Global Scientific JOURNALS

GSJ: Volume 12, Issue 3, March 2024, Online: ISSN 2320-9186
www.globalscientificjournal.com

SIMULATION OF CARDLESS AUTOMATED TELLER MACHINE (ATM) SYSTEM ACCESS USING FACE RECOGNITION

Adeleye Saheed Akinloye[1]
adeleye8@gmail.com
Federal University of Petroleum Resources

Prof. Emmanuel Onibere[2]
Dept. of Computer Science
University of Benin

Ozor Chidinma C[3]
Dept. of Computer Science
Delta State School of Marine Technology, Burutu, Nigeria.

Abere R[4]
Dept. of Computer Science
Federal University of Petroleum Resources

Favour Ediseimokumor Seregbe[5]
Dept. of Computer Science
Delta State School of Marine Technology, Burutu, Nigeria.

Abstract

ATM was most popular for the bank customer for money transactions due to technology improvements in financial infrastructure. A new generation of ATM cardless transactions based on face and Eye recognition systems is replacing ATM cards to enhance security. A high-quality image has an essential role in the recognition process, which is based on a convolutional neural network (CNN). Face and Eye image is used for authentication purpose. Firstly, a particular person's face and Eye image is compared with the database images. Then the comparing output result is matched, the Money Transaction Process initiated. If an unauthorized person is identified, the payment process is not started. It will fail. Thus, a bank model which provides security by using Facial and Eye and face verification software by adding up Eye and face recognition systems can reduce forced transactions to a great extent and offer complex safe authentication.

KEYWORDS: ATM, Facial Recognition, Transaction

1.0 Introduction

The banking sector is one of the essential parts of day-to-day human life. People widely use banking facilities for their economic activities. An Automatic Teller Machine (ATM) is an electronic machine used for accessing a bank account from anywhere without the help of bank staff. The user can perform several banking activities like cash withdrawal, money transfer with the help of an ATM. It is noted that the frequency of crimes related to ATMs is grown consequently there is a demand to provide improves security to ATMs. Previous technologies provide security to transactions for the identification of the authorized user. However, this is limited to secure transactions with ATMs. Currently, ATMs authenticate transactions using the card and pin method, and then they allow access to

banking services. The ATM system verifies the PIN entered against the stored permission PIN for every ATM user. When a match is found, the system identifies the user and enables access to all ATM services. If there is a discrepancy, the user authentication procedure fails, and the user is given two additional tries to input the right PIN. If the wrong PIN is entered, the card gets banned and held by the ATM. Previous efforts concentrated on smart card approaches to give greater security to ATM transactions, however GSM-based technique is also employed for the same goal. At the same time, some system uses a combination of both strategies. Currently, ATM security is supplied to the transactions only. As the number of ATM-related crimes such as robberies, breaking into ATMs, ATM password hacking is going on around, the technology has to be brought out to overcome this, and the approach has to be enhanced. Banks have to be more diligent in securing ATM transactions. In this period, the existing technology contains Card readers, a digital pad, ATM PIN and Video Cameras. Current system offers clients with an ATM card and it's PIN.

Nowadays, a PIN can be hacked and scanned quickly by using ATM scanning machines and video cameras. The cash drawer is equipped with a contact switch which delivers feedback when the drawer is opened or broken. This technology has limitations, hence biometric technology is adopted for ATM transactions. Eye and facial recognition technologies are employed for ATM transactions in a biometric way. In this paper work, first present the system design, which employs a multimodal recognition method to increase security and combines Eye authentication with facial recognition. The facial recognition approach is also utilized for security in which the face is identified for authentication reasons. Also, security is strengthened & facial recognition features.

The current facial and Eye image is matched with the database image in this system. After matching the images accurately, the cash delivery request will be forwarded to the ATM. There was no single eureka moment that marked. L.R McRobbie (2015). Apart from using ATMs other computer-based IT based banking technologies are available for examples internet banking and mobile banking, but the demand for cash still remains high and bank branches are rising continually worldwide as customers demand cash to be accessible at different locations.

