A Survey on Securing the ATM Pin Based on Artificial Intelligence Security

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ABSTRACT

An Automated Teller Machine (ATM) is the outlet of banks. Debit cards are the basic requirement of any ATM to withdraw money. There are many advantages, but there are also equal disadvantages. ATM users have many threats to their banking details. An ATM pin is the most confidential data to access one's account to withdraw cash. Snoopers use Spy cameras to predict ATM Pins. ATM Machines are vulnerable to such fraudulency since they have poor maintenance over the ATMs and lack security features. ATMs in common have a usual Number Pad which makes shoulder surfing an easy way for fradulents to happen thus making User's Accounts unsafe. Spy Cameras are fixed perpendicular to the ATM keypad to record the PIN. Most often these cameras are not identified by the users or the Bank Officials in charge of it. This efficient method provides a way to stop these activities. ATM is redesigned with a touch-based keypad system that changes its layout (i.e, number position) dynamically after the PIN is entered by the user. Based on the number of digits in the PIN, the layout count will be increased. To avoid the usage of Spy cameras, an infrared ray transmitter and receiver are implanted around the keypad. To detect the presence of a Spy camera, IR sensors are placed perpendicular to the keypad which makes an intimation in the ATM display when some static object is detected and freezes the keypad.

Keywords: ATM pin, Touch-based keypad, Infrared rays, IR Sensor

I. INTRODUCTION

The Automated Teller Machine (ATM) is the electronic machine that was invented by John shepherd-Barron and Donald Wetzel. ATM plays a Transformation in the banking sector. An ATM is a complete basic transaction without the aid of the branch representative. Many ATMs provide additional options like deposits, checking our balance, etc… which brings more efficiency to our routine life. **Advantages:** It serves for 24 hours. It is widely located in every place like a railway stations, hotels, colleges, theaters, malls, etc. ATMs have become relatively cheaper compared to the counter transaction. Despite

all these advantages, it has been noted that [5] customers face enormous problems like ATMs fraud, and the security of ATMs leads to an apparent rise in theft problems. [6] The key resource for this kind of theft in ATMs happens through PIN recognition. Different ways ATMs are prone to theft happenings are

SHOULDER SURFING - It is one of the acknowledged methods for glancing others' passwords over users' shoulders while they are performing their process in front of the ATM [1].

HAND MOVEMENTS - It is one of the techniques used by ATM frauds by seeking the hand moments of the user and predicting the PIN of the user [4].

DARK CHAMBER - The other possible threat for the attacker is to use the spy camera to record the keypad while users enter their PIN [7][9].

II. RELATED WORK

Automated teller machines (ATMs) are electronic banking outlets that allow people to complete transactions without going into a branch of their bank. The user can perform several banking activities like cash withdrawal, and money transfers with the help of an ATM. Some ATMs are simple cash dispensers such as check deposits, balance transfers, and bill payments. Although the design of each ATM is different, they all contain the same basic parts such as a card reader, keypad, cash dispenser, printer, and display screen. A card reader is a device that can decode the information contained in a credit or debit card's magnetic stripe and a keypad that is mainly used to enter the password. A cash dispenser is a machine built into the wall of a bank, which allows people to take out money from their bank account using their cards. A printer is a device that will print thermal paper which is used for receipts in ATM transactions and a Display screen displays the transaction information. Each step of withdrawal is shown on the display screen. These are the elements in the existing system of the atm.

III. LITERATURE SURVEY

The purpose of the study is to provide adequate information on the research being proposed. We belong to the edge of the computerized and smart world. A smart step toward the economy is the introduction of Automated teller machines (ATM) have been adopted by banks because they offer considerable benefits to both banks and their depositors. The ATM system is mainly used by bank clients. Based on the literature papers, we have found that ATM PIN is still being stolen by burglars using Pinhole cameras, Shoulder surfing techniques, and hand movements. Artificial intelligence (AI) and the Internet Of Things (IoT) work together to provide an efficient way of securing the ATM PIN.

3.1 PURPOSE OF STUDY

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3.2 DETAILED SURVEY

Implementation of Random Number Generator Using LFSR for High Secured Multi-Purpose Application.

The work proposed in [1] (LFSR) is a shift register whose input bit is a linear function of its previous state and generates the random number. Random numbers are enabled as digital systems become faster and denser, it is feasible and useful for security purposes and this is highly secure. LFSR itself is not

secure as the output streams of LFSR are deterministic and the position of the taps makes the next state predictable.

The Heat of the Moment: Characterizing the Efficacy of Thermal Camera-Based Attacks.

In the idea focused in [2], Conventional cameras need to film the code as it is being typed, whereas thermal cameras can recover the code for some time afterward. A theft attack has the advantage of using a conventional thermal camera in that the codes do not need to be captured while they are being typed. Images are difficult to render in specific objects having erratic temperatures. Accurate temperature measurements are hindered by differing reflections from surfaces.

