Aadhar Based Biometric Cardless ATM

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Abstract: **Today Identification and verification of the people is the major issue in online transactions. Information Security and Privacy is required in each and every field. Present paper discuses about security in ATM (Automated teller machine), the main motive of biometric and AADHAR which is used as a key to prevent unauthorized access which in turn helps ATM to recognize a valid access which reduces risks in ATM operations to some extent. The biometric in this paper mainly concentrated about Iris and Fingerprint by image processing, helps in reducing financial loses to the customer as compared to the existing system.**

Keywords: Iris, Fingerprint,Minutiae, AADHAR and ATM.

I INTRODUCTION

AADHAR card is the unique proof to identify the people in India. Biometrics and AADHAR are nothing but the behavioural and physical characteristics that can be stored in the database and it is compared during Verification and Identification. Fingerprint and Iris has different features that can be used to identify the individual uniquely. The pin is nothing but the biometric identity that can be seen but cannot be stolen. Here seeding the AADHAR number with bank account is necessary. The data collected is encrypted at multiple levels. It is decrypted in the memory and leaves no traces on disk. The data centre is protected by many security measures. The complete details will be stored in Central Identities data repository (CIDR).If in case of invalid access the message will be sent to higher authority through GSM.

The most advanced technology in biometric identification has made outstanding efforts solve the unsafe state of problems at ATM. Biometric data collection from people requires more resources and more economical, which cannot be shared with other people also. Our UIDAI solved this problem by introducing AADHAR scheme. AADHAR scheme concentrates on biometric mainly on Iris and Fingerprint. We have choose the same path in order to provide security

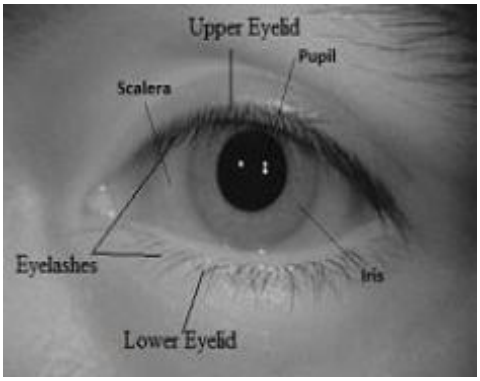

Fig1: Human Eye.

Iris of two different individuals does not match with each other. Two identical twins also do not share the same iris pattern.

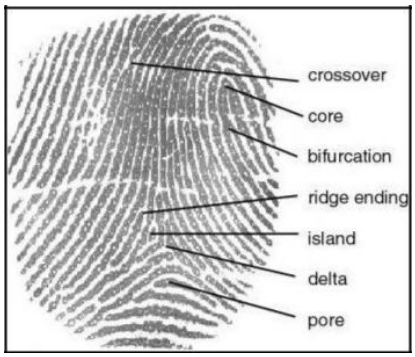

Fig2: Fingerprint.

Fingerprints are the most widely used parameter for individual identification. A fingerprint can be formed from an impression of the pattern of ridges and bifurcations from a finger.

Both Iris and fingerprint features can be used to make the ATM more and more secure.

II RELATED WORK

Mr. Abhijeet S.kale et al [1], proposed an efficient approach based on Arm controller on biometrics, AADHAR card for authentication of customers to overcome the criminal attempts with less risk factor but it is more economical .

Abdul Rahaman shaik et al [2], proposed a best approach based on AADHAR linked biometric mechanism with normal OTP system to overcome unauthorized access of a person's bank account by a hacker but the problem was password guessing attacks are not feasible.

Neenu preetam et al [3], implement the idea of using card less cash biometric ATM system to make quickly authorized a person to withdraw money and it also saves time and cost but it is more economical.

Mr. Mahesh et al [4], proposed an efficient approach based on biometric Fingerprint technology ,instead of using fingerprint as a password for ATM transaction, it provides more stability and reliability but multi model biometric would have been used for more security and privacy.

Ankith kumar [5], propose the idea using biometric or AADHAR card and OTP password based authentication technique, it is stronger method of authentication and verification easy to maintain but OTP passwords cannot be shared with other .

Abhijeet S,kale et al [6], implement the idea of Arm controller on biometrics and AADHAR card provide secured way of authentication and it secures money with less risk factor but is not multi model biometric.

Narendra kumar et al [7], proposed the idea to provide encryption by biometric key, it enhances feasibility and dependability but if it takes much time due to more response times for key generation.

K. Duraiswamy etc al [8], propose the idea of Multi model biometric fusion technique is better authentication and more security but it is very high computational complexity [8].

B.raja et al [9], implement the idea of cryptographic key morphological operators will reduce the complicated operation to generate cryptographic keys and feasibility of the approach for the attacks has to be taken into account .

