

# FACE RECOGNITION BASED NEW GENERATION ATM MACHINE

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## Abstract

Automated Teller Machines are widely used nowadays by people. But it's hard to carry their ATM card everywhere, people may forget to have their ATM card or forget their PIN number. The ATM card may get damaged and users can have a situation where they can't get access to their money. The main aim of the project is to design a Face Recognition Based New Generation ATM Machine using MATLAB. This application is process in ATM security framework to improve the verification strategies to improve the innovation.

## Keywords:

PC with MATLAB, Arduino, GSM module, DC motor, Face recognition technology.

## 1. Introduction:

The rise of technology bring into force loads of types of tools that aspire at more customer pleasure. ATM is a machine which made money transactions effortless for customers. But it has both advantages and disadvantages. Current ATMs make use of naught more than an access card and PIN for uniqueness confirmation. This has ATM Using Face Recognition System demonstrate the way to a lot of fake attempt and mistreatment through card theft, PIN theft, stealing and hacking of customer's account details and other part of security.

## 1.2. What Are Face Recognition Systems?

FRS is an application that mechanically identifies a person from a digital image or a video outline from a video source. One of the behaviors to do this method is by matching chosen facial features from a facial database and the image.

Various facial recognition algorithms be familiar with faces by extracting features, from a snap of the subject's face. For example, an algorithm may examine the size, relative

position, in addition to/or outline of the nose, eyes, cheekbone and jaw. These facial appearances are then used to search for other imagery across matching features. Other algorithm manages a balcony of face images and then compresses the image's face information and it saves only the data in the image that is used for face detection. A searched image is then compared with the face record.

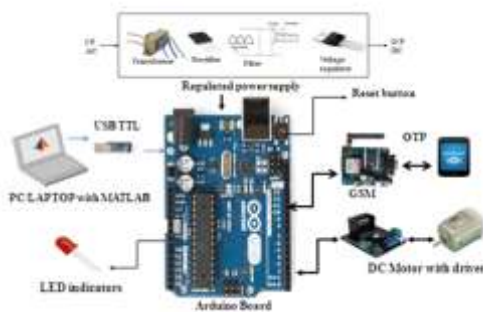
The project makes a use of ARDUINO UNO, DC motor GSM and PC with MATLAB. In this DC motor as an ATM machine for money transaction and GSM module is used to send and receive the OTP to the customer and Arduino microcontroller is a mediator between input and output modules. Based on the input the microcontroller takes the necessary action upon the system.

## 2. LITERATURE SURVEY:

Financial institutions have registered major loses till today due to users being exposed of their credit and debit card information. For secure PIN authentication, in this paper, we propose Secure-PIN Authentication-as-a-Service (SEPIA), a secure obfuscated PIN authentication protocol for ATM and other point-of-service terminals using cloud-connected personal mobile and wearable devices. It protects the user from intermediate transaction attacks. A SEPIA user utilizes a mobile device for scanning or QR code on the terminal screen to prove co-location to the cloud-based server and European Journal of Molecular & Clinical Medicine ISSN 2515-8260 Volume 7, Issue 4, 2020 2855 obtain a secure PIN template for point-of-service authentication [7]. Features like face recognition and one time password are used for the enhancement of security of accounts and privacy of users. Face recognition technology helps the machine to identify each and every user uniquely thus making face as a key. This eliminates the chances of fraud due to theft and duplicity of the ATM cards. Moreover, the randomly generated OTP frees the user from remembering PINs as it itself acts as a PIN [4].

ATM are widely used nowadays by people. But it's hard if we forget the PIN number or it may get damaged and users can have a situation where they can't get access to their money. In this the use of biometrics for authentication instead of PIN and ATM card is encouraged. Here, The Face ID and Fingerprint are preferred to high priority. The fingerprint is preferred to high priority. The fingerprint of the user is identified and face image is verified, and the appropriate user is given authentication. For the prototype of the system, Raspberry pi microcontroller is used [8]. Faces are represented by labeled graphs, based on a Gabor wavelet transform. Image graphs of new faces are extracted by an elastic graph matching process and can be compared by a simple similarity function. Phase information is used for accurate node positioning. Object-adapted graphs are used to handle large rotations in depth [5]. ATM with a currency dispenser includes a contactless card reader that can read data from an RFID tag of a customer's ATM card. The contactless card reader can also be used in conjunction with a magnetic stripe card reader. It is able to prevent the missing of the ATM card and dispensed money by the customer inside the ATM center after the transaction [1]. An automatic teller machine security model that would combine a physical access card, a PIN, and electronic facial recognition having access only to actual owner of the card [2]. Denis et. al., [9] explores the difficulties in Block chain IoT applications, and outlines the huge work in order to analyze how Block chain could be utilized in real money coordination. The author in [10] has examined the different error codes thrown by various ATM machines produced by different manufacturers and proposed a common code for very similar malfunctions made by the machine.

