Novel Security System for ATM Centre Using Image Processing Technology

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Abstract-*There is an urgent for improving security in banking region. With the birth of the Automatic Teller Machines, banking became a lot easier though with its own troubles of insecurity. Due to tremendous increase in the number of criminals and their activities, the ATM has become insecure. The recent progress in biometric identification techniques ,include finger printing, retina scanning and facial recognition has made a great efforts to rescue the unsafe situation at the ATM. This research looked into the development of a system that integrates facial recognition technology into the identify verification process used in ATMs. The development of such a system would serve to protect consumers and financial institutions alike from strangers and identify thieves. We propose an Automatic Teller Machine security model that first recognize the face and give access to further process. If the user wear helmet or close their face by using mask ,our system will give the alarm sound. After face detection successful the person can able to access the ATM. Inside ATM, if the person makes abnormal activities such as raising hands, touch anything apart from ATM machine, unnecessary walking inside the room our system will identify this activity and sends the abnormal activity information to the respective authorized person.*

Keywords-live video face detection, ATM security system, glass breakage system, facial recognition technology.

I. INTRODUCTION

ATM is one such machine which made money transactions easy for customers to bank. The other side of this improvement is the enhancement of the culprit's probability to get his unauthentic share. Trationally, security is handled by requiring the combination of a physical access card and a PIN or other password in order to access a customer's account. This model invites fraudulent attempts through stolen cards, badly chosen or automatically assigned PINs, cards with little or no encryption schemes, employees with access to non-encrypted customer account information and other points of failure.

The increased threat encountered by customers and ATM machines, have drifted the ATM centre to a danger zone. The present day monitoring system is more vulnerable which in turn the fraudulent activities and crimes in ATM centres. This is high-time for banking sector and government to join hands to weed out the crisis in security system. So it becomes indispensable to strictly monitor the do's and don'ts. Inside the ATM centres, very specifically the facial recognition is considered to authenticate the entry of any individual inside the ATM centre, it is achieved by employing classifier technique, as an additional feature, a combinational biometry system is used to access the ATM machine. The entire security module is incorporated with an easy panic button and a sound-cum-alarm, which alerts the cops as well as the bank security wing, ensuring immediate to the victims including physically challenged people. This overall system proves to be an autonomous, continues and secured surveillance system.

We propose an automatic teller machine security model that first recognize the face and give access to further process, if the user wear helmet or close their face by mask then our system give the alarm sound and give the message to remove the helmet or mask. After face detection successful the person can enter into the ATM centre and access the ATM. Inside ATM, if the person makes abnormal activities such as raising hand, touch anything apart from ATM machine working area, unnecessary walking inside the room. Our system will identify the activity and the door will be closed automatically and sends the abnormal activity information to the respective authorized person. If this technology becomes widely used, ATM would be protected. However , it obvious that man's biometric features cannot be replicated, this proposal will go long way to solve the problem of account safety making it possible for the actual account owner alone have access to his accounts. The combined biometric features approach is to serve the purpose both the identification and authentication will secure the cash from unauthorized person. Recognition system can be divided into two main parts.

The first part is image processing and the second part is recognition techniques. The image processing part consists of face acquisition through scanning, image enhancement, image clipping, filtering, edge detection and feature extraction. The process would effectively become an exercise in pattern matching, which would not require a great deal of

time. With appropriate lighting and robust learning software, slight variations could be accounted for in most cases.

Usually, biometric and non-biometric methods are used to provide such security features. In non-biometric methods, personal ID and password are used to identify the person, where in the possibility of theft remains. Biometric methods involve no such possibilities, because they employ techniques such as voice recognition , signature recognition, retinal recognition, fingerprint recognition and face recognition. These methods are sophisticated and costlier. Our project is intended to reduce these crimes by implementing simpler yet secure method of accessing ATMs.

