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Credit Card Fraud Detection Using Face Recognition and Email Verification

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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 recognizing 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 is verified followed by Face recognition and second step is email verification. 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: Face detection, Face recognition, Credit card, Open CV, EMAIL.

I. INTRODUCTION

The most common modes of payment during an online transaction are credit and debit cards. 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 make it easy for user to afford all the luxuries, and hence, attract 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 are 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.

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 LBP 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 include 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.

II. 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. In last 2 years, more than 2000 credit frauds have been filed. The traditional method of credit card transaction uses email for verification. The security of this system can be enhanced using face recognition. Various algorithms have been proposed for face recognition like CNN.

In the proposed model, we have used Local binary patterns for face recognition. The user had to enter credit card details, the webcam will turn on and capture 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. If the valid person identify then transaction will done otherwise system send the email to authorized user(valid user).
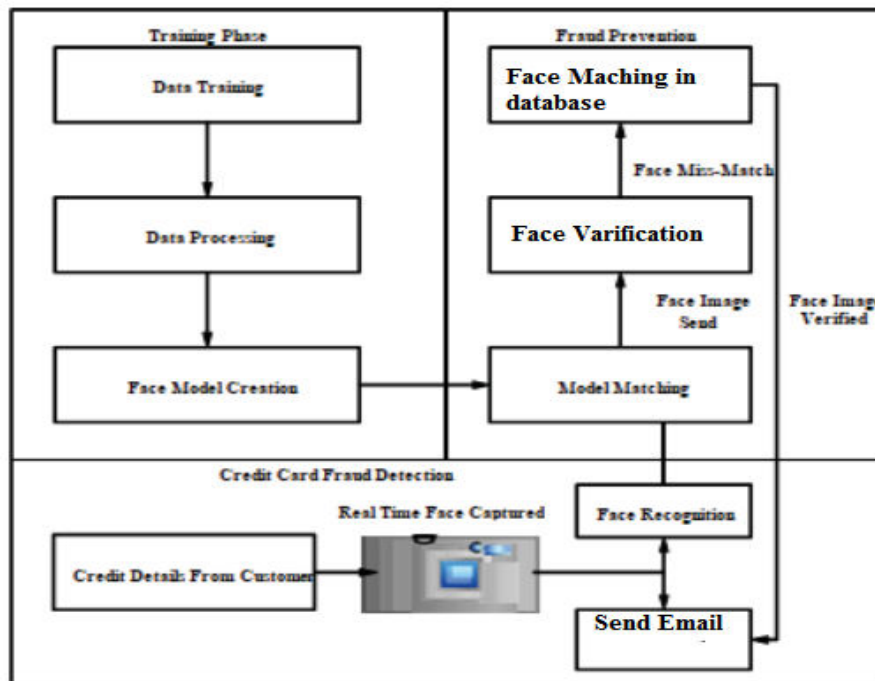
III. PROPOSED ALGORITHM

Step 1: Convolutional layer (convolution operation)

Step 2: Pooling layer (pooling)

Step 3: Input layer for the artificial neural network (flattening)
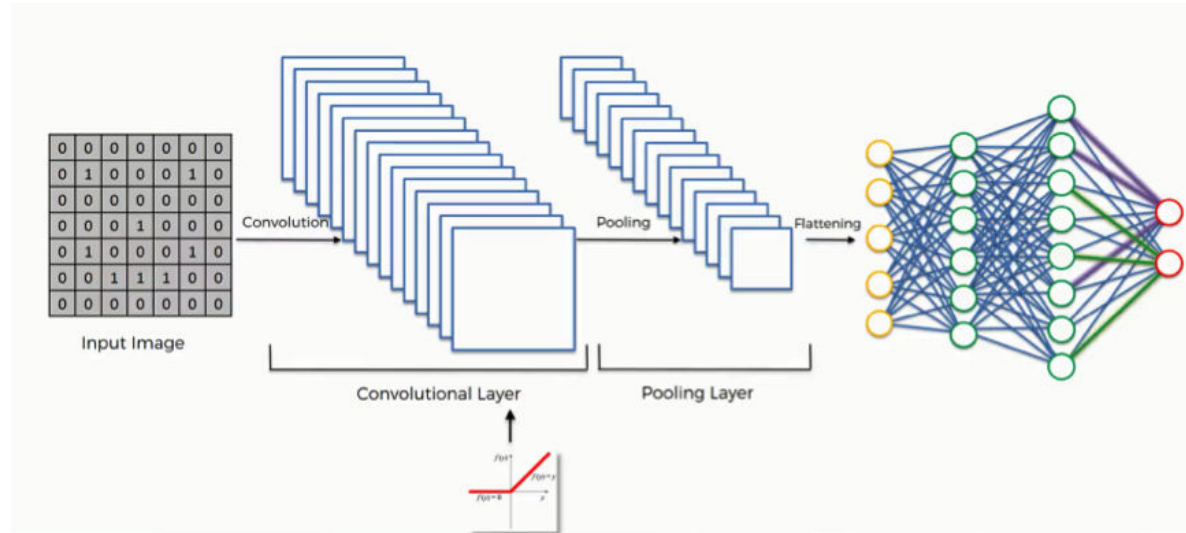
IV. PSEUDO CODE

Input: LR cell images {Yi } and corresponding HR cell images {Xi }

Output: Model parameter θ = {W1, W2, W3, B1, B2, B3}

1. θ are initialized by drawing randomly from Gaussian Distribution ($\mu = 0$, $\sigma = 0.001$)
2. For i = 0 to n // n is the number of training image
3. For i = 1 to 3 // 3 layers to tune
4. Calculate F_i (Y) based on Equations (13)–(15)
5. End For
6. Calculate L (θ) = 1 n $\sum$ n i=1 ||F (Yi ; θ) − Xi ||2
7. If L (θ) < ε // ε is closed to zero
8. Calculate $\Delta_{i+1} = 0.9 \times \Delta_i + \eta \times \partial L / \partial W_l i$, $W_l i+1 = W_l i + \Delta_{i+1}$
9. End If
10. End For
11. For i = 1 to 3 // 3-layer network
12. Calculate F (Y0) based on Equations (13)–(15)
13. End For

Results:
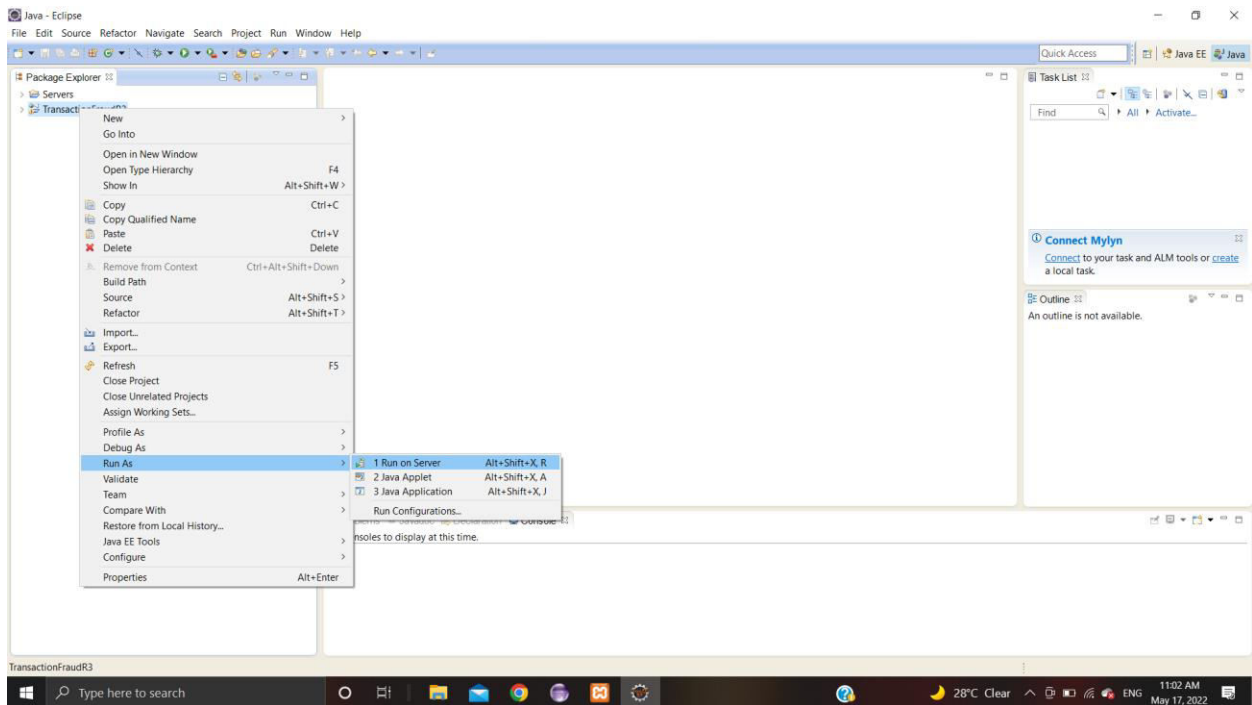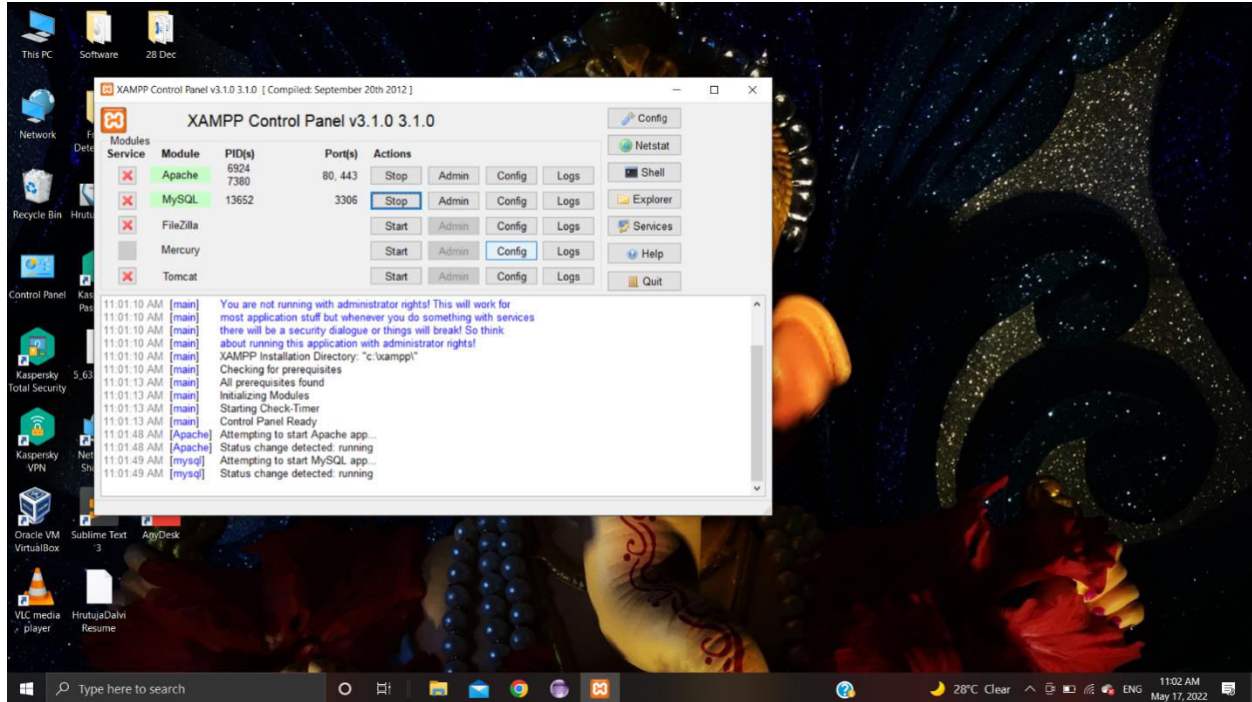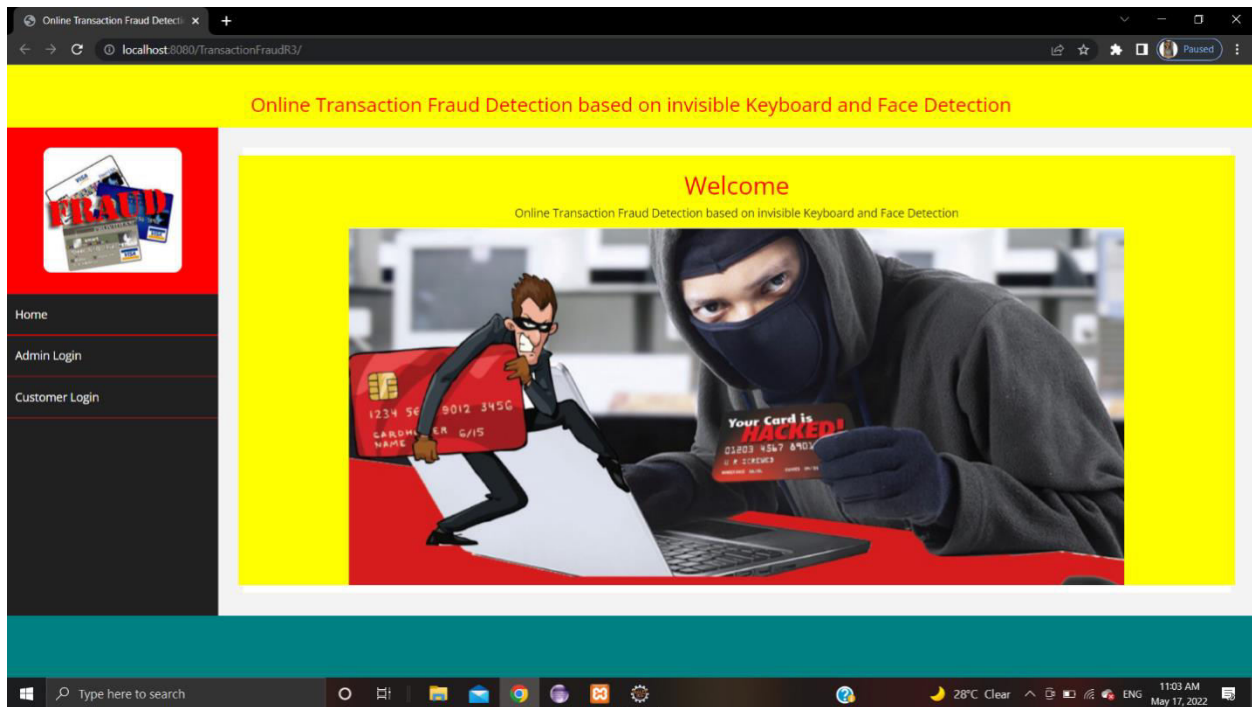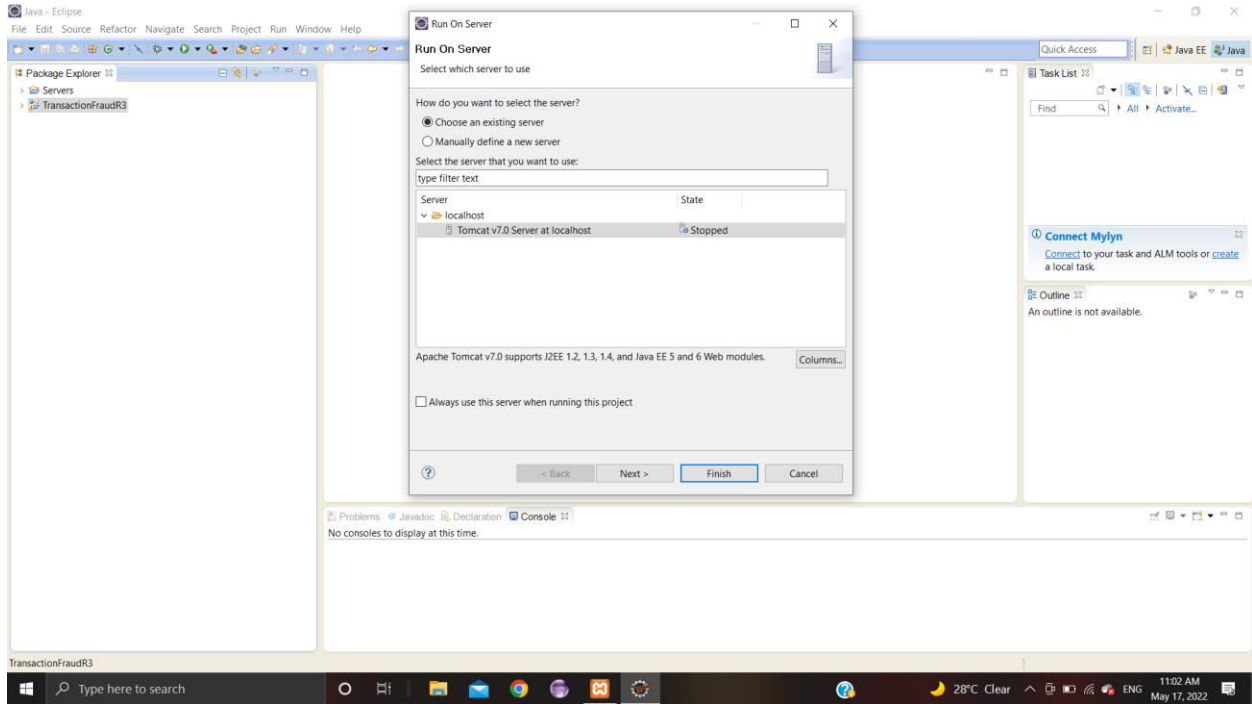
V.   CONCLUSION AND FUTURE WORK

Our proposed project has been designed for the purpose of reducing the credit card frauds that may occur during online payment transaction. There is no need of specialized hardware for installing this system. It just needs a computer and a camera for construction. The system is reliable and efficient mode of transaction process. The camera plays a crucial role in the working of our project, therefore the image quality and also the performance of the camera must be tested time to time.

Since we have proposed a modular approach, we can improve different modules until we reach an acceptable identification and authentication rate. The comparison of the input image and the image stored in database should be fast and reliable enough.

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