

ENHANCEMENT OF ATM SECURITY

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Abstract—The surveillance systems have been widely used in automatic teller machines (ATMs), banks, convenient stores, etc. For example, when a customer uses the ATM, the surveillance systems will record his/her face information. The information will help us understand and trace who withdrew money. However, when criminals use the ATM to withdraw illegal money, they usually block their faces with something (now-a-days, criminals usually use safety helmets or masks to block their faces). That will degrade the purpose of the surveillance system. In this proposed system if the withdrawer's face is covered, the user is being alerted to uncover his face and unless the user uncovers his face the transaction is kept on hold. The technology will help in reducing physical thefts and thereby assisting to find the culprit through CCTV footage.

Index Terms—face detection, OpenCV, ATM security, feature extraction, machine learning, camera, Python, face verification.

I. INTRODUCTION

The Modern age is constantly changing and everything is at our fingertips because of constant upgradation in technology. This technology is used from high medical demands to personal needs, one of the most effective usages is in ATM security to reduce ATM thefts and robberies.

Within the present scenario, the majority of the population uses the ATM system to withdraw

Cash. At the same time, there are countless ATM thefts and robberies that have occurred in many localities of the city, although Closed-circuit Television(CCTV) cameras are installed within the ATM center, if a person enters with his face covered it becomes difficult to detect his face. A good way to abate these kinds of robberies is by means of the usage of smart and embellished technology. In the present ATM system, the use of the right PIN allows the user to withdraw the cash and have a successful transaction but when ATM cards are forgotten or stolen, an unauthorized person can use the card, which increased the crime and illegal access of the ATM cards which has become a severe danger to both the finance zone and to humans. The robbery related to ATMs primarily based on unauthorized access has accelerated hugely in current years about 90 percent. In this proposed system if the withdrawer's face is covered, the user is being alerted to uncover his face and unless the user uncovers his face the transaction is kept on hold. The technology will help in reducing physical thefts and thereby assisting to find the culprit through CCTV footage.

Face detection is a majorly used technology in many sectors because of its easy integrity and enhanced security, face detection identifies the unique appearance of the human face after which it makes an analogy based totally on the present database of images. Sensors locate and perceive

face shapes by the color of the iris, nostril form, and so on. figuring out the human face consists of focusing on certain particular functions, including the jaw, cheekbones, face shape, and so forth.

II. LITERATURE SURVEY

A. IOT based ATM surveillance machine.

In this proposed system a face spotting CCTV camera is used to capture bodily disturbances and is frequently used for physical thefts. the main purpose of the proposed machine is to ship an alert via social media like facebook, twitter, and Gmail the usage of IOT and GSM community. It uses Liquidator chloroform to unfold the chloroform to make the thief unconscious. This device caters for realistic monitoring and manages maintaining the Integrity of the Specifications.

B. ATM- security using machine learning technique in IOT.

This project will give access to the user only after identifying the image of the user taken by the CCTV in the ATM and compare the identified image with the image of the user that was stored in the database created during the account creation which comes under the banking session of banks. In some cases the authorized user is not able to use the ATM for some emergency purposes, in such cases, the OTP is sent to the users registered mobile number and the person who came instead of the authorized user have to enter the OTP that the authorized user received.

C. Design And Implementation Of ATM With Theft Detection, Prevention, Protection and Tracking.

This project deals with prevention of ATM theft from robbery, so to overcome the drawbacks found in existing technology in our society. In order to enter the ATM room, the user will have to show the ATM card having inbuilt RFID tag to the RFID reader attached to the ATM door .Once

the card is read, the ATM door will open and the user will enter the room. Within 20 seconds the ATM door will close automatically. The movement of ATM door is in turn controlled by a DC motor . If the ATM is tampered, vibration sensor senses vibration produced from ATM machine.

D. ATM Theft Monitoring and Security System using Rasp berry Pi2

Therefore, this study is going to suggest the method of rapid reaction and minimization of loss by detecting the ATM machine at real- time when it has been stolen can be found. Whenever robbery occurs, Vibration sensor is used here which senses vibration produced from ATM machine. This system uses Raspberry pi2 to process real time data collected using the vibration sensor. Once the vibration is sensed the beep sound will occur from the buzzer. DC Motor is used for closing the door and shutter of ATM. Camera is always in processing and sending video continuous to the PC and it will be saved in computer.

III. PROPOSED SYSTEM

Within the proposed system the face of the user looking to withdraw cash is detected and checked whether it is masked or not. If it is masked them an alert message is prompted asking him to uncover his face. Unless the user does not uncover his face, the transaction is not proceeded.

- Face detection is a way of locating the faces (place and length) in a photo and probably extracting them to be utilized by the face detection algorithm.
- Feature extraction: After detecting the face in a picture, the features of the face which include eyes, nostril, and mouth are extracted, this is referred to as feature extraction. Feature extraction can be performed in diverse methods. Feature extraction is the most critical and initial step

to recognize a face.

- Face detection: with the facial pixel already extracted, cropped, resized and usually converted to grayscale, the face detection uses a set of rules for finding traits which exceptionally describe the photograph.