The mentioned banking system/ technology such as internet, mobile and traditional banking cannot allow customers to have

© GSJ

access to their cash at convenient, and level of internet access and the cost of procurering the facilities to their cash at convenient, and level of internet access and the cost of procuring the facilities to use both the internet and mobile banking such as computer or sophisticated mobile phone are also barrier in using such technologies. C.H, Ugwuishiwu, M.E. Ezema and N.G ugwuegbu (2013). the existing system although growing day by day and meeting many customers' needs fails in the case when simplicity and over friendliness is measured. Currently one major way to get access to your account in other to perform some of the transaction mentioned earlier is through the use of ATM card. There are lots of problem associated with the use of ATM card, these include:

1. Loss or theft of ATM card which would deny customers access to the ATM channel until replaced.
2. ATM Card skimming (the illegal copying of information from the magnetic stripe of a credit or ATM card)
3. Damaging of ATM card and expiring
4. Card gobbling

2.0 Materials and Methods

Florea (2013), presents the realization of a development framework for software interpretability in the banking financial institution and an integrated solution for achieving sales process automation in banking. The implementation of a web-based solution to standardize, optimize and manage flow of sales/pre-sales and generating new leads is needed to maintain a competitive edge in a very active banking market. The study focuses on presenting the identified techniques and procedures to implement these requirements. In the study, it was concluded that the solution is mainly dedicated lending management, achieving this iteration of two elements commonly used in current organization which are; a solution for customer management and business process that involves CRM an online portal for document management.

Odusina, (2014), this author investigate ATM usage and Customer's Satisfaction in Nigeria. He discovered that despite the increasing number of ATM installations in Nigeria. Customers' needs are not satisfactorily met as customers are always seen on queue in large number at various ATM designated centers as well as poor service delivery of some of these machine. He uses research engages comparative analysis of three banks in ogun state, Metropolis of Nigeria viz-a-viz first bank, Guaranty trust Bank and access bank. Data

© GSJ

was collected with the aid of questionnaires to sampled population of 200 respondents and chi-square statistical tool was used to analyze the data and and the results showed a positive and significant relationship between ATM usage and customers Satisfaction.

Moutinho (1992) established that ATM facility resulted in speed of transactions and saved time for customers.

Yekini et al (2012) conducted an investigative research on the use of ATM card. The authors made effort to conduct an interview with structured questions among the ATM users, data obtained was analyzed, the result proofed that a lot of problems was associated with the use of ATM smartcard. Some of the problems identified are: difficult to prevent another person from attaining and using a legitimate person's card, conventional smartcard can be lost, duplicated, stolen or impersonated with accuracy. To address the problems, the author proposed the use of biometric voice-based access control system in automatic teller machine. In the proposed system, access will be authorized simply by means of an enroll user speaking into a microphone attached to the automatic teller machine.

Yazeed et al. (2013) in their work, the authors are of the opinion that Automated Teller Machine (ATM) packages of banks in Ghana have operated for a very long time without full exploration of all essential functions of the facility and this has been a surprised to the public and other decision makers about the effect of ATM operations on customer demand for it. That leads to author's research intrests to assess the operational features of the ATM and the factors that account for customers stress to use ATM.

Mosabber Hossain (2006), the study was focused on a clear view of two different working procedure of ATM (Automated Teller Machine) in Bangladesh. Two processes are core banking and consortium of banks and author reached a conclusion after few surveys to the bank. The author is of the opinion that the major problem of using ATM is that the user do not have the information when the ATM machine is off or on. Consequent, if user find it closed after traveling a long distance then it is very much annoying. To support his suggestion, he built a software which can be really helpful to the situation and also identify few problems like booths limitations, using limitations and transactions and suggestions was made to arrest the situation.

