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ATM machine security using OTP and Facial Recognition Features

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Abstract — In the 21st century where the uses of ATM machines has increased drastically, So it has been very difficult for us to secure the ATM transaction as password or PINs as it can be hacked or stolen. We aim to avoid the ATM robberies and wrong person misuse the ATM so that we can make them to lead their life safely and securely. The proposed system is designed based on the intelligence system to ensure the ATM usage without any hesitation and make the world to be a part of digitization. Once customer inserts the card into the ATM, a session is initiated, the system starts face detection using the camera located near the ATM and builds a temporary identity database for the customer and user face verification is performed on the ATM .Valid user would continue the normal process but the Invalid user cannot be access the ATM card so they give the secondary password to the system automatically the unauthorized person would continue the transaction.

Keywords: Face Detection, Security, PIN, Automated teller machine (ATM), hacking, Camera, OTP, Virtual Keypad.

I. INTRODUCTION

In the digital era, where Automated teller machine (ATM) and online banking have become so handy that all our day to day life is completely dependent on it. But due to increased chances of attacks we are asked for authentication at each and every step. The present Automated teller machine (ATM) security authentication technique is dependent on pin-based verification. The security and vulnerability are opposite sides of the same coin, an Automated teller machine (ATM) machine becomes vulnerable due to weakness of its security. Automated teller machine (ATM) machine manufactures go on adding and strengthening security features of Automated teller machine (ATM), so that customer can carry banking transactions hassle free and without any fear of siphoning of amount from their account and the same frauds works with similar speed to crack the innovated security feature so that they can have access over the Automated teller machine to exploit the accounts of bank customers.

II. LITERATURE SURVEY

1. ATM Security Using Fingerprint Biometric Identifer: An Investigative Study

Author: Moses Okechukwu Onyesolu, Ignatius Majesty Ezeani

Description:

Nearly all the ATM users use the credential in the form of PIN to authenticate the genuine user. But it is observed that sharing PIN is common practice. In this paper, they have showed that growth in electronic transaction has resulted in a greater demand for fast and accurate user identification and authentication. Access codes for buildings, banks account and computer systems often use PIN's for identification and security clearance. Conventional method of identification based on possession of ID cards or exclusive knowledge like social security number or a password aren't of all together.

2. A FACE DETECTION BASED ATM SECURITY SYSTEM USING EMBEDDED LINUX PLATFORM

Author: Jignesh J. Patoliya, Miral M. Desai

Description:

In this paper they have suggested 'Smart ATM security system based on embedded Linux platform'. Implementation of System is based on credit card size Raspberry Pi board with extended capability of open source Computer Vision software which is used for Image processing operation. High security mechanism is provided by the actions such as pre system captures the human face and check whether the human face is detected properly or not. If system fails to detect the face properly, it warns the user to adjust him/her properly to detect the face. Still the face is not detected properly the system will lock the door of the ATM cabin for security purpose.