Roopam kumar Rao [10], implement the idea of data encryption standard, crossing number is efficient and good performance and multi model biometric would have been more secure .

Binsul C. kavoor [11], proposed the efficient method for ATM based on biometric i.e. iris recognition, it is reliable but the problem is automatic segmentation was not perfect and FRR is 0.238% , FAR is 0.005%.

Supriya m.h et al [12], proposed the idea of using iris biometric recognition by canny operator, it is very efficient way for biometric ATM but it is computationally redacted.

Prateek-Verma et al [13], propose the efficient way based on iris recognition biometric to provide high recognition with reduced FAR, FRR. But it is lack of effectiveness and FAR is 0.25%, FRR is 0.11%.

Vanaja et al [14], propose the idea of iris texture analysis for security system ,it makes efficiency rate is more and isolated iris region could making the recognition process less accurate since less accurate less iris recognition.

Mrs. Nitasha soni [15], propose the idea of ATM security by using fingerprint recognition, Fingerprint can't be stolen and for some people it is very intrusive because is still related to criminal identification.FRR is 0.238%, FAR is 0.826% .

Swaroop Borulear Kinjal Patel et al [16], proposed the idea based on fingerprint security using image processing, it is platform independent and results are very accurate and it is portability and low cost but it might be more economical and FRR is 0.1%.

Ravi J. et al [17], implement the idea of fingerprint recognition using minutia score matching it will give better acceptance ratio, but it is more economical because the data collection from the people might be difficult FAR is 0.826.

Vaibhav K. Pandit [18], implement the idea of atm security using Fingerprint recognition to provide high level security

III EXISTING SYSTEM

The Customer inserts a plastic ATM card with four digit secret pin number if the pin is correct the system allows for the further transaction. Using the ATM customer can access the bank accounts to make the transaction such as cash withdrawals, balance enquire etc.., In this module the fraud cases reported repeatedly and this system is not much secure.

IV PROPOSED SYSTEM

In proposed system we are not at all using plastic ATM card and PIN. Instead we are making use of Biometrics.

Iris

Iris lies between Cornea and Lens. Iris pattern does not match with other individuals because of epigenetic nature. iris recognition can be done by Daugmans algorithm. Iris segmentation is done by Hough Transform where we will get iris as well as pupil region by excluding features like eyelids and eyelashes.

Normalization is converting the segmented images to constant dimensions. Next the Histogram equalization is done to adjust the contrast of the image.

Inner iris boundary can be found by Canny edge detection technique.

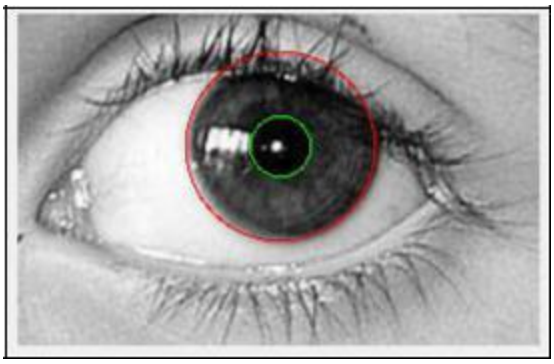

Fig 3: Iris Segmentation.

Fingerprint mainly concentrated about Fingerprint Image enhancement where it will make the image clear for further use.

Histogram equalisation maximizes the visualization effect in enhanced image. Fingerprint Binarization converts grey scale image into a binary image.

Thinning is the method that reduces the thickness of each line of pattern into one pixel.

Minutiae extraction: Minutiae points can be extracted which may be formed by ridges and bifurcations.

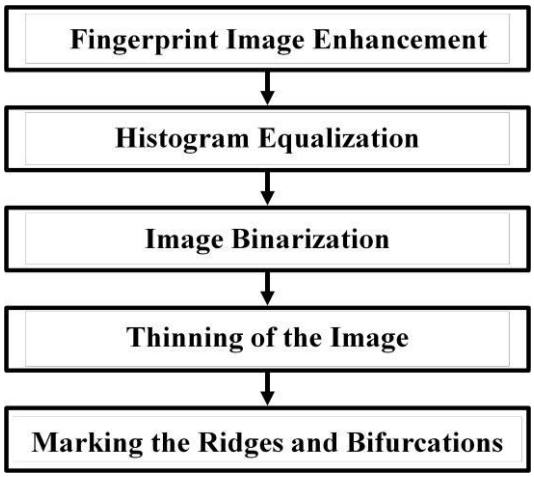

Fig 4: Flow of Fingerprint feature extraction

Cryptography

One solution to avoid from hackers is multimodal biometrics into Cryptographic Key generation where we can achieve incredible security.

