AI BASED CARD LESS ATM TRANSACTION USING FACE RECOGNITION

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ABSTRACT

The current ATM (Automated Teller Machine) system uses ATM card and PIN (Pin Identification Number) for authentication. This system is likely to be harmed by many security issues such as theft of ATM card, skimming, Lebanese loop etc. So in this project, we propose a system that uses face recognition authentication (not ATM cards) for accessing user account along with PIN which is more secure and reliable than the existing system. Here we are using the CNN model (Deep Learning Model) for face recognition.

1. INTRODUCTION

1.1 ATM(Automatic Teller Machine)

An automated teller machine (ATM) or cash machine (in British English) is an electronic telecommunications device that enables customers of financial institutions to perform financial transactions, such as cash withdrawals, deposits, funds transfers, or account information inquiries, at any time and without the need for direct interaction with bank staff.

ATMs are known by a variety of names, including automatic teller machine (ATM) in the United States (sometimes redundantly as "ATM machine"). In Canada, the term automated banking machine (ABM) is also used, although ATM is also very commonly used in Canada, with many Canadian organizations using ATM over ABM. In British English, the terms cashpoint, cash machine, cash line and hole in the wall are most widely used. Other terms include any time money, cash line, tyme machine, cash dispenser, cash corner, bankomat, or bancomat.

Using an ATM, customers can access their bank deposit or credit accounts in order to make a variety of financial transactions, most notably cash withdrawals and balance checking, as well as transferring credit to and from mobile phones. ATMs can also be used to withdraw cash in a foreign country. If the currency being withdrawn from the ATM is different from

that in which the bank account is denominated, the money will be converted at the financial institution's exchange rate. Customers are typically identified by inserting a plastic ATM card (or some other acceptable payment card) into the ATM, with authentication being by the customer entering a personal identification number (PIN), which must match the PIN stored in the chip on the card (if the card is so equipped), or in the issuing financial institution's database.

1.2 FACE RECONGNITION

A facial recognition system is a technology capable of matching a human face from a digital image or a video frame against a database of faces, typically employed to authenticate users through ID verification services, works by pinpointing and measuring facial features from a given image.

While initially a form of computer application, facial recognition systems have seen wider uses in recent times on smart phones and in other forms of technology, such as robotics. Facial recognition systems have been deployed in advanced human-computer interaction, video surveillance and automatic indexing of images. They are also used widely by law enforcement agencies.

2. SYSTEM IMPLEMENTATION

2.1 EXISTING SYSTEM

The ATM using Face Recognition System is indicate the way to a lot of forgery attempt and abuse through card theft and pin theft of customer account details. In this system they are used many components like Face Detector, Face Recognizer, 2-D, 3-D Technique and Surface Texture Analysis.

2.2 PROPOSED SYSTEM

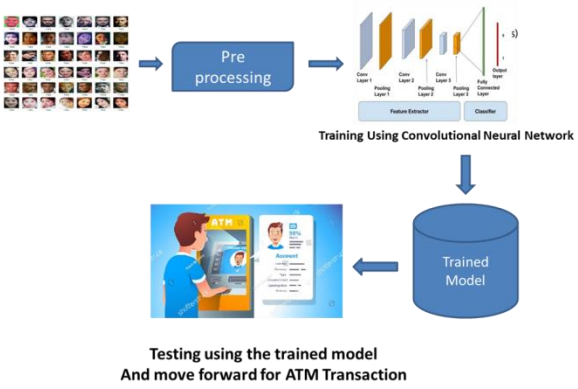


Fig 2.1 Proposed Block Diagram

The proposed system we use Convolutional Neural Network to predict the face recognition.

Its consists of the following steps:

i. the face in image is detected and cropped,
ii. the cropped image is pre-processed in order to provide further illumination invariant,
iii. the convolutional neural network is applied to predicted features.

2.3 PREPROCESSING

A pre-processing or filtering step is applied to minimize the degradation related to the noise. There has been a lot of

work in structuring the efficient noise suppression filters. The noise such as the shadow in the input images are removed using the pre-processing filters such as average filter. This stage is necessary to enhance the lungs image quality and made the feature extraction component more reliable for the improvement of broad and narrow input image.

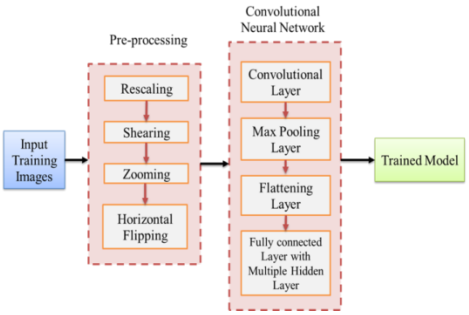


Fig.2.2 Training

2.4 DEEP LEARING

Deep learning (also known as deep structured learning) is part of a broader family of machine learning methods based on artificial neural networks with representation learning. Learning can be supervised, semi-supervised or unsupervised.

Deep learning architectures such as deep neural networks, deep belief networks, recurrent neural networks and convolution neural networks have been applied to fields including computer vision, machine vision, speech recognition, natural language processing, audio recognition, social network filtering, machine translation, bioinformatics, drug design, medical image analysis, material inspection and board game programs, where they have produced results comparable to and in some cases surpassing human expert performance.

2.5 CONVOLUTIONAL NEURAL NETWORK

In deep learning, a convolutional neural network (CNN, or ConvNet) is a class of deep neural networks, most commonly applied to analyzing visual imagery. They are also known as shift invariant or space invariant artificial neural networks (SIANN), based on their shared-weights architecture and translation invariance characteristics. They have applications in image and video recognition, recommender systems, image classification, medical image analysis, natural language processing, and financial time series.