3. IMPROVING ATM SECURITY VIA FACE RECOGNITION

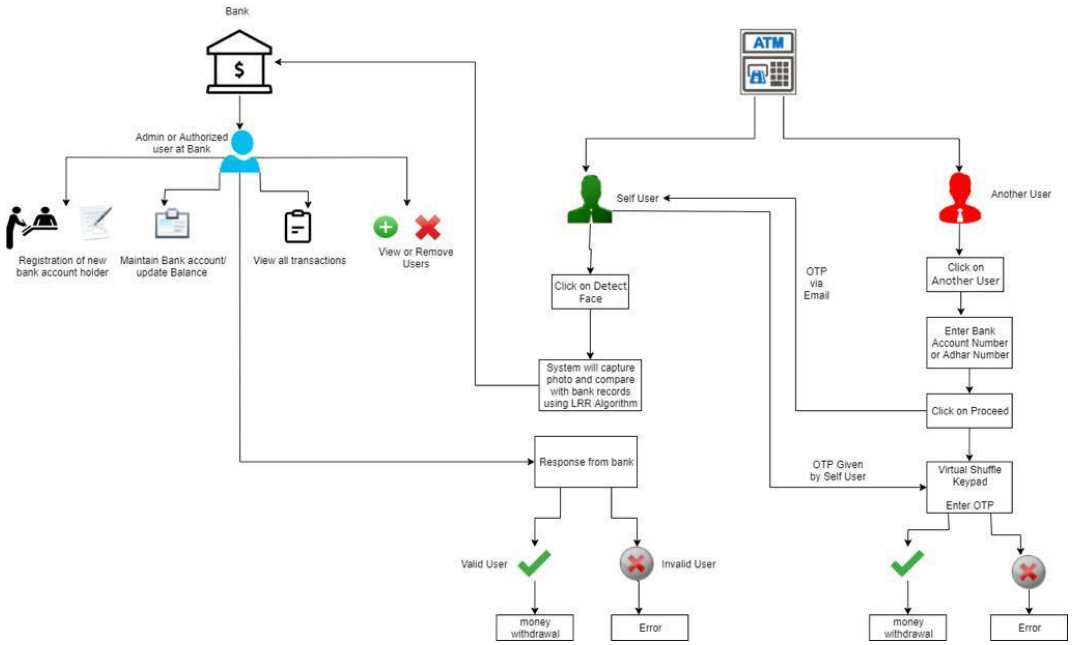
Author: K John Peter, G. Gimini Sahaya Glory, S. Arguman, G. Nagarajan

Description:

This paper reveal the idea behind, a facial recognition system is a computer application for automatically identifying or verifying a person from a digital image or a video frame from a video source. It uses face recognition technique for verification in ATM system. In Order to detect face, it has two types of comparisons. The verification is the first, this is where the system compares the given individual with who that individual says they are and gives a yes or no decision. The second one is identification this is where the system compares the given individual to all the other available individuals in the database and gives a ranked list of matches

III. PROPOSED SYSTEM

Our proposed system is designed based on the intelligence system to ensure the ATM usage without any hesitation and make the world to be a part of digitization. Once customer inserts the card into the ATM, a session is initiated, the system starts face detection using the camera of ATM and builds a temporary identity database for the customer and user face verification is performed on the ATM .Valid user would continue the normal process but the Invalid user cannot access the ATM machine. It will detect the fraud activities as we have developed the more secure and reliable system. System depends on the camera for 24/7 as well as for internet. The Area of work is basically focused on Design and Implementation of Face Detection based ATM Security System using LRR algorithm. Limitations of existing system are overcome in our proposed system. In order to make any transaction, system will provide to option to process. First Self user, where in system will ask for "Detect Face" and allow to process transaction if it matches with Image store in banks database otherwise system will decline the transaction after couple of warnings. Second Guest User, where in system will ask for "OTP" and allow to process transaction if Guest User enter the correct OTP which has been sent to authorize User.



MATHEMATICAL MODEL

Step 1: let's consider the U as the user of system who logins to the system.

U=f U1, U2Un g.

Step 2: Let say S as System that will authenticate the user U by face detection or sending the OTP to user mail and verify the user.

Step 3: The user U will perform some activities like cash withdraw or perform some activities like profile update.

Step 4: The Proposed system will compare the image stored in database with the live face image captured from the ATM camera, if it does not matches with the image stored, system will give warning message.

Step 5: The system also provide the second option to login into system i.e. using guest login, where in user login using OTP.

IV. APPLICATIONS

1. System is specially built for Bank ATM machines

V. GOALS AND OBJECTIVES

1. In the terms of accuracy & Efficiency, our proposed system leads in terms with other systems.
2. ATM machine security using OTP and facial recognition features, which detects fraud and avoid unwanted fraud.
3. As our goal is to build robust system, which has both the ways to login like self user and the guest user.

VI. CONCLUSION

Our proposed system ATM model that is more reliable in providing security by using facial recognition system. Our system aims to provide 2 modes of login. Where in self mode is for the intended person of account, who wishes to self login using the facial detection method. So face detection takes place based on LRR algorithm. Comparison of face takes place with the Image stored in database while registration process. And second mode is guest mode, which is available as in backup if in worst case face does not match with the stored image in database. Then user has the second option with OTP and password. So we have successfully implemented the ATM security system using face detection technique.

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