Federal Urdu University of Arts, Sciences & Technology, Islamabad Campus

Department of Computer Science

BS FINAL YEAR PROJECTS EXHIBITION

3. SECURE CAM VISION

1.Abstract

An AI surveillance mobile based application that upgrades existing CCTV to detect threats automatically. Identifies faces, weapons, fire, and sends instant alerts with cloud-stored evidence. Includes mobile monitoring and facial recognition for attendance. Cuts manual oversight and boosts security efficiency.

2.Problem Statement

Traditional CCTV systemsrequire constant human monitoring, resulting in delayed threat detection, high costs, and oversight errors. They lack AI-powered real-time analysis, automated alerts, and verified digital evidence, exposing organizations like Saadat Enterprises to security risks and inefficient incident response.

3.Objectives

1. Build AI system for real-time threat detection
2. Enable automated alerts and cloud evidence storage
3. Create mobile monitoring interfaces
4. Reduce manual oversight, improve security

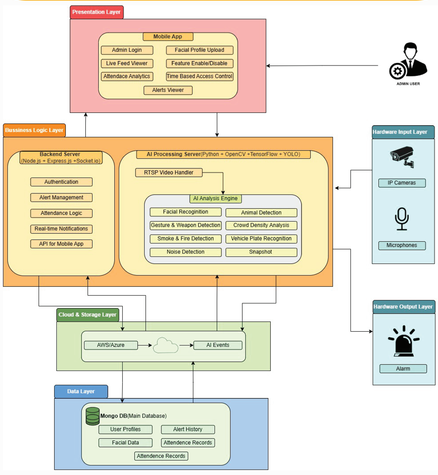
4.Main Features

- AI real-time threat detection
- Automated multi-channel alerts
- Facial recognition & attendance tracking
- Cloud evidence with digital signatures
- Mobile live monitoring
- Vehicle & crowd analysis
- Offline auto-sync
- Third-party system integration

5.Tools & Technologies

- **AI:** Python, TensorFlow, OpenCV, YOLO
- **Backend:** Node.js, Express.js, Socket.io
- **Database:** MongoDB
- **Mobile:** React Native, Redux
- **Cloud:** AWS S3, Firebase
- **Streaming:** RTSP, WebRTC, WebSockets
- **Security:** HTTPS/TLS
- **DevOps:** Docker, GitHub Actions
- **Hardware:** RTSP cameras

6.Block Diagram



7.Methodology:

The project follows the Rational Unified Process (RUP), an iterative methodology consisting of four phases.

Inception: AI security for Saadat Enterprises. Stakeholders: admins, staff, IT. Needs: RTSP, facial recognition, alerts, attendance.

Elaboration: React Native, Node.js, Python AI, MongoDB. Refine use cases, prototype RTSP + face detection.

Construction: 5 iterations (RTSP, facial recognition, detection, attendance, mobile app).

Testing: unit, integration, system.

Transition: Deploy, train, feedback, refine AI.

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