IOB CYBERNOVA HACKATHON 2025

AI- Powered Multifactor Authentication System

PROBLEM STATEMENT TITLE- Secure Money Transfer

THEME- AI- Powered Multifactor Authentication System

PS CATEGORY- Software

TEAM ID- 03

TEAM NAME (REGISTERED ON PORTAL)- Quantum Coders

NAME OF THE MEMBERS AND COLLEGE REGN NO:

1. Vedhanathan Pon Abiram T- 230071601247

2. Sara Sakeena A- 230071601205

3. Shanmuga Priya S - 230071601219

4. Sri Ranjani V -230071601225

AI- POWERED MULTIFACTOR AUTHENTICATION

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⚠️ PROBLEM IDENTIFIED:

Only relay on password and OTP , no unique device identification, easy to spoof devices and no fraud detection before transaction

❌ MODERN THREATS

Phishing, SIM Swap, Deepfake Attacks

✅ SOLUTIONS

Device Fingerprint + Biometrics (Facial Analysis)

Device Fingerprint (User Agents , Screen Resolution , Time Zone , Language , OS ,IP ,Geo Location)
Biometrics facial analysis (liveliness check , deepfake detection , 68 facial landmark)

FEASIBILITY AND VIABILITY

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FEASIBILITY

User-Friendly – Completely passive device fingerprinting ensuring seamless operation.

Secure Verification – Incorporates facial recognition to authenticate the actual user.

Real-Time Verification – Implements liveness detection to ensure live presence during authentication.

CHALLENGES

❌ Transaction via different device
❌ Image morphing
❌ Biometric Spoofing

STRATEGIES

☑ E-mail Verification (OTP) using Nodemailer
☑ Deepfake detection using Deepface
☑ Liveness detection using MTCNN

TECHNICAL APPROACH

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AI Models:
- DLIB-68 + MEDIAPIPE
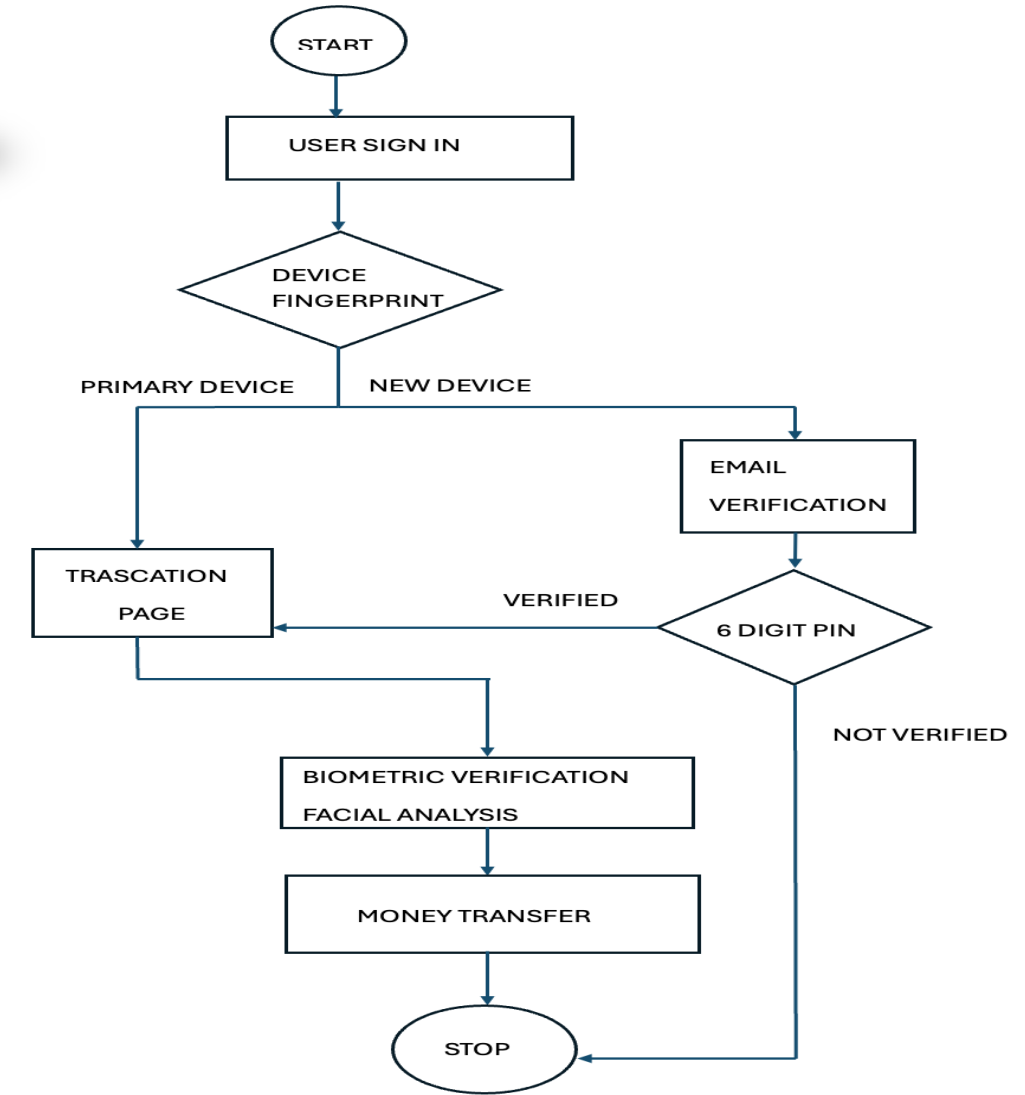- MTCNN
- OpenCV,

Algorithm:
- MTCNN – used for liveliness detection
- SHA 512 – used to secure the data

Device Fingerprint:
Fingerprint Spoofing – SHA - Hashing 512
Email Verification – Allowing users to work from different device

Biometric (Face Recognition) : – Analyzing 68 facial landmarks using DLIB-68

IMPACTS AND BENEFITS

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Environmental: Reduces SMS/OTP traffic → less server load and energy usage.

Paperless authentication = eco-friendly banking

Social: Enhances customer safety and digital trust.

Protects users from cybercrime and identity theft

Economic :Cuts financial loss from fraud .Lowers cost of manual verification

Increases user confidence → boosts digital service usage

RESEARCH AND RFERENCES

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❖ <u>IEEE References</u>

https://ieeexplore.ieee.org/document/9499970

https://ieeexplore.ieee.org/document/9254105

❖ Blog : Device Fingerprinting

https://blog.castle.io/9-device-fingerprinting-solutions-for-developers/