**3. Implementation:**



**3.1 Block diagram of FACE RECOGNITION BASED NEW GENERATION ATM MACHINE**

The design can be implemented with arduino microcontroller. The interfaced devices to the arduino microcontroller are PC with MATLAB, GSM, DC motor along with

driver. Whenever a customer or an account holder facing on the LAPTOP CAMERA. The MATLAB code is running inside the laptop and the image is captured and compared with facial database, if it is matched then OTP (one time password) will be sent to the customer registered mobile number through GSM modem. The customer in turn needs to forward the same code to the GSM modem to withdraw the money. Once the code is forwarded by the customer, the controller checks the received code with the generated code. If it is matches then the arduino transaction that amount through DC motor. After the transaction the remaining balance will be again sent to the customer registered mobile number via GSM modem.

**4. Related Work:**

The brief introduction of different modules used in this project is discussed below:

**4.1. ARDUINO UNO.**



**4.1.1 ARDUINO UNO**

- ▶ The Arduino Uno is a microcontroller board which has ATmega328 from the AVR family. There are 14 digital input/output pins, 6 Analog pins and 16MHz ceramic resonator.
- ▶ USB connection, power jack and also a reset button is used. Its software is supported by a number of libraries that makes the programming easier.

#### 4.2. GSM module:



GSM, which stands for Global System for Mobile communications, reigns (important) as the world's most widely used cell phone technology.

SIM800 is a quad-band GSM/GPRS module designed for the global market. It works on frequencies GSM 850MHz, EGSM 900MHz, DCS 1800MHz and PCS 1900MHz. SIM800 features GPRS multi-slot class 12/ class 10 (optional) and supports the GPRS coding schemes CS-1, CS-2, CS-3 and CS-4. With a tiny configuration of 24\*24\*3mm, SIM800 can meet almost all the space requirements in users' applications, such as M2M, smart phone, PDA and other mobile devices. SIM800 has 68 SMT pads, and provides all hardware interfaces between the module and customers' boards. SIM800 is designed with power saving technique so that the current consumption is as low as 1.2mA in sleep mode. SIM800 integrates TCP/IP protocol and extended TCP/IP AT commands which are very useful for data transfer applications.

Its works with AT commands.

Commands always start with AT (which means Attention) and finish with a <CR> character. In this project we are using two commands

**Read message +CMGR**

**Send message +CMGS**

#### 4.3. DC motor:



An electric **motor** is an electrical machine which converts electrical energy into mechanical energy. The basic working principle of a **DC motor** is: "whenever a current carrying conductor is placed in a magnetic field, it experiences a mechanical force". In this project we are using DC motor as an ATM machine.

#### 4.4 MATLAB:

The name MATLAB stands for matrix laboratory. MATLAB (matrix laboratory) is a numerical computing environment and fourth-generation programming language. Developed by Math Works, MATLAB allows matrix manipulations, plotting of functions and data, implementation of algorithms, creation of user interfaces, and interfacing with programs written in other languages, including C, C++, Java, and Fortran.

MATLAB can be used in a wide range of applications, including signal and image processing, communications, control design, test and measurement, financial modeling and analysis, and computational biology. For a million engineers and scientists in industry and academia, MATLAB is the language of technical computing.

#### 5. CONCLUSION:

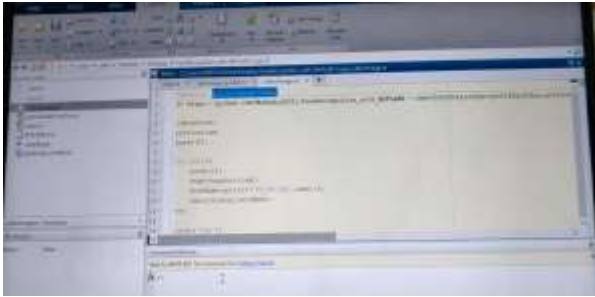
The existing model presents an Integrating feature of all the hardware components which has been used and developed in it with Arduino. The Presence of each and every module has been reasoned out and placed very carefully. Hence the contributing to the best working unit for "**Face Recognition Based New Generation ATM Machine**" has been designed perfectly. Secondly, using MATLAB for face recognition technology and Arduino ide studio for dumping the code into the Arduino. And also the system make more secure the system able to send the OTP (one time password) to the customer for conformation. After transaction the system able to send the message about remaining balance with GSM. Thus, the project has been successfully designed and tested.

#### 6. ACKNOWLEDGEMENT

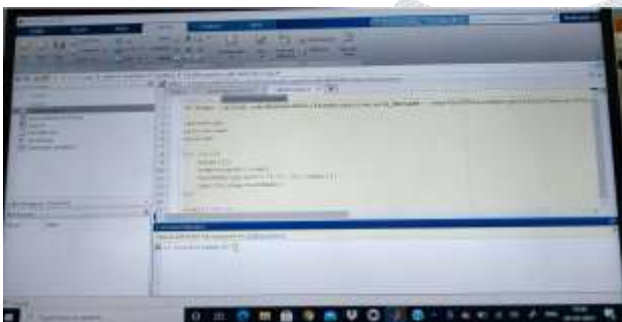
We would like to thank all the authors of different research papers referred during writing

this paper. It was very knowledge gaining and helpful for the further research to be done in future.

## 7. RESULTS:



**Fig: 7.1 Collect Image**



**Fig: 7.2 Select the First User Image**



**Fig: 7.3 Project Output Image**



**Fig: 7.4 GSM module send the OTP to the customer**



**After transaction user get the message of remaining balance.**

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