

FACE RECOGNITION BASED NEW GENERATION ATM MACHINE

<https://www.youtube.com/watch?v=xTLY5ZXvcfo>

The aim of this project is to design and develop a Face Recognition Based New Generation ATM Machine that provides enhanced security for ATM transactions by combining facial recognition with One-Time Password (OTP) authentication. The proposed system reduces the dependency on traditional ATM cards and PINs and provides an additional layer of biometric security.

Face recognition is a biometric technology used to automatically identify or verify a person by comparing a captured facial image with images stored in a facial database. In this project, a laptop camera is used to capture the customer's face. The captured image is processed using MATLAB, where facial features are extracted and compared with the registered facial database. If the face is successfully matched, the system generates a unique OTP and sends it to the customer's registered mobile number through a GSM modem.

The customer enters or sends the received OTP to the system through the GSM communication interface. The Arduino microcontroller receives the OTP and compares it with the generated OTP. If the OTP is correct, the system authorizes the transaction and activates the DC motor through a motor driver to simulate the dispensing of the requested amount. If the facial recognition or OTP verification fails, the transaction is rejected.

After successful completion of the transaction, the system updates the account balance and sends the remaining balance and transaction status to the customer's registered mobile number through the GSM modem. Thus, the proposed ATM provides a two-factor authentication mechanism, combining *"something you are"* (face recognition) with *"something you have"* (registered mobile phone/OTP), thereby improving ATM transaction security.

Objectives:

1. To develop a secure ATM system using face recognition technology.
2. To identify and verify customers using a camera and MATLAB-based facial recognition.
3. To provide OTP-based second-level authentication through a GSM modem.
4. To use an Arduino microcontroller for controlling and coordinating the ATM operations.
5. To authorize cash withdrawal only after successful face and OTP verification.
6. To control the DC motor through a motor driver for cash dispensing simulation.
7. To send OTP, transaction status, and remaining balance to the registered mobile number.
8. To reduce the risk of unauthorized ATM access and improve transaction security.
9. To develop a simple and reliable biometric-based ATM security system.

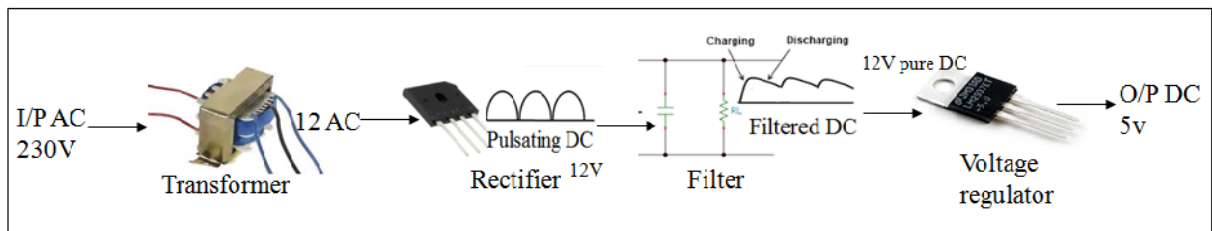
Major Blocks present in this project:

1. Regulated power supply.
2. ARDUINO.
3. GSM Module.
4. LAPTOP Camera.
5. LAPTOP with MATLAB.
6. LED Indicator.

Software's used in this project:

1. Arduino IDE studio compiler.
2. Embedded C Programming.
3. Express SCH for Circuit design.

Regulated power supply:



Block Diagram:

