Loan Management System - Project Report

Title: Loan Management System with Eye Blink Authentication and Cryptographic Communication

Technology Stack: PHP, HTML, CSS, JavaScript

Special Features: Eye Blink Authentication (Biometric Security), Cryptographic Communication (Data Security)

1. Introduction

The Loan Management System is a secure, web-based application designed to streamline the process of managing loan services, from application to repayment. This system integrates Eye Blink Authentication for biometric login security and Cryptographic Communication to ensure secure data transmission and protection from unauthorized access.

2. Objectives

- Provide a user-friendly interface for loan application and tracking.
- Enable Eye Blink Authentication using webcam for secure user login.
- Ensure confidentiality and integrity of data through cryptographic techniques.
- Offer role-based access for Admins and Customers.

3. System Architecture

Front-End:
- HTML/CSS for structure and styling
- JavaScript for dynamic behavior and Eye Blink detection (using face-api.js or TensorFlow.js)

Back-End:
- PHP for server-side logic
- MySQL for database management
- PHP OpenSSL for encryption and decryption

Security Layer:
- Biometric Layer: Eye blink detection using webcam and face landmark tracking.
- Cryptography Layer: AES or RSA encryption to protect sensitive information like loan details and user credentials.

4. Modules

1. User Registration/Login

Biometric login using eye blink recognition.
Secure password storage using hashing (e.g., bcrypt).

2. Loan Application

User can submit loan requests with relevant documents.
Form data is encrypted before submission.

3. Loan Verification

Admin reviews encrypted loan applications and decrypts them using a private key.

4. Loan Approval & Management

Admin updates the status of loan applications.
Users get real-time updates on approval and repayment schedule.

5. Cryptographic Communication

All communication between client and server is encrypted using SSL/TLS.
Sensitive data within the database is encrypted with RSA/AES encryption methods.

5. Technologies Used

Technology	Purpose
PHP	Backend server-side scripting
HTML/CSS	Front-end structure and styling
JavaScript	Client-side scripting and biometric detection
MySQL	Database management
OpenSSL	Encryption and Decryption
face-api.js	Facial detection and blink analysis

6. Security Features

- Eye Blink Authentication: Detects user liveness using real-time webcam feed. Prevents spoofing attacks like using a photo or video.
- Data Encryption: All loan details are encrypted using AES/RSA.
- Secure Login: Biometric verification + encrypted password storage.

7. Conclusion

This project demonstrates a secure and efficient loan management platform integrating cutting-edge technologies like biometric security and cryptographic communication. It enhances the traditional loan system with advanced security and usability features.

8. Screenshots

Eye Blink Authentication

Start Authentication

Authentication Successful!
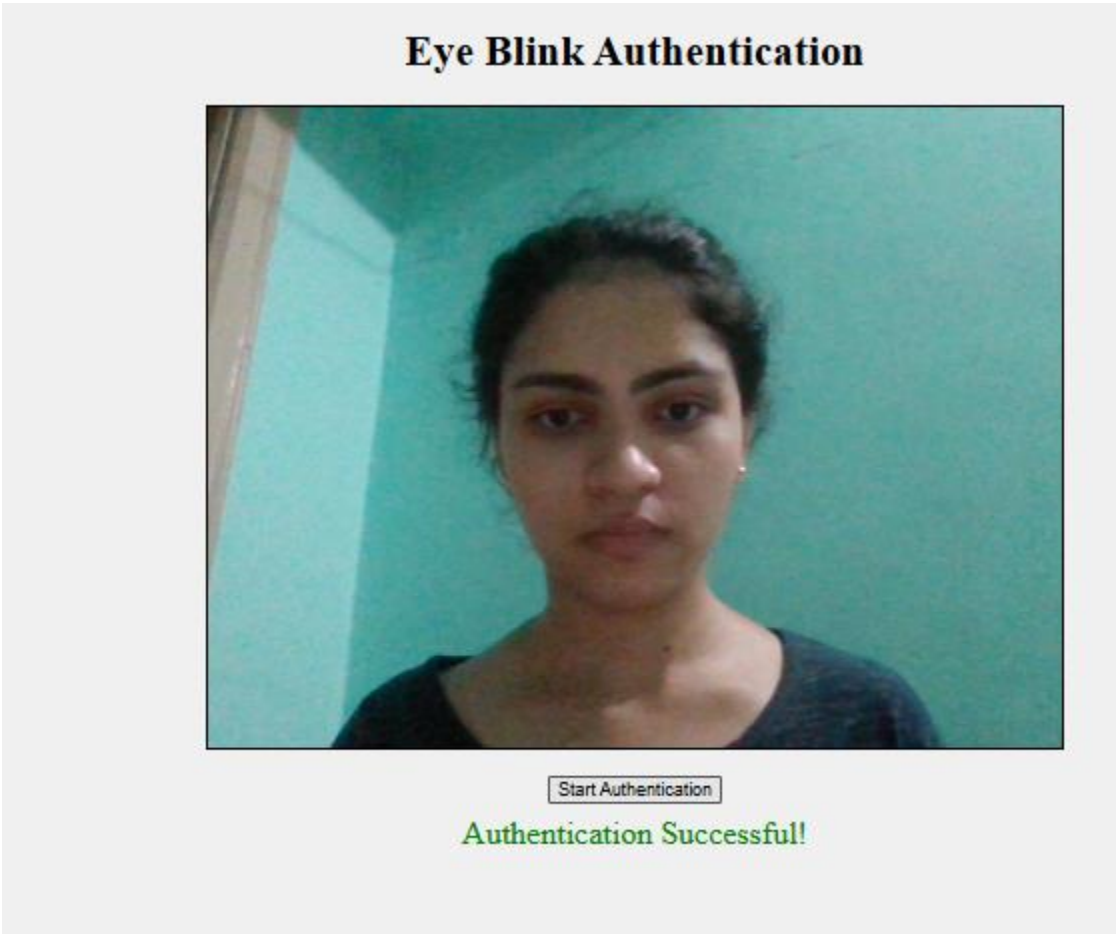
Home

Loans

Payments

Borrowers

Loan Plans

Loan Types

cryptographic communication

Users

Welcome back Administrator!

Payments Today 30,000.00 📅	Borrowers 2 👥	Active Loans 1 👥	Total Receivable 78,090.00 👥
View Payments ›	View Borrowers ›	View Loan List ›	View Loan List ›

Loan List

+ Create New Application

Show 10 ∨ entries

Search:

# ▲	Borrower	Loan Details	Next Payment Details	Status	Action
1	Name :Smith, John C Contact # :+16554 454654 Address :Sample address	Reference :81409630 Loan type :Small Business Plan :36 month/s [8%, 3] Amount :100000 Total Payable Amount :108,000.00 Monthly Payable Amount: 3,000.00 Overdue Payable Amount: 90.00 Date Released: Sep 26, 2020	Date: Dec 26, 2020 Monthly amount:3,000.00 Penalty :90 Payable Amount :3,090.00	Released	✏️ 🗑️
2	Name :S, Veda B Contact # :7658976578 Address :Mangalore	Reference :25721433 Loan type :Personal Loans Plan :27 month/s [6%, 2] Amount :300000 Total Payable Amount :318,000.00 Monthly Payable Amount: 11,777.78 Overdue Payable Amount: 235.56	N/a	Approved	✏️ 🗑️

Showing 1 to 2 of 2 entries

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9. Future Enhancements

- OTP-based dual authentication
- Blockchain ledger for tracking loan approvals and payments
- AI-powered loan eligibility prediction