3.0 Existing System

William and Kannan, (2019) worked on Hybrid Facial Feature Extraction Algorithm for Enhancing ATM Security System. The

Automated Teller Machine also called Any Time Money. The main intention of inventing this ATM system is to receive our savings money in the fastest way without any making delay. At first, in the banking sector does not have any ATM system to withdraw the money. If the user wants to withdraw the cash, then the user should visit the respected bank and complete the withdrawal process. Then only he can withdraw the money. But in the computerized world, all the scientific systems have been improved today. Actually, in an existing ATM system, the user can insert or swipe the card in the machine. Then the user or cardholder performs the basic ATM operations. After completing all the processes and the user will receive cash and a receipt from the machine. This algorithm handles the security issues and it verifies the card holder while the user using ATM service. The normal ATM system is which identifies only the QR and Password of the user. But in this HFFE algorithm will detect the features (nose, lips and etc) of the user and it will execute, when the cardholder starts to type or enter the 4-digit password. So far, we protect our account information from the fraudsters. This proposed system of ATM service architecture diagram is discussed in the system architecture section. Figure 3.1 illustrate the existing system.

© GSJ

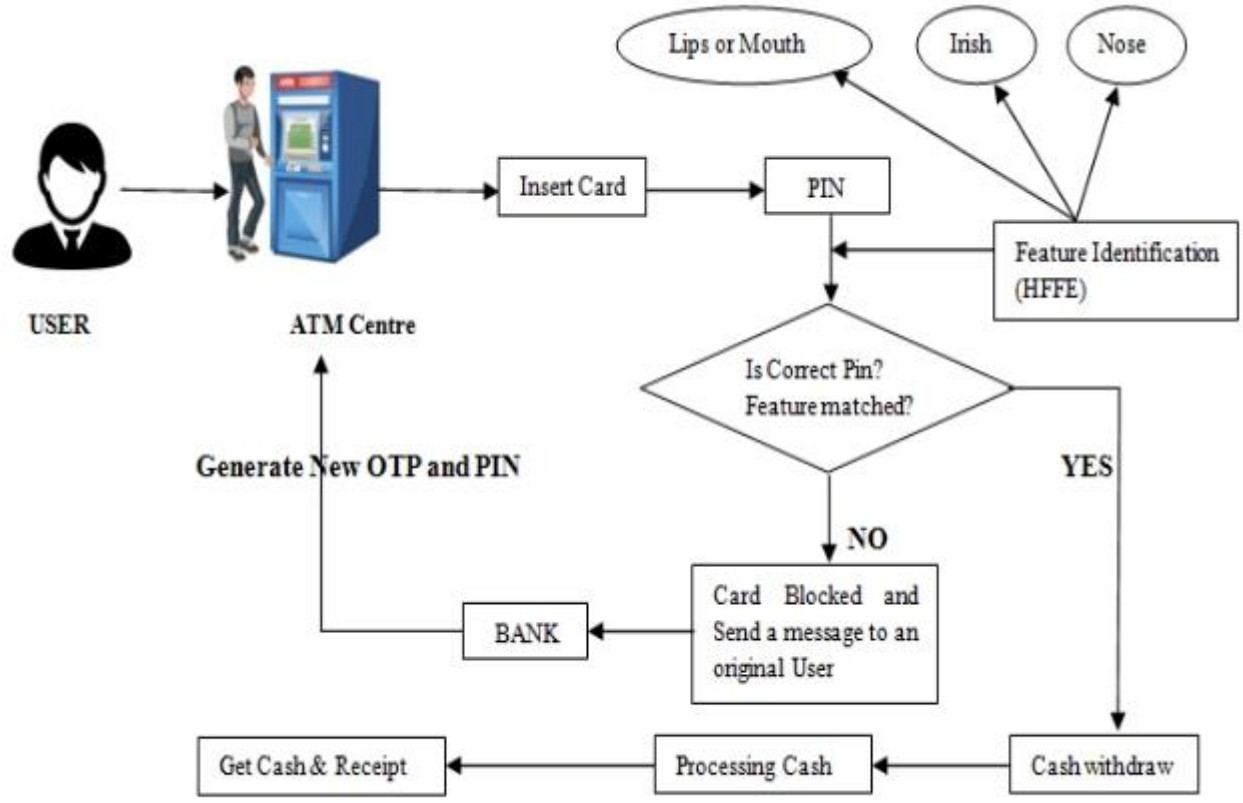


Figure 3.1 Illustration of the Existing System (William and Kannan, 2019)

Disadvantages of the Existing system

Transactions are very complex and are prone to fraudulent.

A card can easily be lost

Its waste customers time and prone to insecurity

Some people have little knowledge on how to use the ATM.

The ATM may be off-line.

4.0 Proposed System

The proposed system intends to solve the existing system problem with different card in transacting business which are generated at the administrative backend be restricted only to trusted personnel. The proposed system uses thumb print Algorithm to encrypt the transaction without no card for multiple transactions. The database from which these reports are generated should also be secured via passwords or via encryption of data stored in the database so as to prevent them from being copied or tampered with. The card-less

functionality card will used the BVN access code to link all the banks such that one ATM card can be used to withdraw from all other banks linked to Central Bank of Nigeria.

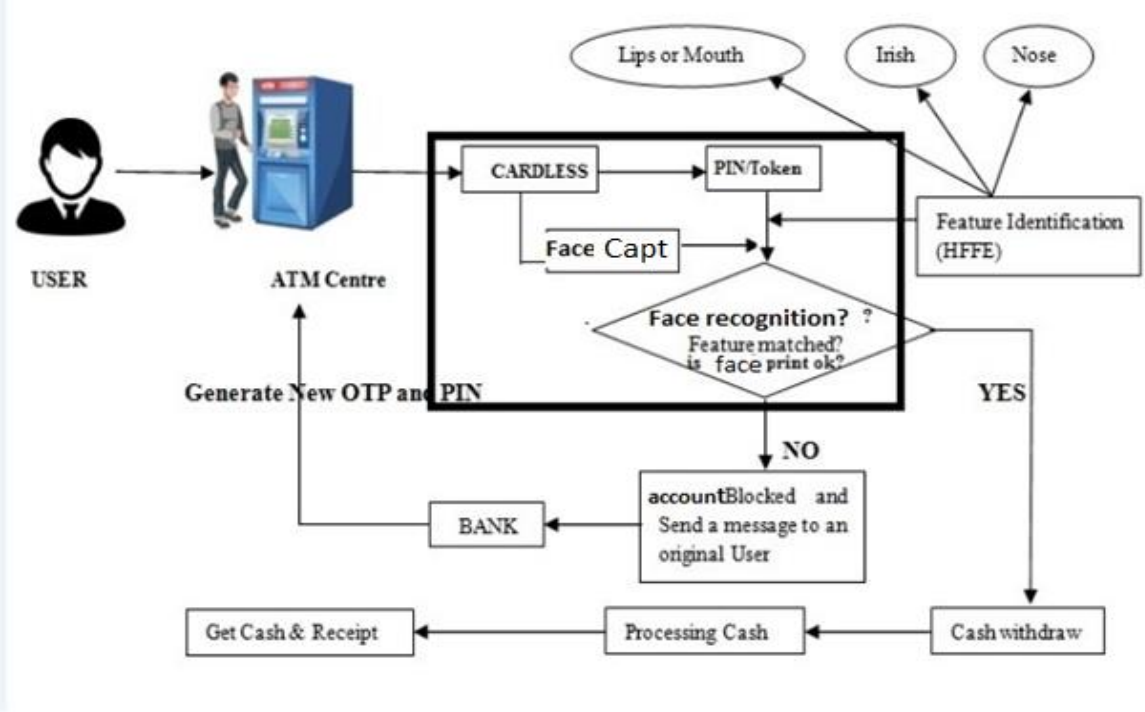


Figure 3.5: Illustration of the Proposed System

4.1 Results

The result of the analysis is shown in figure 4.2

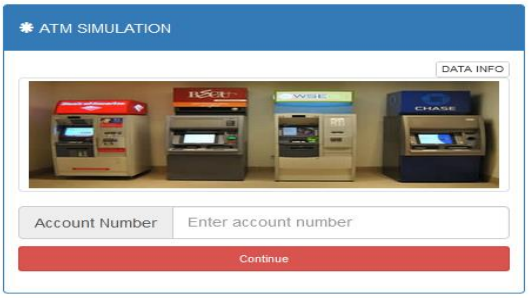
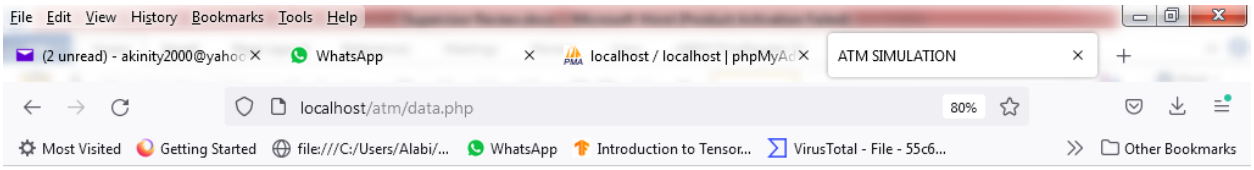