ATM centres play a vital role for money withdrawal. Other than the application it has many purposes like money transaction , cash deposit, registrations. Such wide usage of a card demonstrates as how it is indispensable for modern age. Instead of carrying money which is vulnerable for attacks in a society where the unemployment and inflation dominates so it is safer to carry thin flat card which is compactable in wallets.

It holds the identity of a person which is unique and subjected to personal usage. The prime responsibility is to ensure a secured ATM service by providing enhanced security system in centre. In this technically advanced world automation is grabbing attention in every field. So the ATM centre can be fully automated without manual mode of monitoring and intimation as a solution to the troubles faced.

II. PROPOSED SYSTEM

The conventional security system, which is very much concern over electronic transaction and not concentrating on ATM centres safety which in turn triggered the ATM centre to host many fraudulent activities. This system shortens the problems faced in the conventional security system as it emphasize the need of strictly enforcing the dos and don'ts of ATM centres and it priorities physical safety of the costumers and ATM machine, by providing 24*7 surveillance and immediate rescue alter. As it is very particular about facial identification to authenticate the entry it provide sufficient data in the event of any discrepancies there by illegal activities can be avoided inside the ATM. It ensures more authenticated usage of the account as per the RBI rules. The mind set of people to do mischievous activities inside the ATM centre is flatten. This system provides complete information regarding an unethical event and helps to track the intruder. This also provides necessary evidence for the legal prosecution.

2.1.Architecture Diagram

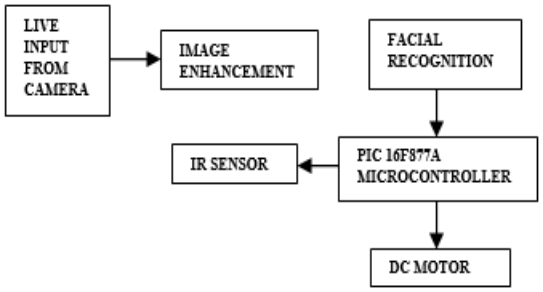

Fig 1: Block Diagram of Proposed System

2.2. Flow Diagram

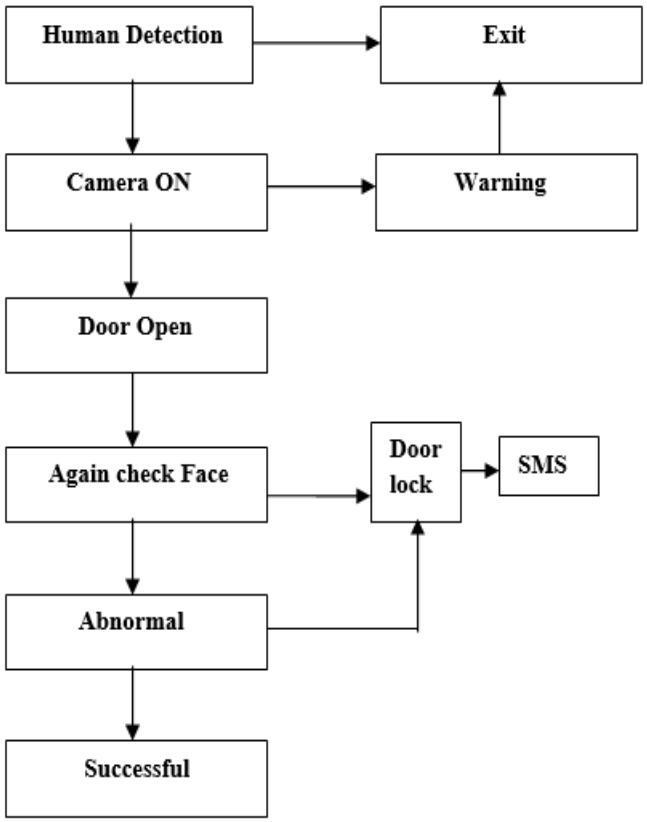

Fig 2: Flow Diagram of Proposed System

This project offers high level of security in the ATM transaction by implementing mask detection in camera after the human is detected by sensor. Once human is detected , camera gets ON and start detecting the human face. If the person wear the helmet or mask our system will give the warning message. After the successful face detection, the door opens and allow the person inside the ATM. Again our system will detect the human face and continuously detecting the activities of the persons activity, if the person do any abnormal activities , the door gets locked and give the message to the respective authorized person. These messages are send to police station and bank sector via SMS.