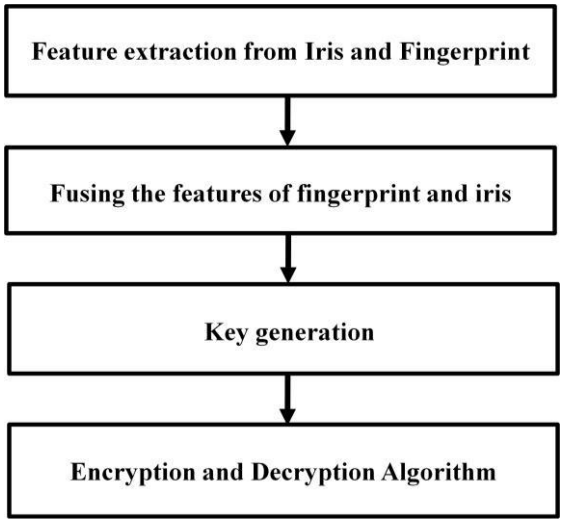

Fig 5: Flow Diagram for Key Generation.

After extracting the features of Iris and also fingerprint a key will be generated and that key can be given as input to the Cryptographic algorithms where the data will be encrypted [19]. Through this the data will be much secure.

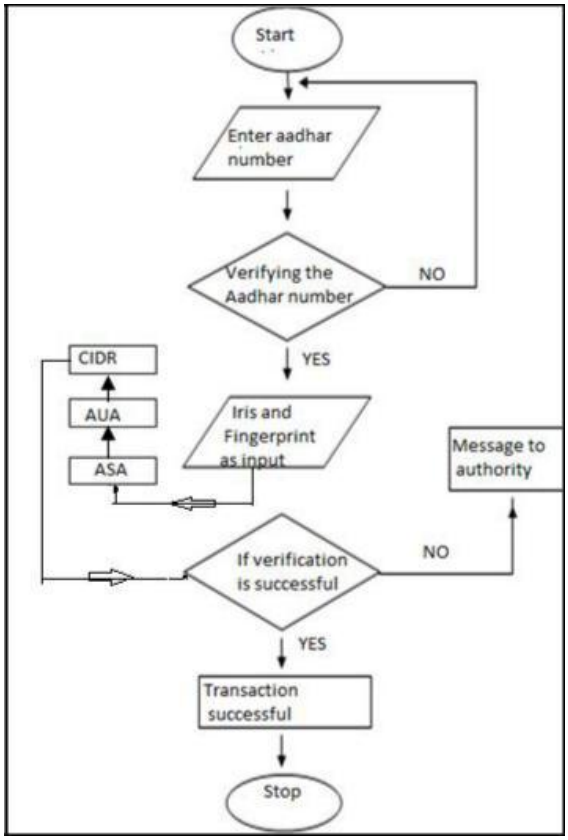

Fig 6: Flowchart of Proposed System.

The above flow diagram gives a description about our proposed system which is much secure when compared to conventional system.

Whenever a person enters into ATM centre he has to enter his AADHAR number. If the AADHAR number is valid then moving towards next step, that is the person has to give his fingerprint and iris as input to the scanner , if both of them matches with the given AADHAR number where the details compared with the UIDAI(Unique Identification Authority of India) CIDR(Central Identified Data repository) database by connecting through AUA(Authentication User Agency) and Authentication Service Agency(ASA) if it comes true then the transaction is successful, otherwise a message will be sent to the higher authority through GSM.

All these measures mainly concentrate about public security and also safety which does not exist in the existing system.

Measures to avoid unauthorized access:

- Skimmers: Malicious card readers they grab the data of the card in existing system our system is not using the card itself.
- Pin cracking and Card trapping: Since we are using biometric it can be avoided.
- The main important measure is the biometric lock that means whenever the user locks his biometric data ,even he can't able to transact with his biometric data also unless he unlocks it.
- M2FUSE-ID is a fingerprint sensor which can detect the forged or plastic made duplicate fingerprints because it scans including the blood vessels.

Hackers may find some other ways to hack but the defenders are there .Till date AADHAR database is not hacked which is one among the World's biggest project of worth.

Advantages

1. Cancellable biometrics
2. No necessity of remembering pins
3. Iris can be accomplished successfully while wearing eye glasses also.
4. Livens techniques to avoid forgery
5. We can stop avoiding ATM cards which are made of plastic.

Limitations

1. When several persons make transactions the AADHAAR server might become busy.
2. False acceptance and False rejection ratio of Iris and Fingerprint is moderate.
3. It cannot be possible to replace if biometric information is lost i.e.., the Iris and the Finger but ATM cards can be issued once again.
4. More cost when compared to the existing system.

V CONCLUSION

In this paper, our main aim is about providing Security in ATM by making use of AADHAR scheme where the unauthorized access can be reduced to some extent which would be helpful for the public.

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