Bank of Baroda Hackathon 2024

Your Team Name : Tech Tinkers

Your team bio : Roshini S - Data Science and Frontend Developer
Ravi Prasath S – Backend and Networks
Devi Raksitha R – IOT and AI

Date : 30/6/2024

Problem Statement?

As we can see that current ATM security measures, relying primarily on PIN-based authentication, are susceptible to unauthorized access and fraudulent transactions. There is a vital need for an advanced authentication system that can reliably verify user identity and prevent unauthorized ATM transactions effectively.

Our idea is that **“FAM -Face Authentication Message”** a authentication method to enhance ATM security through facial recognition technology.

- **Authorized Access:** The owner provides images of themselves and two trusted individuals. Only these faces are allowed to conduct transactions.

- **Stranger Detection:** If an unauthorized person attempts a transaction, their face is captured and stored in the database So, that it can be used for any further needs.

- **Transaction Control:** Unauthorized transaction attempts or those exceeding a set cash withdrawal and multiple transactions within 8 hours trigger an alert to the owner. Transactions are paused until the owner approves via notification or OTP, ensuring secure transaction management.

The goal is to mitigate risks associated with ATM fraud and ensure a seamless and secure banking experience for users.

Pre-Requisite

- **OTP Vulnerabilities:** Despite OTPs being widely used, they are susceptible to fraud through techniques like SIM swapping or phishing attacks, where attackers intercept or manipulate OTPs to gain unauthorized access.

- **Two-Step Verification for Social Media:** Many social media platforms offer two-step verification. However, such systems are not commonly integrated into ATM transactions, highlighting the innovation and effectiveness of our project in introducing facial recognition for enhanced ATM security.

Our project introduces personalized facial recognition for ATM transactions.This approach not only enhances security by limiting access to authorized users but also provides immediate alerts and transaction pauses for unauthorized attempts, thereby significantly reducing the risk of fraud and ensuring secure banking experiences.

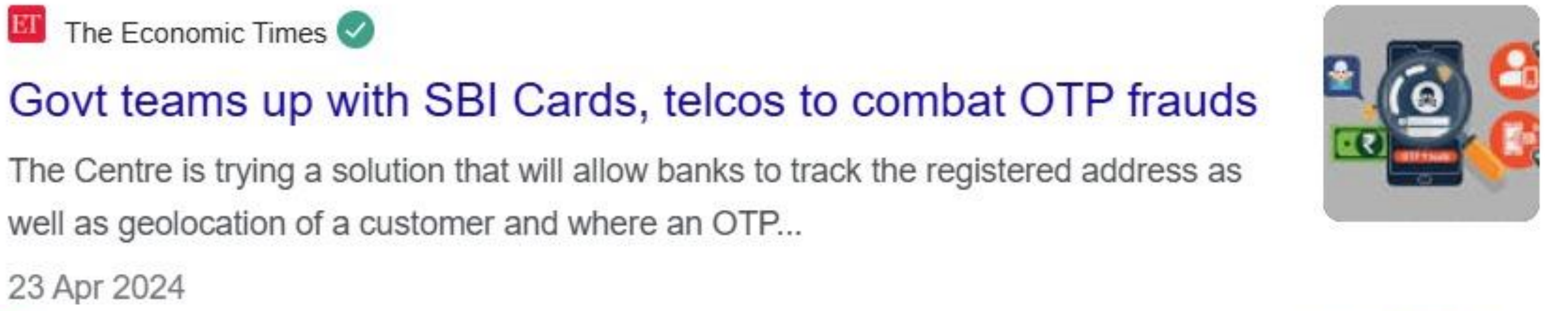
Tools or resources

❑ **Azure Face API** for facial recognition capabilities that can be integrated into your system for face detection, verification, and identification.

❑ **ATM hardware** to supports camera integration and meets the necessary specifications for capturing and processing facial images securely.

❑ **OpenCV** that provides tools for real-time computer vision applications, including facial recognition.Python for machine learning and computer vision projects also integrates well with libraries like OpenCV and Dlib.