Figure 4.2: Data Information



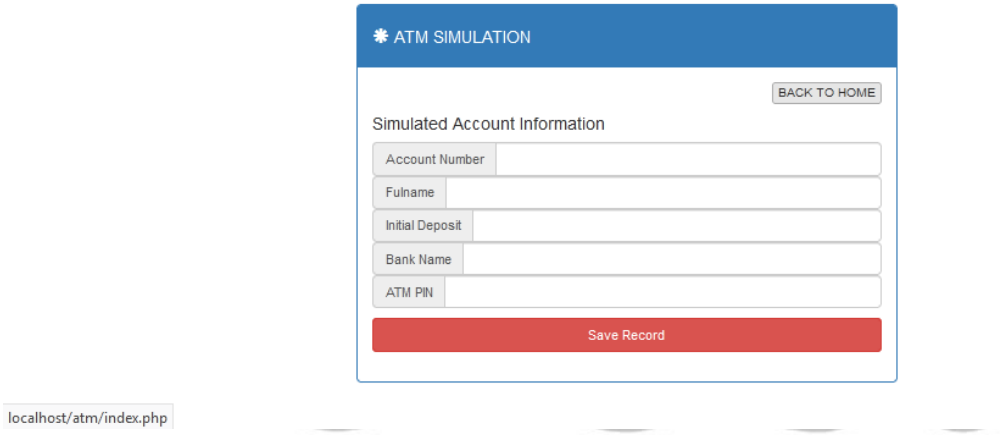


Figure 4.3: Data Entry Records

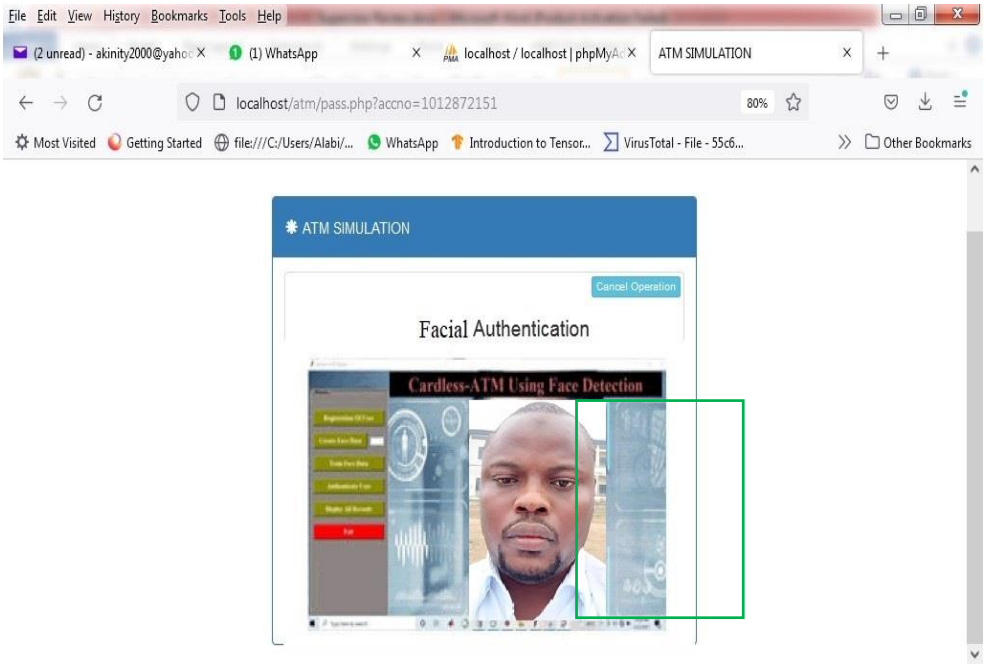


Figure 4.4: Facial Authentication

© GSJ

5.0 Conclusion

This research work has the following contributions:

1. The Point of Sale (POS) Machine makes the users not to panic about how and where this device is been operated from due to the upgrade in the security of it
2. It's very convenient to make transaction without the use of card meaning the facial recognition is very unique to every mankind.
3. The banking sector can actually save more funds meant for card printing into another sections where more attention is needed (e g., the network providers can increase their bandwith).

6.0 Recommendations

The secure digital identity management interoperability system (Internet Banking and E-commerce Environment), POS which serves as one of the leading products in the market.it is recommended to the transaction markets (Banking, Restaurant, Motor-packs to mention but few) to enable a secured, quick, clear and detailed overview of all the components of running a successful business without the necessity of heavy training.

7.0 References

Alfred H., (2006). Young challenge mainstream media, Research firm Globespan questioned 10,000

people in the UK, US, Brazil, Egypt, Germany, India, Indonesia, Nigeria, Russia, and South Korea http://news.bbc.co.uk/ 2/hi/technology/4962794.stm.

Anil K., jain H. and Ross, A. (2008). "Introduction to Biometrics". In Jain, AK; Flynn; Ross, A. Handbook of Biometrics. Springer. 1–22. ISBN 978-0-387-71040-2

Bielski, L. (2003). Striving to Create a Safe Haven Online: ID Theft, Worms, Bugs, andVirtual Eavesdropping Banks Cope with Escalating Threat; ABA Banking Journal, 5 (6), 34-67.

Cronin, M. J. and Mary K. (1997). Banking and Finance on the Internet, John Wiley and Sons. Banking and Finance on the Internet. 2 (41), 55-67.

Dhamija R. and Tygar J. D. (2005). The Battle Against Phishing: Dynamic Security Skins, Proc. Symp. Usable Privacy and Security, 2(5), 23-44.

Dick H. (2005) Keynote – Identity 2.0, / ("Identity is what I say about me, and what others say about me."). http://www.identity20.com/media/OSCON.

Dick H. (2006) A First Look at Laws of Identity. Google Account Authentication: Two Steps Forward, One Step Back http://identity20.com/media/ ETECH_2006/pdf, 3(6), 62

Florea, A. M. I. (2013). Database Security for an Integrated Solution to Automate Sales Processes in Banking, Database Systems Journal, 4(1), 28 - 36.

Gandy, T. (1995). Banking in e-space, The banker, 145 (838), 74–76.

Jain, A. K., Bolle, R., Pankanti, S., eds. (1999). Biometrics: Personal Identification in Networked Society. Kluwer Academic Publications. ISBN 978-0-7923-8345-1.

Jain, A., Hong, L., Pankanti, S. (2000). Biometrics: Promising frontiers for emerging identification market. 5 (6), 34-67.

Jonathan Z. (2008). The Future of the Internet and How to Stop It (forthcoming, Yale University Press) 7(2), 67-89.

Kashwan G.W (2013). Data mining. A review of the techniques used in Mining Data. International Journal of Computer Engineering and Mechanical Engineering. 23(7), 234-245.

Kashwan, R. K. (2015). Customer segmentation using clustering and data mining techniques, International Journal of Computer Theory and Engineering, 5(6): 856 - 861.

Khan B., Khan M. K., Alghathbar K. S. (2010). Biometrics and identity management for homeland security applications in Saudi Arabia; African Journal of Business Management, 4(15), 3296-3306.

© GSJ