of the user for security purpose. Nowdays, Face recognition is a both challenging and important recognition technique in a day to day activities..Among all the biometric techniques such as finger printing the face recognition approach possesses most advantage, which is its user-friendliness. A face recognition, factors that may most affect the performance of the recognizer. Face recognition is one of the few biometric method or technique that possess the merits of both high accuracy and low intrusiveness.The meaning of face recognition system, human face features that use to identify the face, extract features,matches face, face,face recognition types including two- dimensional system (2D) and three-dimensional system (3D) structure .

3. EXITING SYSTEM

The people having the right access to purchase anything with a price for the required items and buying that products.. The first bank card was issued in the London 1967.Payment cards with magnetic strips appeared in 1971,chip cards are invented in 1974.All the time banks sought to protect savings of their clients. For a long time PIN-code was the main protection. A personal identification number(PINs) are usually used in conjunction with usernames or passwords.

Advantages:

1.Attack by key logger is not possible.

2.Attack by brute force is very difficult.

Disadvantages:

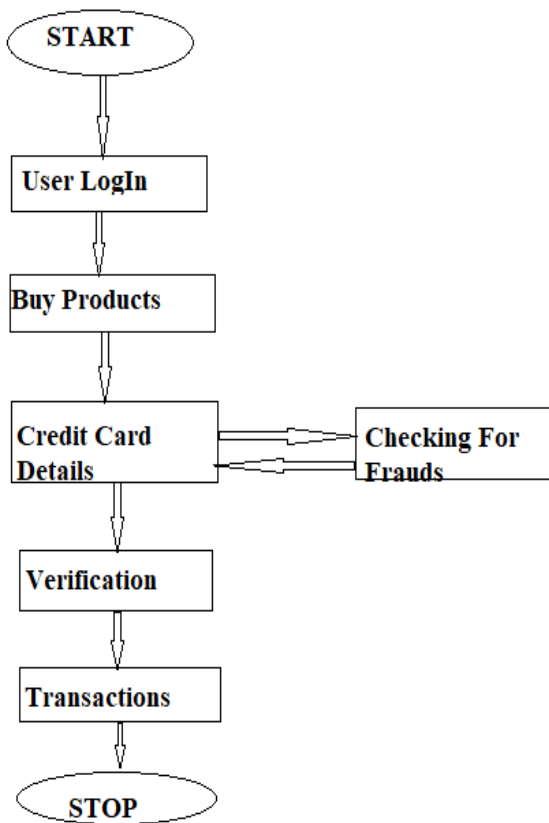1.Pin code can get stolen.

2.It could be forgotten.

Figure 1: Architecture of Existing Credit Card System

4. PROBLEM STATEMENT AND PROPOSED SYSTEM

4.1 Problem statement

Our proposed System is to secure online transaction.It should help user to make secure transaction when needed view payment details in the system.Helps online shopping websites to make payment themselves more efficient.This system will provide unique ID which will be of 10 digits along with face that 10 digit number will be displayed on credit card is provided by us.

4.2 Proposed System

Proposed system is designed with following objectives:

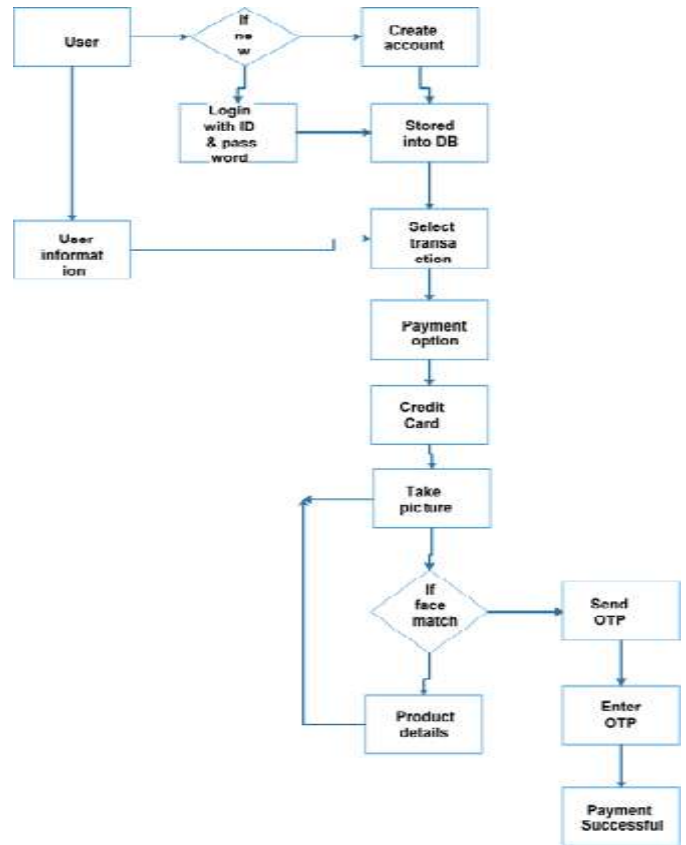1. Secured credit card used for online payments.

2. OTP Generation.

3. Facial Recognition techniques used.

4. E-commerce website used.

5. Required resource allocation.

Figure 2: Flowchart for proposed system

5. SYSTEM ALGORITHM

The following section describes the software algorithm for the system.

   The algorithm consists of the following steps:

   • Face detection

   • Feature extraction

   • Face recognition

In the first step image is captured from the web camera and detect the face.