2.3. Prototype Of Hardware

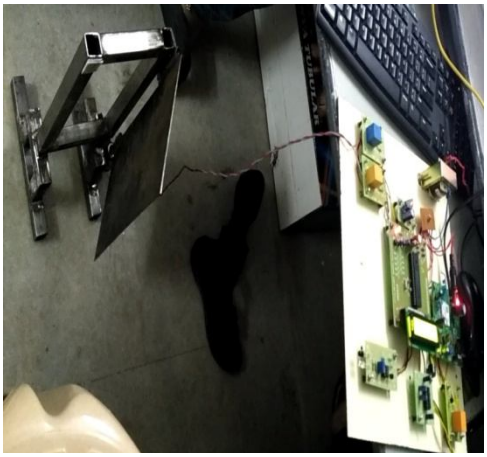

Fig 3: Hardware prototype of proposed system

In our project , the presence of the human is detected by IR sensor , after that camera starts detecting the face of that person. The face detection is based on the viola jones algorithm. If the person does not wear helmet or mask ,the door of the ATM gets open or else the door cannot open. After successful face detection , the person allow inside the ATM. Again our system will detect the face of the person to identify the abnormal activities. Here 30 frames are captured every second. If the person do any illegal activities inside the ATM , the door gets locked and send the message to the respective authorities through GSM.

2.4.Advantages

- Accurate face detection
- Locates a moving object within the camera view
- Determines if the moving object is face
- Face detection speed is high
- Fast response
- Allows the person to enter inside the ATM only after detect their face
- Immediate information sharing to authorized person

III. RESULT

If the person do any abnormal activities the message will send to the concerned person via GSM.

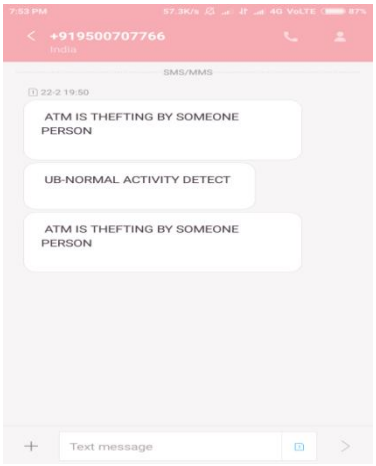

Fig 4: Message send to concerned person

IV. CONCLUSION

Thus develop an ATM model is more reliable in providing security by using facial recognition software. By keeping the time elapsed n the verification process to a negligible amount we even try to maintain the efficiency of this ATM system to a greater degree. Biometrics as means of identifying and authenticating account owners at the automated teller machines gives the needed and much anticipated solution to the problem of illegal trasactions. In this paper, we have tried to proffer a solution to the much dreaded issue of fraudulent transactions through ATM by biometrics that can be made possible only when the account holder is physically present. Thus, it eliminates causes of illegal transactions at the ATM points without the knowledge of the authentic owner. Using a biometric feature for identification is strong and it is further fortified when another is used at authentication level.

V. FUTURE SCOPE

Every application has its own merits and demerits. The project has covered almost all the requirements. Futher requirements and improvements can easily be done since the coding is mainly structured or modular in nature. Changing the exixting modules or adding new modules can append improvements. Futher enhancements can be made to the application, so that the image proceesing functions very attractive and useful manner than the present one. Transforamation of gray scale to binary image lacks in this system so any algorithm can be implemented to improve the performance. The proposed system can be implemented in india and further development can be made by implementing the system across the world.

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