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Artificial Intelligence based Smart ATM

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ABSTRACT - *In the modern world we are witnessing ATM system for performing financial transactions to withdraw money, to transfer money, to check saving account and so on. The current ATM system uses ATM card and PIN for authentication purpose. This system suspects too many security issues. So in this paper we are proposing an advanced ATM security system to avoid theft into ATM. Using fingerprint authentication for accessing the user account using his unique id given in the bank details. In this process, bankers will collect customers fingerprint, mobile number, email and name. This personal details of a specific user will be stored into back end that is in the banks database. This insures developed system more secured rather than current system which uses just on identification we are proposing some more additional features such as automatic door mechanism during theft with message to cops and alarming simultaneously. Image processing is used in CCTV as well as cash tray. Artificial inelegance program is used to remove illiteracy and to make interaction easy. The main objective of proposed system is to avoid a theft and instead of relying on pin number as a security the multiple layers of security is enhanced and implemented.*

Key Words: *ATM, biometric, GSM, image processing, artificial intelligence.*

1. INTRODUCTION

ATM is an automated teller machine which is a computerized telecommunication device that provides customer with access to financial transactions in public space without the need for human clerk or bank teller. The first ATM was installed in Enfield town in London on June 27, 1967 by Barclays bank. ATM's are named by various other names like automated transaction Machine, Automated Banking Machine, Cash point (at Britain), Hole in the wall, Ban comet (In Europe and Russia), Any time money (India)[5]. In modern world, money is required at any time or anywhere for travelling, shopping and health emergencies we need to carry Money. It increases the risk of robbery at any instant, where bank is the safest place to keep our money .It provides automated teller machine (ATM) which can provide money at any time at any location .So ATM has provided us with all the benefits .We are encouraged here to add some more sorts of security features inside the current ATM system and so through this paper we are proposing here further security by adding secondary stage of prevention to the current ATM system and to the existing security system by using biometric authentication and AI for easy interaction . Authentication and verification has always been the part to worry about security and confidentiality of the consumers. In rapid changing world it is not easy to maintain integrity and authenticity of a person. To prevent the frauds we need some full proof security solutions which we can use along with current available technology. We are using artificial intelligence Biometric authentication, automatic door lock system, image processing inside cash tray for detection of insufficient funds and currency scanning so that the torn notes will be scanned and removed. Also using this feature we will limit the mass entry inside ATM room by detecting number of heads. Combinations of all these technologies may help in reducing the ATM frauds and hence can improve the security level of other financial transactions.

2. LITERATURE SURVEY

2.1 Biometric authentications to control ATM theft-[2]

In this paper it is proposed that the way banking and transaction system is changing in the world ,the validation, authentication and confirmation of a person is very important and should be of more concern .So biometric is one of the best solution for security of the system and can be added to maintain authentication and confidentiality. Instead of going just for PIN identification and verification fingerprint scanning, iris scan, palm scanning can be used.

Even we can use voice recognition. Combinations of such technologies may help in reducing the ATM frauds and hence can improve the security level of other financial transactions .There are many ways of biometric scanning these are

- Fingerprint verification
- Face recognition

- Scanning of retina
- Scanning of hand geometry
- Scanning of vein geometry
- Iris scanning
- Signature biometrics
- Voice analysis

2.2 Card less ATM system: In this paper it is proposed to add embedded system that uses Biometric or PIN identification. ATM system is susceptible to many types of frauds such as theft of ATM card, Lebanese Loop, Skimming etc. This system will maintain the personal information of a user inside the bank's database at the back end .Fingerprint of the entire user who wishes to access account are taken. This system first fetches the fingerprint of a specific user who wish to perform transaction .If fingerprint is matched then user will get direct access without performing PIN procedure or any other procedure. If password or fingerprint matches then the required transaction can be performed [6].

3. EXISTING METHOD

When ATM card is inserted into card slot the information present on the magnetic strip is read by two card readers present in the card slot. One card reader looks for special code which confirms that card is real. Second card reader grabs account number and password to check against what you entered. If authentication is successful then ATM connects with bank server through telephone network. Now user can perform bank transactions and when transaction is completed card comes out through ATM slot and user automatically logs out. Counting machine is present to count number of notes and receipt comes through printer which gives you information about transaction completed.

