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3-Level Authentication for Bank Locker Security

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***Abstract*—** Now-a- day's people are more concern about security of their valuable things. As security towards our valuable things is at most risk because we are using bank as safer place. As with tremendous development due to new technology era people started earning more and buying more precious things. With this huge development of the same need of security is more. Security is very important, for this purpose as people keep these valuable things in a bank locker as for safety. Still, we often hear in newspapers every now and then that some unauthorized person has access the locker and stolen valuable things. In order to overcome this, authentication of the person who wants to uses locker is very important. To overcome this security issue, a strong security system has been proposed using three level as voice identification, iris detection and GSM technology for OTP. Our goal is to provide solution to security for bank locker from unauthorized person. As there is demand for more efficient security techniques to avoid access bank locker by unauthorized person. The main goal of our paper is to provide 3-ways authentication to provide high security. In this system there will be three steps to authenticate an authorized user.

Keywords— Smart Phone, OTP,Iris Detection, Voice identification.

I. INTRODUCTION

Now-a-days safety has become an essential issue for most of the people. Increase in threats in bank has cause of concern as the banks are always targets by criminal. Increasing crimes in banks has become a serious issue. In order to overcome this type of threats, authentication of the person who uses bank locker is very important. Because of this risk, there is a need to define security techniques for identifying a person. So, only authentication of the user is an area of concern. However, as per research in this domain smarts cards might be stolen, passwords can be easily cracked. Manual way bank people need to be involved with every person. To provide high security and to make easier process, we are taking the help of different technologies like OTP, Voice matching and Biometrics. To provide high security, biometric authentication is strong technique as each person has unique biological information. Biometrics can be defined as recognizing and identifying a person based on different biological characteristics. Biometrics commonly includes fingerprint, face, iris, palm, etc for recognition and verification of authorized user. In this paper, we provide three level securities by IRIS authentication and smart phone. Smart phone will help to provide request and get one time password which changes for every access and gives high security. By this three level security system we can provide high security and save the time of both bank employees and the customers.

In this paper, Section I contains the introduction of, Section II contain the literature survey, Section III contain the proposed system, and Section IV Advantages Section VI concludes research work with future directions).

II. RELATED WORK

This section describes the survey of different technology that has been used in bank locker systems. In olden days, only mechanical locks were available which was not secured enough. As technology grows, modern electronic locks were introduced into the market to avoid further theft and unauthorized access. In most of the banks, the locker systems involve manual locking system. The major drawbacks of such manual locking systems are lack of security and waiting time of the customers. This can be overcome by our system by focusing both problems. There are many techniques which are already implemented.

Hiloni S. Detroja, Prutha J. Vasoya, Disha D. Kotadiya and Prof. C. B. Bambhroliya [5] have proposed Subhash H. Jadhav , S. S. Agrawal In their proposed system first the user will enroll his user name, password and his mobile number, then the person will put finger on finger print module and finger print will be scanned and stored with fingerprint id . In this way user enrolment process will be completed. Then user will perform login operation. During login operation user first swipe RFID tag on the RFID reader if it is ok then

finger print of authentic person will be scanned. If the finger is correct of that particular person then it will allow and display finger is matched and if the finger is not matched of that particular person then it will gives the signal to the siren and will play some time and then message goes to the user that the unauthorized entry is there please check. And if the finger print is matched then it will gives the signal to do next step to enter the Password, then the authorized person will enter the password. If the password is incorrect then it will play siren and the system will send the message to the user i.e. the unauthorized person is trying to open the lock so please check it and so on, if all the conditions are matched then the microcontroller processes the data and correspondingly drives the motor to operate the load i.e. lock will be opened. The main advantages of using RFID, biometric fingerprint, password and GSM technology is highly secure and reliable locker system than any other locker systems. This system can also create a log containing check in and checkout of each user along with basic information.

Password based locking system was one of the modern electronic lock system where password is used as the verification factor.

Then comes the next electronic lock system which is an RFID based system. The working of RFID based system is described where RFID tag and reader are the main components and RFID value acts as the authentication factor. Later on the biometrics lock system came into existence as face recognition, fingerprint recognition, voice recognition, iris recognition and identification and work on the principle "what we are". Here the personal identification of each individual is used as the factor for verification. An encryption based lock system was introduced where the original password was encrypted to generate the new password which is been used to unlock the door. This technique is mainly introduced to prevent hacking.