5.1 Local binary pattern

Local Binary Pattern is an algorithm which is based on the texture of the object. However, unlike other texture based algorithms which generally uses a global threshold value, this algorithm computes the local representation of the texture. LBP is defined as an orders set of binary

comparisons of pixels intensities between the center pixels and its eight surrounding pixels. Local Binary Pattern do this comparison by applying the following formula:

$$LBP(x_c, y_c) = \sum_{n=0}^{7} s(i_n - i_c)2^n$$

Where ic corresponds to the value of the center pixel (xx_{cc},yy_{cc}), in to the value of eight surrounding pixels. It is used to determine the local features in the face images and also works by using basic LBP operator. Face Feature extracted matrix originally of size 3 x 3, the values are compared by the value of the centre pixel, then binary pattern code is produced and also LBP code is obtained by converting the binary code into decimal one.

The steps involved in the algorithm are as follows:

1. Initialize temp = 0

2. FOR each image I in the training image set

3. Initialize the pattern histogram, H = 0

4. FOR each center pixel tc ὸ I

5. Compute the pattern label of tc , LBP(1)

6. Increase the corresponding bin value by 1.

7. END FOR

8. Find the highest LBP face feature for each face image and combined into single vector matrix.

9. Compare with test face image.

10. If it match it most similar face in database then successfully recognized.
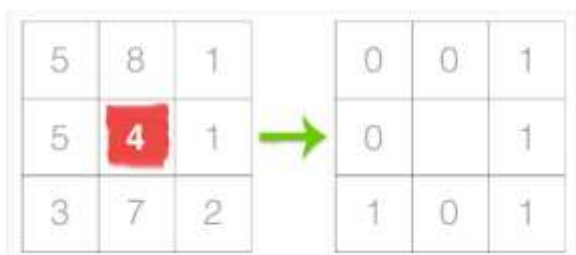
5.2 Cascade Classifiers

Using Haar-like features for after face detection which utilizes the intensity of surrounding pixels, this strategy trained can be used to identify human face features, such as eyes, noses,cheeks, etc. However, this process will take a relatively long time, so the concept of Cascade of Classifiers was introduced. By categorizing features into general and specific stages, a program can first run a general group of feature searches on a given area. If this technique does not detect a potential human face initially, then there is no

reason to continue the process, and the program will continue on to the next area. This is a much quicker approach, instead of closely analyzing each individual pixel.This algorithm includes Haar feature selection process. All human faces share some similar properties.

These regularities may be matched using Haar Features. A few properties common to human faces:

a) The eye region is darker than the uppercheeks.

b) The nose bridge region is brighter than the eyes. Composition of properties forming matchable facial features:

a) Location and size: eyes, mouth, bridge of nose

b) Value: oriented gradients of pixel intensities.

6. IMPLEMENTATION

Below are the methodology and descriptions of the applications used for data gathering, face detection, training and face recognition.

6.1 Face Detection

First stage was creating a face detection system using Haarcascades.Although, training is required for creating new Haar-cascades, **OpenCV** has a robust set of Haar-cascades that was used for the project. Using face-cascades alone caused random objects to be identified and eye cascades were incorporated to obtain stable face detection.Face and eye classifier objects are created using classifier class in OpenCV through the **CascadeClassifier()**.For feature classification uses xml files such as haarcascade_eye_xml.

A camera object is created using the **VideoCapture()** to capture images by using the **CascadeClassifier.**

6.2 Face Recognition Process

This project implemented using Local binary pattern algorithm. This algorithm implemented using OpenCV libraries. There are three stage for the face recognition as follows:

1. Collecting images Ids.

2. Extracting unique features, classifying them and storing in XML files.

3. Matching features of an input image to the features stored in the saved XML files .

6.3 Training the classifiers

OpenCV enables the creation of XML files to store features extracted from datasets using the Face Recognizer class. The stored images are imported, converted to gray scale and saved with IDs in two lists with same indexes.

7. EXPERIMENT RESULTS

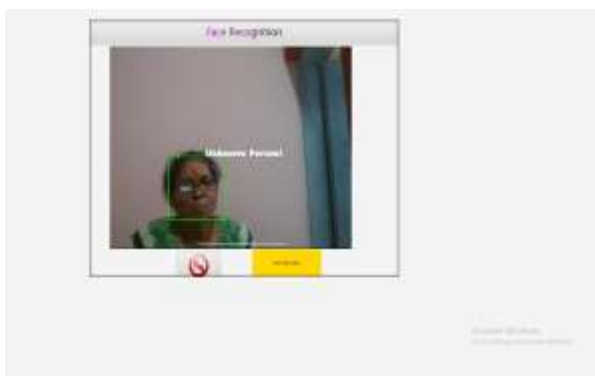**Figure 4**:Face detection

Figure 6:Face Saved

Figure 6 :Not Recognition face

8. FUTURE SCOPE

The same project can be utilized for several security purpose applications where authentication is needed to access the privileges of the respective system. It can be used in recognizing and detecting guilty parties involving in unauthorized business. Face recognition and face detection algorithm can be improved with respect to the utilization of resources so that the project can recognize more number of faces at a time which can make the system far better. Many variants of the project can be developed and utilized for home security and personal or organizational benefits.

CONCLUSION

Purpose of Our proposed project on credit card authentication using face recognition is reducing credit card frauds that may occur during an online payment process. It should be flexible so that people can easily use it without any hesitation.The web cam plays an important role in the system.It is reliable and user friendly.Using this technique solve the issues by integrating face Recognition ,this system still lacks the ability to identify people with similar face.This problem is overcome by using OTP. The comparison of the real time image with the images stored in the database should be reliable.This system should not be made wait long time for a user.

REFERENCES

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