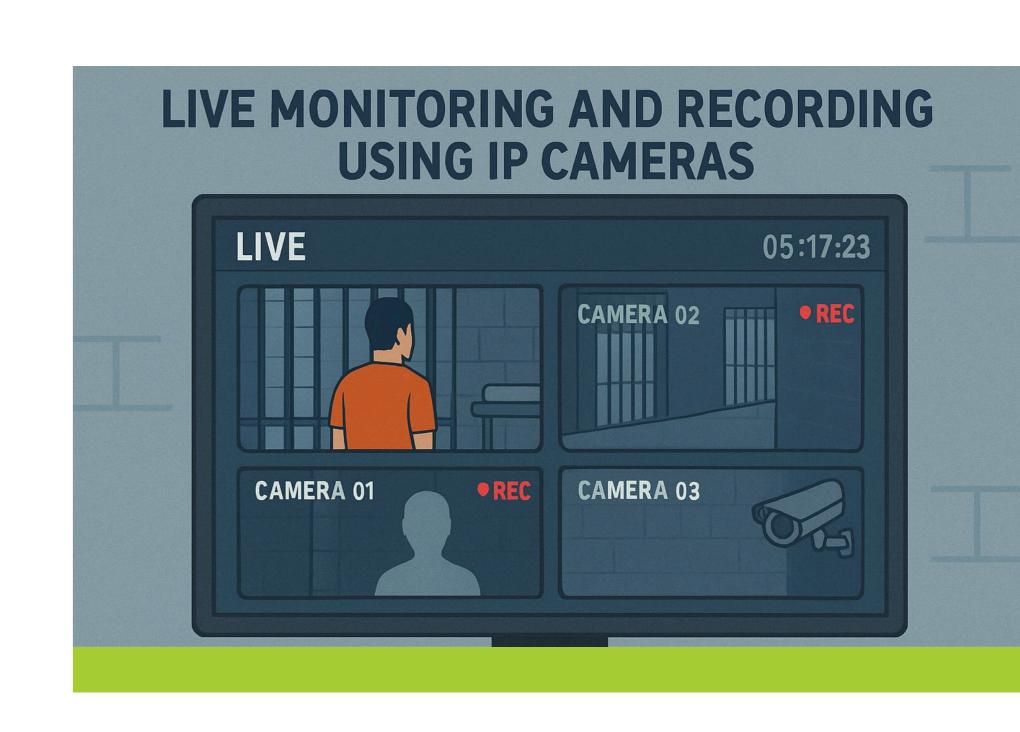


Al-Powered Prison Tracking and Monitoring System

We developed a custom AI Camera-Based Tracking and Attendance System specifically designed for correctional environments. Using facial recognition, intelligent rule enforcement, and real-time alerting, the system streamlines monitoring while enhancing safety and accountability.

Prisoner tracking inside prison





Prison inside or not

Unknown person alert inside cell





Prison guard tracking

Realtime alerts on Prison CMS





Live monitoring and recording to monitor using IP cameras

Client Overview

Client	A high-security prison facility focused on modernizing operations
Use Case	Automated tracking and attendance of individuals using Al-powered facial recognition
Location	India
End Users	Prisoners, Guards, Control Room Operators, Administrative Staff

Problem Statement

Conventional monitoring methods within the facility were facing critical challenges:

- · Manual headcounts were time-consuming and repetitive
- Human errors led to potential security risks
- No real-time visibility into zone-based movement
- · Dependency on paper-based logs and physical supervision

To address these inefficiencies, the facility required a secure, automated, and real-time system to monitor and track movement and presence accurately within restricted zones.

System Workflow

Initial Configuration	 Person Types: Define roles like Prisoner, Guard, Visitor Rules: Set rules for zone access (e.g., cell blocks, yard, kitchen) and time-based shifts Devices: Register and assign AI-enabled cameras to monitor critical areas
Al Server Setup	 Configure the AI Server with details such as CPU, RAM, OS, MAC address, and IP Enable seamless camera communication via MQTT protocol
Person Enrollment	Required details include: Name, Age, Gender Unique Person Number Facial Photograph Assigned Access Rules and Devices Person Type (e.g., Prisoner, Guard, Visitor)
Live Tracking & Attendance	 Al cameras scan and identify faces at zone checkpoints The system validates presence and triggers alerts for: Recognized Individuals Unknown or Unregistered Faces Obstructed or Unclear Faces Absence within required zones or shifts
Real-Time Monitoring	 Web-based dashboard accessible by authorized personnel Logs with timestamps for all movement and alerts Daily, weekly, and zone-specific attendance reports

Tech Stack Overview

Frontend	React.js (Admin Control Panel)
Backend	Node.js with Express.js
Database	MongoDB
Al Engine	Python-based face recognition
Camera Communication	MQTT (Camera Al Server)
Deployment	On-premise within a secure, isolated network environment

Core Features Delivered

- Real-time Al-driven facial recognition
- · Seamless integration with on-site AI camera infrastructure
- · Zone-based rule configuration and enforcement
- Digitized attendance and movement logs
- Secure, role-based user access for staff and operators
- Automatic alerts for unauthorized access and anomalies
- Comprehensive reporting for compliance and review

Deployed Across Multiple Locations

This AI-powered tracking system has been successfully deployed and adapted for various secure environments, including:

- High-security correctional facilities
- · Industrial campuses requiring restricted area monitoring
- Secure government and defense-controlled compounds
- Large factories with sensitive zones
- · Research labs and infrastructure zones with access control needs
- Juvenile and rehabilitation centers
- · Private institutions focused on automated personnel tracking

The platform's modular structure allows easy replication and adaptation across various types of correctional environments.

Impact & Results

- Over 90% reduction in time spent on manual attendance and monitoring
- Fully digitized and tamper-proof record keeping
- · Significantly enhanced facility security through automated alerting
- Improved real-time monitoring and response readiness
- Reduced reliance on manual supervision for routine checks