Any Supporting Functional Documents

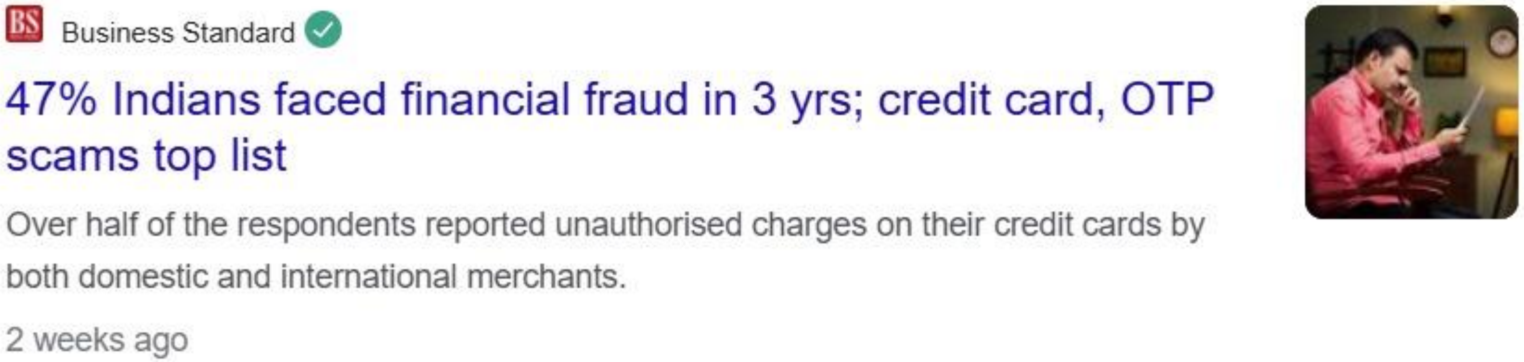


ET The Economic Times ✓

Govt teams up with SBI Cards, telcos to combat OTP frauds

The Centre is trying a solution that will allow banks to track the registered address as well as geolocation of a customer and where an OTP...

23 Apr 2024

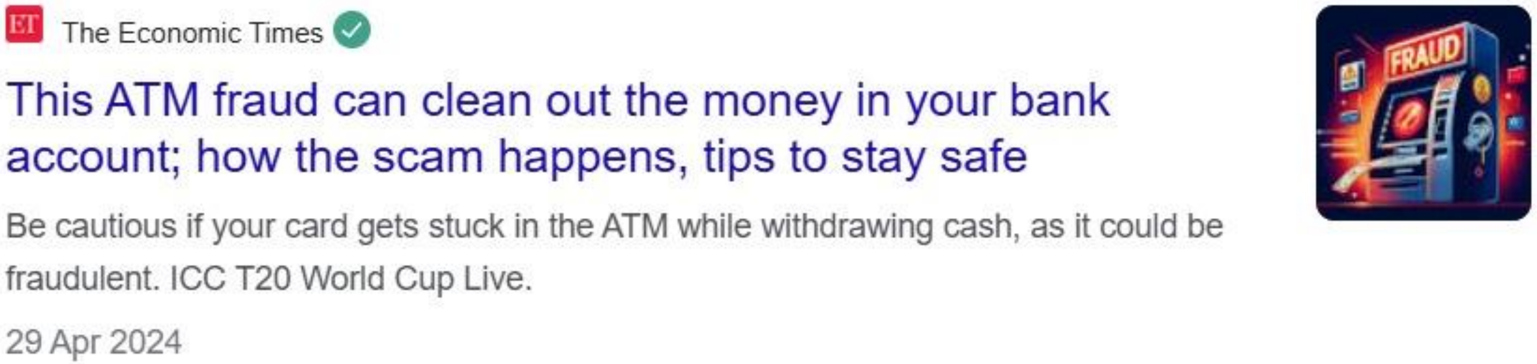


BS Business Standard ✓

47% Indians faced financial fraud in 3 yrs; credit card, OTP scams top list

Over half of the respondents reported unauthorised charges on their credit cards by both domestic and international merchants.