- User needs to perform one of the following transactions:

1. Cash transfer
2. Cash Withdraw
3. Balance Enquiry
4. Password change

This is just general method of what happens.

4. PROBLEM STATEMENT

There are several methods through person can hack into the customer's account can steal the money from the customer's account. This is as follows:

1. Skimming: A device is been installed into the card slot and all the information is read from onto the card. A small pinhole camera is fixed above the keypad which takes up all this information. By the help of this information a duplicate card is made by the criminal and can access the customer's account.

2. Lebanese Loop: In this type of fraud, the criminal installs the device due to which card gets locked into the slot the time when transaction completes that time the machine pushes out the card now since the card is locked. The customer moves away from his place for complaining and by the time criminals comes out and will unlock the card and will draw all the money from users account.

3. Lost or stolen card: If the card is lost or stolen that time too there is possibility that users account can be access by criminal.

By many such techniques criminals can access your account. If biometric with some additional security is used then these frauds can be minimized.

5. PROPOSED METHOD

In our proposed system, in addition with biometric we are accessing some of the more features inside an ATM system like

- Automatic door lock
- AI based image processing and currency scanning
- Voice accessible machine using AI
- Insufficient deposits in a tray can be detected
- Message to the cops if something wrong is detected by using GSM module

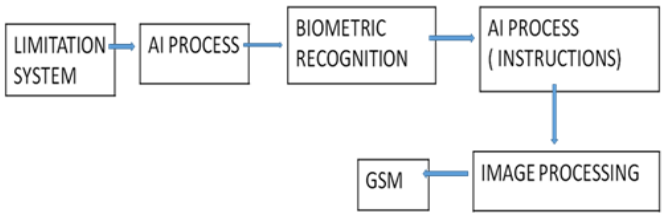

Fig.1 Block diagram of proposed method.

- Limitation system- In this system it contains CCTV as a hardware part and image processing as a software part in which system detects number of heads present in ATM room and limit the person entry as desired by bank rules .
- AI process – CCTV sends signals to the ATM machine where AI responds to the extra head to go out and wait and it also welcomes the user.
- Biometric recognition – As the information of the user is already stored on cloud via bank. Using this technology time will be saved and user can get access only with biometrics and doesn't need to follow the old long procedure.
- AI instruction- Here without touching the ATM machine or buttons user uses voice commands to withdraw money or any other activity. User can access by speaking local languages.
- Image processing – This technique is used inside cash tray of ATM machine for detection of insufficient funds and torn notes.
- GSM – The GSM module will send message to user and bank for withdrawal of money.

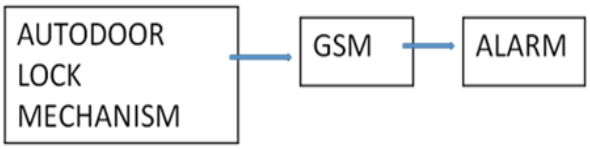

Fig 2 – Block diagram for avoiding theft

- Auto door lock mechanism – During theft either CCTV or motion sensor will detect illegal action. Signal to the stepper motor will be given to lock the door.
- GSM- As soon as illegal motion is detected message or ring to the nearest cop station will be sent.
- ALARM- As soon as illegal motion is detected alarm will start to buzz for residents nearby.
- Moreover, the machine can be operated by blind persons. If found disabled, the mechanism could improve the accessibility of ATMs for handicapped people.

Components Required:

1. R305 fingerprint sensor
2. Arduino UNO
3. GSM Module
4. Motion sensor
5. Camera
6. Stepper Motor
7. Buzzer Alarm

5. FUTURE SCOPE

- QR code recognition.
- scanning of microchip on ATM card
- releasing chloroform via air conditioner during theft whenever illegal moments
  Are detected.
- If the person who can't speak will perform transaction by the use of actions that webcam will detect and AI will respond

CONCLUSION:

The problem of ATM theft and misuse of ATM card has become a major source problem in the society. From the above conceptual model it has been cleared that biometric ATM system is highly secured as it provides authentication. Multimode biometric can be implemented to enhance the security level of the ATM organization [4].This paper identifies a high level model for the modification of existing ATM system by updating biometric authentication, automatic Door lock, AI based image processing and currency scanning system.

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