IV. ALGORITHM

Convolution neural network algorithm is a multilayer per ceptron that is the special design for identification of two dimensional image information . Always has more layers: input layer, convolution layer, sample layer and output layer. In addition, in a deep network architecture the convolution layer and sample layer can have multiple. CNN algorithm has two main processes: convolution and sampling . Convolution process: use a trainable filter F_x , deconvolution of the input image (the first stage is the input image, the input of the after convolution is the feature image of each layer, namely Feature Map), then add a bias b_x , we can get convolution layer C_x . A sampling process: n pixels of each neighborhood through reducing

pooling steps, become a pixel, and then by scalar weighting $W_x + 1$ weighted, add bias $b_x + 1$, and then by an activation function, produce a narrow n times feature map $S_x + 1$.

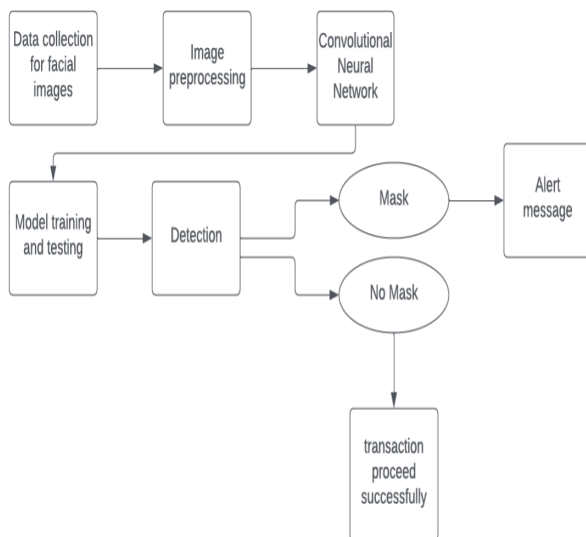
The key technology of CNN is the local receptive field, sharing of weights, sub sampling by time or space, so as to extract feature and reduce the size of the training parameters. The advantage of CNN algorithm is that to avoid the explicit feature extraction, and implicitly to learn from the training data. The same neuron weights on the surface of the feature mapping, thus network can learn parallelly, reduce the complexity of the network. Adopting sub sampling structure by time or space, can achieve some degree of robustness, scale and deformation displacement. Input information and network topology can be a very good match, It has unique advantages in speech recognition and image processing.

V. COMPARISON BETWEEN EXISTING AND PROPOSED SYSTEM

One of the existing systems aims at preventing physical threats such as attack on the withdrawal using weapons such as knives, guns etc. A CCTV camera is installed in the ATM along with vibration sensors, if any unusual movements are detected by sensor or captured by camera, chloroform is released which makes the attacker unconscious and an alert message is sent through social media and gmail using IoT and GSM network which makes the public aware of the attack happening in their vicinity so that preventive measures can be taken. In the present system there are security concerns so to overcome this we have proposed to apply face detection in enhancing ATM security by using CNN face detection algorithm.

One of the existing systems Developed an ATM based fingerprint verification and simulated it for ATM operations by incorporating the fingerprints of users into the bank’s database. This system developed was inefficient because there was no

Fig. 1. Flow Diagram of CNN



finger print matching algorithm and was not built as an enhancement of the existing system. A combination of fingerprint biometric token and GSM technology was developed but a nominee or third party's finger print was incorporated in the architecture and there is a discord between the main user and the nominee user in the system architecture.

In another one, the IOT model was implemented by using suitable components with the raspberry pi 3. first the user is subjected to the photograph of various angles while issuing the debit or credit card. The images taken are stored and converted into the grayscale images for reducing the errors occur while the face detection the grayscale image of the user is split up into many pieces and each piece is given a value and get stored. The one of the component camera is used to detect the face the person approaching the ATM by using the face detection Haar cascade which is an trained xml file while holds the xml code for the detection of the face of a person of any gender and accrue the image of the users face who is approaching the ATM machine. The accrued images of the user are also changed into the grayscale image and split down into various pieces and given values. Based upon the data stored in the card of the user the given values of the approaching user's image is compared with the respected values of the image of the user that were processed and stored while the card issuing process.

One of the proposed system deals with prevention of ATM theft from robbery. In order to enter the ATM room, the user will have to show the ATM card having inbuilt RFID tag to the RFID reader attached to the ATM door. Once the card is read, the ATM door will open and the user will enter the room. Within 20 seconds the ATM door will close automatically. The movement of ATM door is in turn controlled by a DC motor. If the ATM is tampered, vibration sensor senses vibration produced from ATM machine. This system uses arduino controller based embedded system to process real time data collected using the vibration sensor. Once the vibration is sensed,

the beep sound will occur from the buzzer. Servo motor is used to leak the gas inside the ATM to bring the thief into unconscious stage. GSM sends the message that "THE ATM IS TAMPERED" to respective bank and nearby police station. GPS sends the exact location of the affected ATM.

VI. RESULT AND CONCLUSION

Hence, we have studied face detection algorithms i.e CNN, for identifying and verifying the person from a digital picture in an ATM system to enhance its security. We are proposing to use the CNN face detection algorithm as it is computationally efficient and it performs parameter sharing and uses special convolution and pooling algorithms. It finds the relevant features without the need for human intervention.

We thus put forth an ATM model which provides security by using facial detection software. So the identity confirmation process used in ATMs can reduce forced transaction to a great extent. This paper contributes to the ATM safety by recognising whether or not the cash withdrawer is covered his face or not with the aid of facial detector and thereby asking for the user to uncover his face while retrieving cash and hence preventing the misuse of ATM card by unauthorized user.

VII. REFERENCES

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