

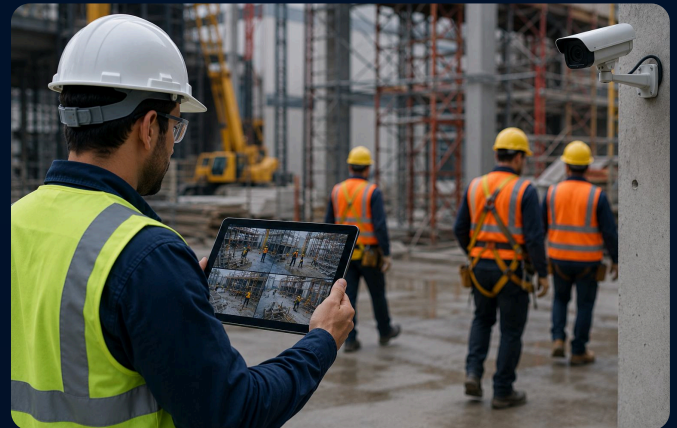


شركة ابتكارات حادة
Sharp Innovations
Innovating The Tech Experience

AI PPE MONITORING

OVERVIEW

The AI PPE Monitoring System by Sharp Innvotech is an industrial safety solution designed to automate the enforcement of Personal Protective Equipment (PPE) regulations. By integrating deep learning object detection with existing CCTV infrastructure, the platform continuously monitors work sites to ensure employees are correctly wearing essential gear—such as hard hats, safety vests, boots, and protective eyewear—thereby proactively reducing workplace accidents.



CHALLENGES

- 1. Manual Monitoring Limitations:** Relying on human supervisors to visually check thousands of workers across large sites is prone to error and logistically impossible to maintain 24/7.
- 2. Reactive Safety Culture:** Without automated systems, violations are often discovered only after an incident occurs, making it difficult to prevent hazardous behaviors in real-time.
- 3. Compliance Gaps:** Disconnected manual reporting makes it challenging to maintain accurate, audit-ready safety logs required by industrial health and safety regulators.
- 4. Environmental Obstacles:** Traditional surveillance struggles with poor lighting, dust, and complex machinery movement, often resulting in high false-alarm rates or missed detections.



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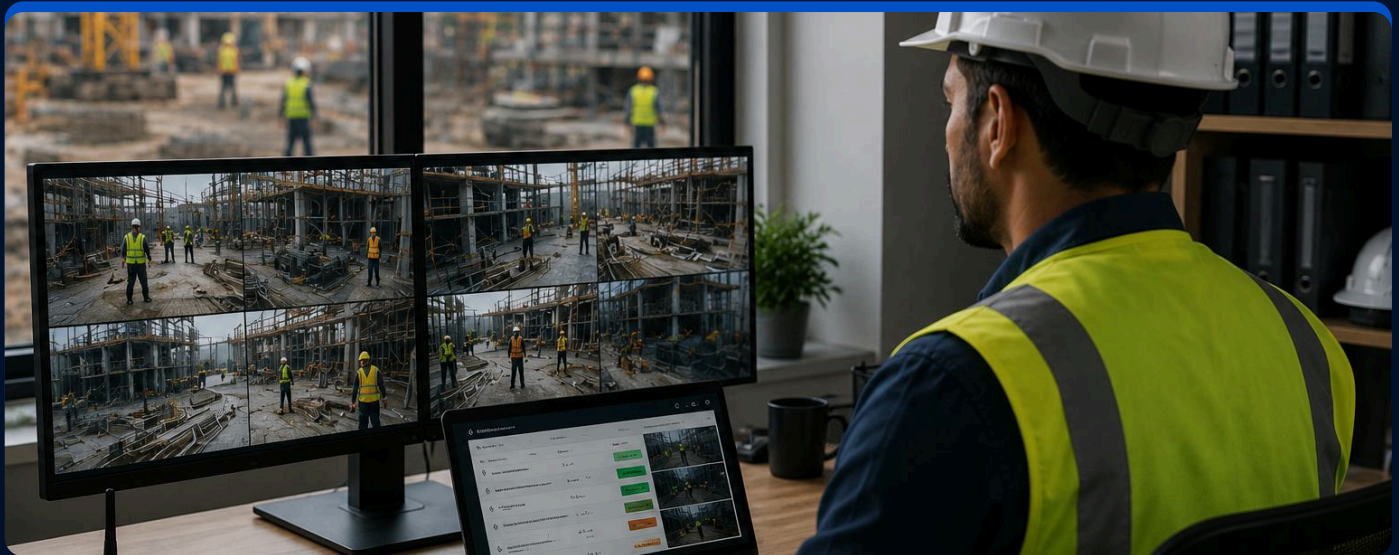


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ANALYSIS

- 1.** Centralized Safety Intelligence: Transforms site-wide surveillance into a unified digital ecosystem, acting as a single source of truth for PPE compliance and safety alerts.
- 2.** Proactive Hazard Mitigation: Leverages AI vision to identify non-compliance in milliseconds, enabling supervisors to intervene before high-risk behaviors lead to injuries.
- 3.** Scalable Operational Oversight: Engineered for enterprise-grade environments, allowing managers to monitor multiple zones and camera feeds simultaneously without adding headcount.
- 4.** Objective Data Accountability: Replaces subjective human observation with timestamped visual evidence, creating a verifiable audit trail for internal reviews and government inspections.

SOLUTIONS



- 1.** Multi-Item Recognition: Uses advanced deep learning models to detect specific safety gear including hard hats, high-visibility vests, protective eyewear, and safety boots.
- 2.** Real-Time Automated Alerts: Triggers instant notifications to HSE (Health, Safety, and Environment) officers, including a snapshot of the violation, timestamp, and location data.
- 3.** Zone-Based Configuration: Allows administrators to define custom safety rules for different project areas (e.g., "Hard hat required" zones vs. "Full PPE" zones).
- 4.** Enterprise Integration: Connects safety violation data directly with site access gates and HR platforms to automate compliance tracking and training workflows.
- 5.** Edge-First Architecture: Performs analysis on local site servers to ensure low-latency performance and strict adherence to cybersecurity guidelines.

KEY FEATURES



Enhanced Workplace Safety

Promotes a proactive safety culture by consistently flagging non-compliance, which helps stop hazardous practices immediately.



Reduced Operational Costs

Minimizes downtime associated with safety incidents and equipment repairs while lowering potential insurance liabilities.



Regulatory Compliance

Simplifies adherence to Saudi Ministry of Human Resources and industrial safety guidelines.



Automated Audit Reporting

Eliminates the manual labor required to compile compliance reports, making government and internal audits significantly more efficient.

END RESULT

- Prevented Workplace Accidents: Significant reduction in injuries due to the proactive identification and elimination of safety violations.
- Optimized HSE Performance: A data-driven safety framework that allows for better allocation of safety resources and targeted training based on historical violation patterns.
- Total Operational Transparency: Clear, digital visibility into site-wide compliance rates, ensuring all departments meet the highest safety standards.
- Future-Ready Industrial Environment: A resilient, technologically advanced safety infrastructure that supports the core objectives of Saudi Vision 2030 by protecting human capital and promoting efficient industrial growth.



TECHNOLOGY



Angular



Nodejs



Postgres



Express