Steps in CNN

- **Step 1: Convolution**
- **Step 2: Pooling**
- **Step 3: Flattening**
- **Step 4: Fully connection**

Convolution Layer

When programming a CNN, the input is a tensor with shape (number of images) x (image height) x (image width) x (image depth). Then after passing through a convolutional layer, the image becomes abstracted to a feature map, with shape (number of images) x (feature map height) x (feature map width) x (feature map channels). A convolutional layer within a neural network should have the following attributes:

- Convolutional kernels defined by a width and height (hyper-parameters).

- The number of input channels and output channels (hyper-parameter).
- The depth of the Convolution filter (the input channels) must be equal to the number channels (depth) of the input feature map.

Convolutional layers convolve the input and pass its result to the next layer. This is similar to the response of a neuron in the visual cortex to a specific stimulus.[12] Each convolutional neuron processes data only for its receptive field. Although fully connected feedforward neural networks can be used to learn features as well as classify data, it is not practical to apply this architecture to images. A very high number of neurons would be necessary, even in a shallow (opposite of deep) architecture, due to the very large input sizes associated with images, where each pixel is a relevant variable. For instance, a fully connected layer for a (small) image of size 100 x 100 has 10,000 weights for each neuron in the second layer.

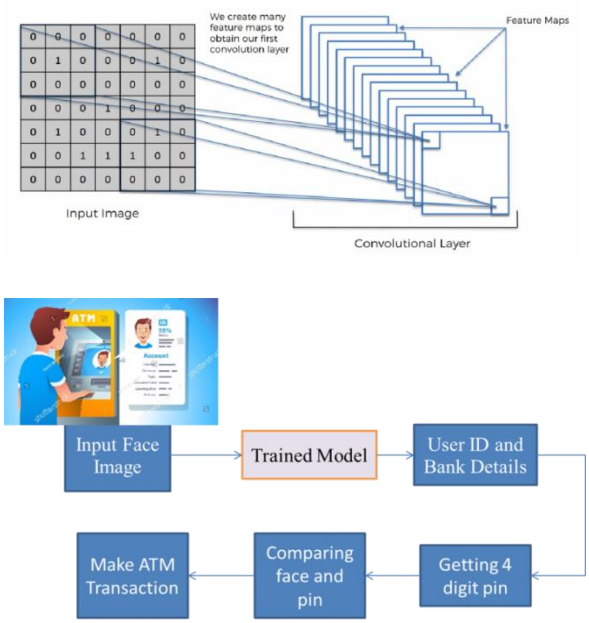
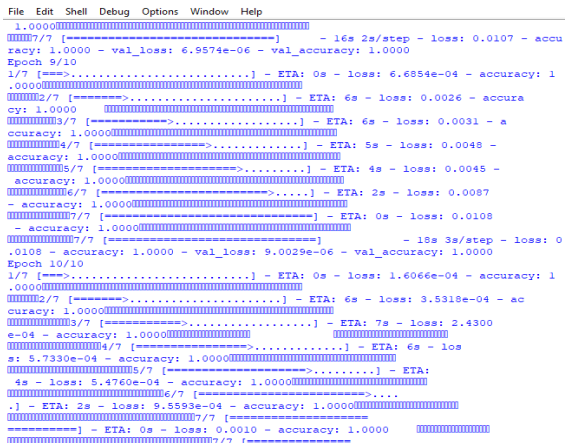


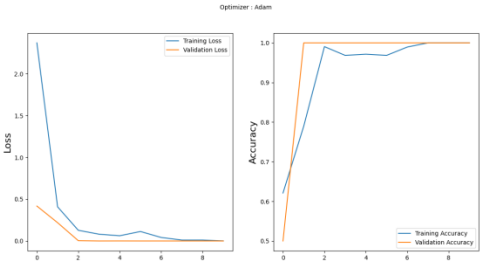
Fig 3.3 Testing

3. RESULTS:

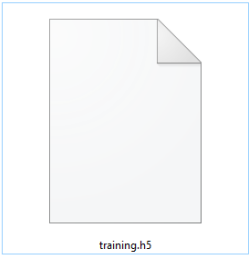
3.1 Training



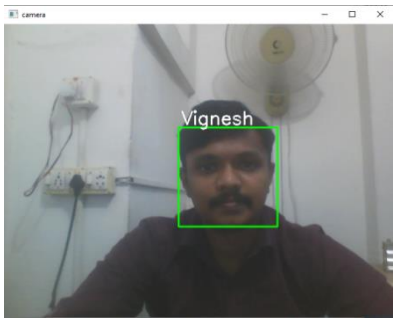
3.2Accuracy and loss graph



3.3 Training file



3.4 Face recognition- testing



3.5 Password matching

```
Hello Vignesh, You are logged in, to

Please Enter the 4 digit Code : 1234
Password Matched
```

3.6 Transaction

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Please Enter Amount: 200
please collect your cash
Your Available Balance is :  300
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4. CONCLUSION

This project can overcome the issue of impersonation of a cardholder. This is like a two factor authentication method which is used to confirm that the transaction is done by the card owner or the persons trusted by the owner using face recognition. It limits the card usage of the unauthorized users who hold the password of someone's card. Thus, this ATM model provides security against exploitation of identity, by using a verification system using face recognition to the identity and confirm the user and it will scale back forced transactions to an excellent extent.

5.REFERENCES

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