



# Real-Time Facial Recognition System with Motion Detection

Addressing modern security challenges with contactless authentication.

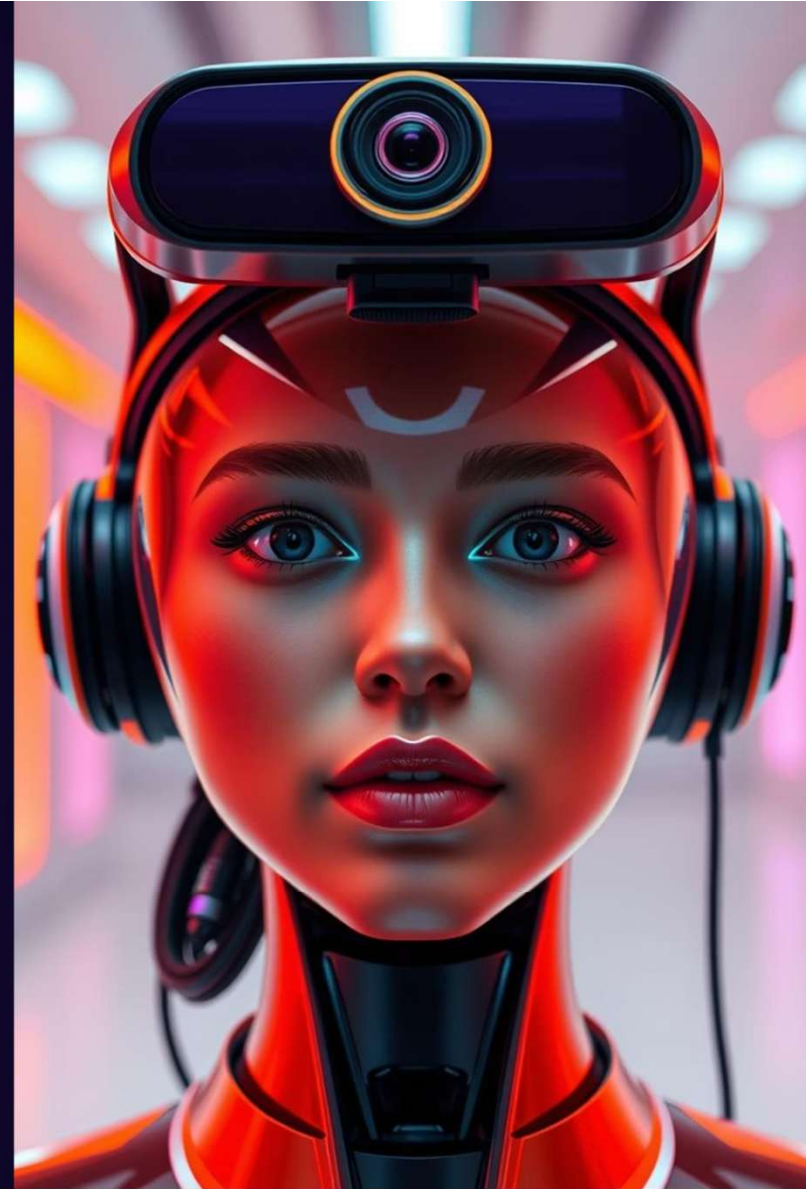
# System Overview & Real-Time Problem

## System Overview

Facial recognition with motion detection for secure, contactless authentication.

## Real-Time Problem

Need for secure, efficient authentication beyond passwords and cards.



# Security Risks & Attendance Challenges

## Security Risks

- Passwords vulnerable to phishing and theft
- Protect personal data and assets

## Attendance & Access

- Manual systems are slow and error-prone
- Contactless, reliable attendance tracking needed



# Motion Detection Challenge

Motion detection adds security by flagging unusual activity.

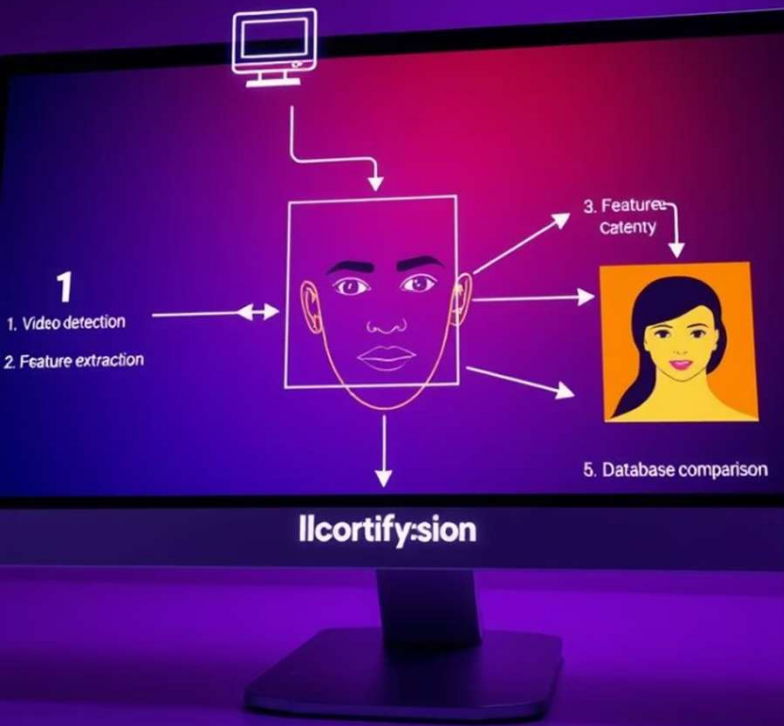
Prevents spoofing, tampering, and unauthorized intrusions effectively.

LINKS;

VIDEO:-<https://youtu.be/gJXEuH8qVBQ?si=ygmW2UxoqhFGCCZ>

GITHUB: - <https://github.com/nathanyakob19/Face-recognition-.git>

# System Architecture & Technology Stack



## Python & OpenCV

Core logic, video feed, face detection, motion tracking.



## face\_recognition Library

128-dimensional face encoding for accurate matching.



## MySQL & Flask

Data storage and backend API for user management.



## Motion Detection Module

Detects movement to enhance security alerts.

# Key Features of the System

## Real-Time Facial Recognition

Live webcam feed ensures only registered users access.

## Motion Detection

Monitors environment and alerts on suspicious movements.

## Fast Processing

Face matching within 1-2 seconds, minimal latency.

## Database Integration

Automated user data storage for accurate authentication.



# Use Cases & Applications

## Employee Attendance

Automatic, secure tracking without manual input.

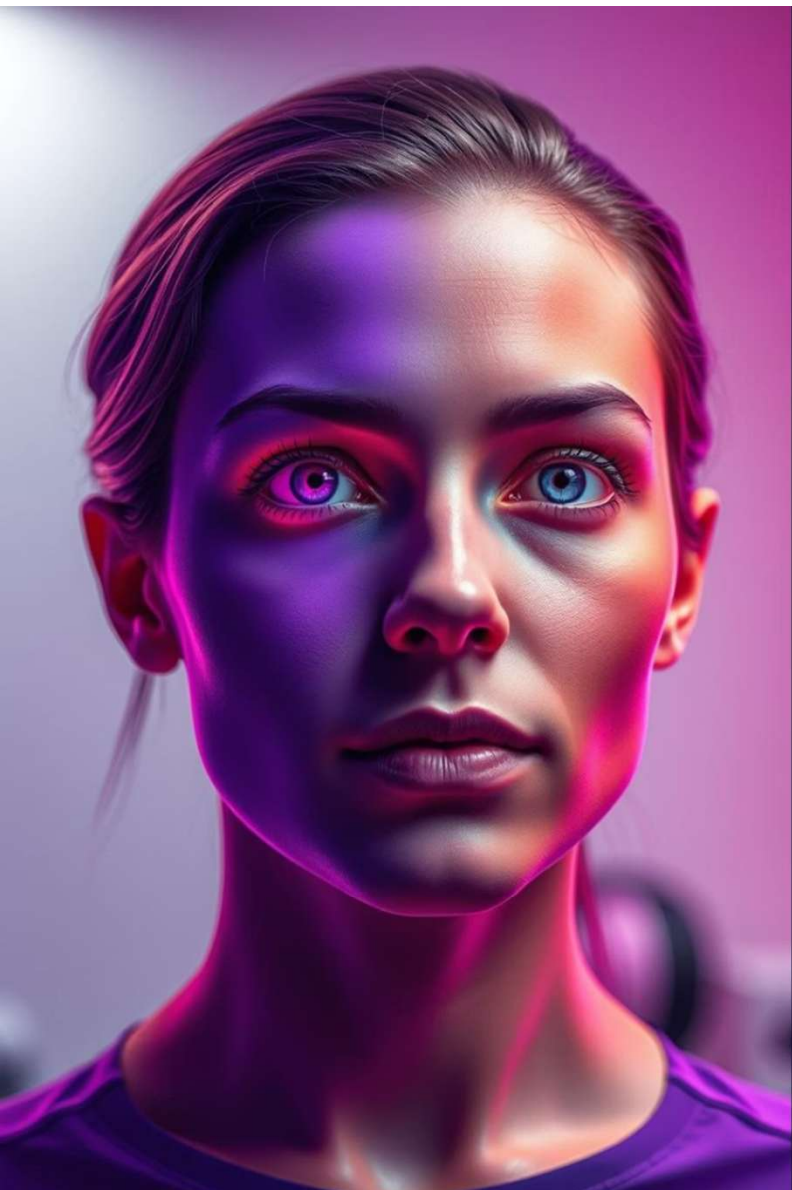
## Visitor Management

Controlled building access with real-time activity monitoring.

## Public Safety

Surveillance in public spaces for security alerts.





## Testing & Results



### Accuracy

Maintains ~92% accuracy despite lighting and occlusions.



### Performance

1-2 seconds for encoding, under 0.5 seconds for matching.





# Ethical Considerations & Future Scope

1

## **Privacy Compliance**

GDPR-compliant data storage with user consent.

2

## **Liveness Detection**

Prevent spoofing with eye-blink and other checks.

3

## **Cloud Integration**

Scalable deployment for larger user bases.

4

## **Mobile App**

Register and authenticate via smartphones.



# Conclusion

Combining motion detection with facial recognition solves key security challenges.

Future enhancements will boost reliability and scalability.