Gaurav Chavan, Sourabh Dabke, Anup Ghandghe, Mrs.K.A.Musale [7] have design advance security systems for banking which will ensure the genuine access of the locker overcoming all the misuses. For this we are using unique password technique, password verification and lastly the OTP verification. The unique password technique to be applied in bank security system because this kind of technique is effective and fast, and after entering the first door user has to enter OTP which is being sent through android application so that IR is disabled and second door is opened, if the user enters the first door and crosses the IR without entering the OTP provided the alarm signal would be raised to make an alarm. After verification of the OTP he has entered second door will be opened, and the person can Access locker only and only if he clears the three security level.

Sagar S. Palsodkar*, Prof S.B. Patil [1] have proposed the system in which bank that will collect the biometric data of each person for accessing the lockers because in this system only authenticated person recover the money, documents from the lockers. As biometric and GSM security has been used hence more advantages then other system. Limitations: As fingerprint or face biometric system is used then large data base is required.

R.Ramani ,S. Selvaraju, S.Valarmathy, P Niranjan [2] have proposed and implement a bank locker security system based on RFID and GSM technology which can be organized in bank, secured offices and homes. In this system only authentic person can be recovered money from bank locker. The RFID reader reads the id number from passive tag and sends to the microcontroller, if the id number is valid then microcontroller send the SMS request to the authenticated person mobile number, for the original password to open the bank locker, if the person send the password to the microcontroller, which will verify the passwords entered by the key board and received from authenticated mobile phone. if these two passwords are matched the locker will be opened otherwise it will be remain in locked position. This system is more secure than other systems because two passwords required for verification. As network signals are not available, then locker may not be opened.

P. Sugapriya, K. Amsavalli [3] have collected datasets and maintained in bank agent server. The machine has a camera to capture the pattern flow of user and sent for processing features of the logic were compared and user where recognized. In addition to the authentication of user there is another system to identify the user before that RFID tad checking is needed. Image processing is used and keypad password is needed for another level of security. In future bank can implement this type of authentication option for banking and from this project shows that all the bank accounts can be accessed without using cards through this face recognition efficiently and safely. Three level banking security is used. Time consuming method because huge datasets are require.

Gayathri and Selvakumari [4] have proposed access control system forms a vital link in a security chain. The Fingerprint and password based security system presented here is an access control system that allows only authorized persons to access a restricted area, They have implemented a locker security system based on fingerprint, password and GSM technology containing door locking system which can activate, authenticate and validate the user and unlock the door in real time for locker secure. It will provide strong authentication key. But it is time consuming.

Raghu Ram.Gangi1, Subhramanya Sarma Gollapudi[8] have implemented a locker security system based on RFID, FINGERPRINT, PASSWORD and GSM technology containing door locking system which can activate, authenticate, and validate the user and unlock the door in real time for locker secure access. Fingerprints are one of many forms of biometrics, used to identify individuals and verify their identity. This article touches on two major classes of algorithms and four sensor designs (optical, ultrasonic, passive capacitance, and active capacitance). The main advantage of using RFID, FINGERPRINT, PASSWORD and GSM is more secure than other systems. In general terms, RFID is a means of identifying a person or object using a radiofrequency transmission. In other words RFID is an electronic method of exchanging data over radio frequency waves. The technology can be used to identify, track, sort or detect a wide variety of objects.

Prajwal, Naaga Soujanya, Shruthi N [9] we have proposed a locker system, based on RFID and Password technology. This system also finds its application in house safes, Smart cash box, offices, etc to safe guard valuables. When a customer steps in front of locker room the IR sensor gets activated and the customer needs to give the access card, if the customer fails to do so in 60 seconds the buzzer gets activated, only authenticated person can enter the locker room. Once the customer is inside the locker room, the customer is again asked to give the access card for their respective locker. If the customer is authenticated, they are required to enter the correct password, otherwise safe gets locked.

III. PROPOSED SYSTEM

1.1. BIOMETRIC SYSTEM

A biometric system is nothing but pattern or feature extraction and authentication technique. That feature database is already store and input will be matched with already store feature. Biometric system runs in two ways verification or identification. While recognition involves comparing the acquired biometric information against stored in the database, verification involves matching of the both. A simple biometric system consists of four basic components as

1. Camera to capture image
2. Feature extraction algorithm.
3. Matching algorithm
5. Concluding Identity

1.2. IRIS RECOGNITION

Iris recognition is an biometric identification system that uses pattern-recognition techniques on images of one or both of the irises of an person. Each person have unique, stable feature of iris. A key advantage of iris recognition is speed of matching and unique in pattern of each individual. Also many governments automated system uses iris as best biometric method as it is protected internally and externally.
In this proposed system 3 level security will be providedas in Figure 1.

1. Level 1: A person will visit bank and request for permission to open a bank locker through a smart phone.
Admin of bank will grant permission in terms of OTP to the person. After putting OTP user will be authenticated. If not then again request will be send.

2. Level 2: A person after completing level 1 authentication will input voice through android application which is nothing but a secret text will is only know to the account holder. The voice input will be given to the system. Then the system will authenticate the correct voice of the user.

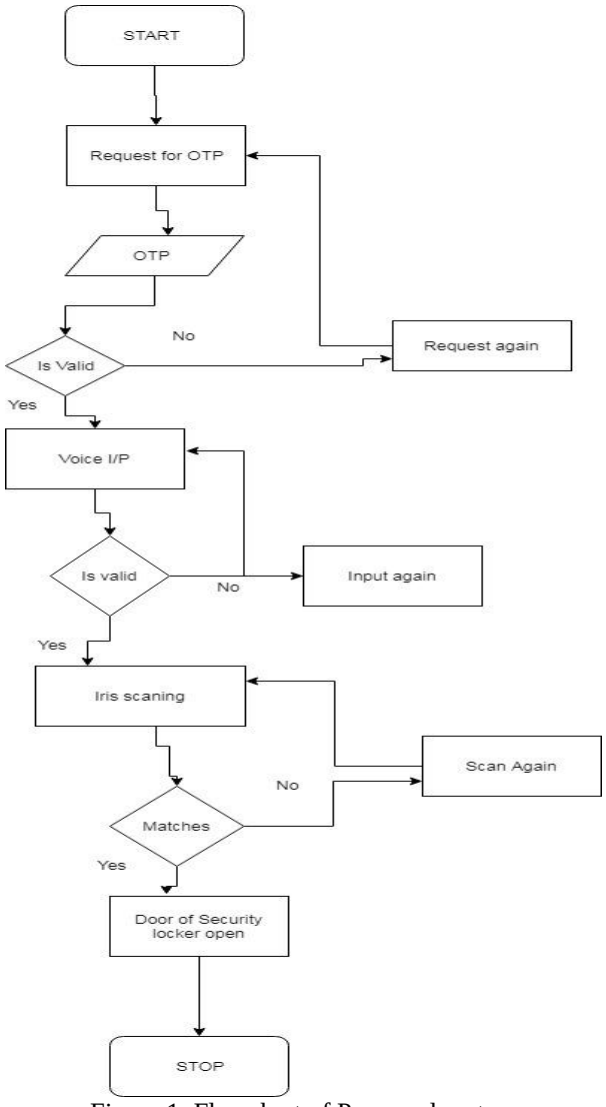

Figure 1: Flowchart of Proposed system

3. Level 3: After this two level authentication user will be looking to camera connected. Where iris of the user will be scanned and already store database matching of both will be done. If matches the by automated system bank locker lock will be open. As the advantage of above related work we have proposed a system where person will be authenticated using 3 level which provides high security to the person. Also bank employee will have no involvement. The system will be practically implemented with low cost without person without carrying about key, passowords, RFID.

Advantages :

1. Time efficient Solution as fully automated
2. No involvement of bank employee manually
3. Cost effective
4. Iris is unique for every person so highly secure system

Nothing to remember and nothing to carry.

IV. COMPARISON OF ALL METHODS

Sr. No.	Method	Different method Advantages	Different method Disadvantages
1	Fingerprint or Face biometric system	secure	Large data base is required.
2	Finger Print and RFID	Highly secure	Time Consuming
3	RFID and Password	Secure	Less Time Consuming and less storage
4	Voice Authentication	Highly secure	Storage is more
5	Voice authentication + IRIS authentication + OTP	Highly secure	Storage and time is less as compare to above methods.

IV. CONCLUSION

We have proposed a 3 level bank locker security system using OTP, IRIS Recognition and Voice recognition by considering different pros and cons of various method. The implementation cost of the above proposed system is less as compared to other methods. Its main advantage is high level of security is provided. There is a lot of future scope for the method, because a security system helps you protect your property and your privacy. The proposed system can be modified and developed according to the rising needs or demands.

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