2 weeks ago



ET The Economic Times ✓

This ATM fraud can clean out the money in your bank account; how the scam happens, tips to stay safe

Be cautious if your card gets stuck in the ATM while withdrawing cash, as it could be fraudulent. ICC T20 World Cup Live.

29 Apr 2024

Key Differentiators & Adoption Plan

- Enhanced Security: Instead of using codes that can be stolen or copied, our system verifies your identity using your unique facial features. It's much harder for someone to fake or steal your face compared to a code.

- User Convenience: Instead of typing in codes or tokens, you just show your face. It's quick and easy, making transactions faster and simpler for you.

- Real-time Control: If an unauthorized user tries t, our system immediately stops transactions until you say it's okay. This gives you instant control over your account's security.

Adoption Plans:

- Show and Teach Users: We'll explain clearly how to set up and use facial recognition for safe transactions. We want everyone to feel comfortable and confident using it

- Integrate with Banks: We'll team up with banks to smoothly add our technology to their systems. This means you can use facial recognition at your bank just like you use your debit card today.

Business Potential and Relevance

❑ **Enhanced Security:** Implementing facial recognition, the system significantly reduces the risk of unauthorized access and fraudulent transactions, providing a robust alternative to PIN-based authentication.

❑ **Customer Trust and Satisfaction:** By Providing advanced security measures can enhance customers' trust in the bank, leading to increased customer loyalty and retention.

❑ **Competitive Advantage :** Banks that implement advanced security measures like FAM can differentiate themselves from competitors, attracting more security-conscious customers.

Uniqueness of Approach and Solution

- **Personalized Authorization:** Users can select specific faces, such as their own and two trusted individuals, that are exclusively allowed to conduct transactions. This personalized approach boosts security by restricting access strictly to authorized persons chosen by the user.

- **Unauthorized Person Detection:** The system utilizes Azure Face API to promptly capture images of anyone attempting transactions without authorization. This feature not only enhances security measures but also facilitates easier identification for law enforcement or future security investigations.

- **Real-time Transaction Control:** In the event of an unauthorized attempt to withdraw cash or exceed a user-set limit, transactions are immediately paused. They can only proceed upon the user's approval, facilitated through Azure API notifications or OTPs, effectively minimizing the risk of thefts and frauds.

This approach represents a new and highly efficient method for ATM security. By combining personalized biometric authorization with real-time detection and control using Azure Face API to enhance protection.

User Experience

- **Enhanced Security:** Users benefit from an additional layer of security beyond PINs. Facial recognition through FAM ensures that only authorized individuals can initiate transactions. Users need not fear thefts or frauds, as their transactions are protected by biometric authentication.

- **Real-time Alerts and Control:** If someone tries to access your account without permission, our system sends you an instant alert. Transactions are stopped until you confirm your identity using OTP or any other authentication. This gives you quick control over your account's security, ensuring your peace of mind that your money is safe.

Scalability

- Cloud Integration Utilize **Azure's scalable cloud infrastructure** for facial recognition processing and data storage.

- **Scalable security** protocols to handle increased data volumes and user numbers while maintaining high security standards.

- **Real-Time Monitoring** to track performance metrics and identify bottlenecks or issues promptly.

Ease of Deployment and Maintenance

- **Plug-and-Play Modules** like camera and facial recognition components as modular, plug-and-play units that can be easily integrated into existing ATM machines without significant modifications.

- **User-Friendly Installation** to Provide video tutorials to assist technicians in setting up the system.

- **Remote Access** to Allow authorized personnel to perform remote maintenance and troubleshooting, reducing the need for on-site visits.

Security Considerations

- **Camera module** to verify.

- **faceAnti-Spoofing** Techniques to Implement liveness detection to differentiate between real faces and photos or videos.

- Alert and response system with **FAM**.

Thank You

Roshini S

Ravi Prasath S

Devi Raksitha R