A safeguard against ATM fraud

The idea implemented in[3], Once the entered PIN matches with the one stored in the server, OTP could be received via registered mobile (SIM card) in the user's ATM bank account. The mechanism is en route to avoid shoulder surfing and hidden camera activities. The approach made in this paper isn't feasible in the context of the time and availability of a particular mobile network.

Enhanced security for ATM machines with OTP and Facial recognition features

In the novel method in [4], Face recognition technology helps the machine to identify each and every user uniquely thus making the face a key. Face recognition and One-Time Password (OTP) are used for the enhancement of the security of accounts and the privacy of users. The major drawback of this system is that if a particular network service is down, then it becomes impossible for the user to receive OTP and if the camera does not work properly or is damaged then the transaction is hindered.

ATM fraud detection and prevention

In the idea focused in [5], The types of ATM frauds & securities, modus operandi with general precautions to protect the ATM frauds. Training should focus on the nature and risks associated with ATM fraud along with examples to illustrate the threat and exposure.

The fact can not also be hidden that the Indian ATM industry is in a growing stage, this provides also an opportunity for the fraudsters.

Improving Security Using a Three-Tier Authentication for Automated Teller Machine (ATM)

The work proposed in [6] is, Three-tier authentication model with three layers of authentication using password, fingerprint, and One-Time-Password (OTP). The result of this system is improved security, interfaced with a fingerprint scanner for biometric authentication. It is evident that the authentication process is faster with the existing system than the proposed system. It takes more time to be authenticated in the proposed system and if a particular network service is down, then it becomes impossible for the user to receive OTP.

ATM robbery prevention by using advanced security

In [7], 3-layered advanced ATM theft security systems are GPS, vibration sensor, and motion sensors at the entrance to GPS technology in the ATM machine. Our proposal supports the smart city concept. Geological location will always be traced to an ATM machine providing complete ATM theft security. This advanced secured system may be costly as compared to the existing one. Making an ATM machine will be a little bit complex in structure.

3.3 FINDINGS OF THE SURVEY

From the continuous surveys, it is determined that there is a lot of research that has been taken on protecting the PIN from Bulgares. Pinhole cameras and shoulder surfing is the major cause of stealing the atm pin. To avoid these causes the most common techniques used are One-time password (OTP), face recognition, fingerprint, and usage of Thermal cameras. All of the above-mentioned techniques have At Least one drawback in securing the atm pin. For OTP if a particular network service is down, it takes a period of time for the user to receive OTP. Biometric authentication like face recognition and fingerprint may delay the timing of transactions being processed and also be difficult in facing emergency situations.

For face recognition, if the camera does not work properly or is damaged then the transaction is hindered.

3.4 ISSUES IN THE SYSTEM

Unfortunately, the existing system is not scalable, since it does not achieve full security for protecting the ATM PIN from burglars. There also abide some drawbacks in the existing system which lead atm users to lose trust and confidence in banks. Traditional keypads in the atm lead to theft like Shoulder surfing and hand movements. Usage of Pinhole cameras in ATMs became a vast advantage for the burglars. By using all these theft techniques burglars can easily crack the user's ATM PIN.

IV. PROBLEM STATEMENT

Bestowing the bank statement, many filed a complaint that the user's PIN had been glanced at and some malicious activities have occurred and are still yet to happen. These activities made the innocent people suffer to a great extent where their savings and their salary or the balance have been heisted. ATMs have a vast range of usage. Security is a major issue in Automated Teller Machines (ATM) with the widespread utilization of electronic transactions it is necessary to increase customers' recognition accuracy. It can offer a convenient and secure mode of authentication to the customers. Almost 80% of the world population started to make use of instant cash withdrawals. This advancement in technology gave away to the plunderer to make a theft with less effort. As the number of persons using ATMs is becoming more desirable targets for attacks. These upcoming attacks could be counted as a security risk in the form of card cloning or PIN release, etc. These risks broadly lead to a violation of privacy, and direct financial loss due to ATM fraud. It has been generally believed that high-quality security perks up the trust and confidence of end-users, but it has been observed that the so-called high-quality security of ATM machines is decreasing day by day. Moreover, the burglar uses the hand movements of the user while the user enters the specified PIN to make out their transaction or to complete their transaction. People suffer enormously from these malicious activities. Plunderer uses some spy cameras to capture or know the user attributes. The ATM card or PIN of a user can be spied upon and can be accessed easily by obtaining the card by faulty means. This can lead to some serious consequences. This hardware device records the PIN entered by the user. They should not recognize the PIN entered by the user and this must be blocked from a burglar. This happens due to the elegant method of entering the PIN in the atm. These social problems must be rectified, which can be done with an alternate method of entering the particulars to make chaos for the burglar.

V. CONCLUSION

This enhances the method of protecting users' PINs when physical contact is made with an ATM. It makes similar changes to the existing ATM architecture to ensure the security of users from snoopers. From these many banks, customers are reassured that their account details and cash cannot be tampered with, hence, better service delivery will attract many customers to use ATMs. It makes similar changes to the existing ATM architecture to ensure the security of users from snoopers. This advanced ATM theft security system will provide a secure and smarter for human beings.

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