KRYTON AI TECHNOLOGIES

AI-Powered Video Analytics (VA) Solution

Datasheet

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1 AI-Powered Video Analytics (VA) Solution

This document outlines the functional and technical specifications for the Video Analytics (VA) Solution. The solution is designed to enhance workplace safety, security, and operational efficiency through its advanced analytics modules and a unified management platform.

Core Components

The solution is comprised of three primary components, each detailed in this datasheet:

S. No	Components	Specifications
1	PPE Compliance Module	Real-time detection of Personal Protective Equipment (PPE) to ensure worker safety.
2	People & Occupancy Counting Module	Accurate, real-time counting of personnel with facial recognition for identification, emergency management, and operational oversight.
3	Unified Dashboard	A central smart dashboard for configuration, live monitoring, reporting, and management of all analytics modules.

2 Analytics Module 1: PPE Compliance

This module ensures adherence to safety protocols by automatically detecting Personal Protective Equipment (PPE) on individuals in designated work areas. It combines real-time video analysis to identify non-compliant personnel and generate actionable alerts and reports. v(1em)

S. No	Components	Specifications
	System Functionalities	
1	PPE Compliance	Enforces mandatory PPE compliance by detecting personnel not wearing required gear.
2	Equipment Detection	Uses AI-based cameras and analytics software to detect missing safety helmets, safety vests/ dungarees, and gloves.
3	Color Identification	Accurately identifies 4 to 5 different colors of safety vests/dungarees corresponding to different employee categories.
4	Visual Highlighting	Highlights non-compliance with a distinct color in the live, real-time video feed for immediate attention.
5	Facial Recognition	Identifies non-compliant individuals using facial recognition, displaying their name and employee number in the system log.
6	Event Recording	Automatically saves all highlighted non-compliance video events to the recording server with complete metadata.
7	Real-time Detection	Provides real-time detection of safety helmets, gloves, and safety vests/dungarees.
8	Instant Alerts	Generates immediate alerts on non-compliance, complete with a snapshot and metadata stored alongside the video stream.
9	Reporting	Generates detailed reports on PPE compliance, filterable by camera and specific time periods.

10	VMS Integration	Integrates seamlessly with VMS and generates alerts and logs for external systems via Email, SMS, or API.
11	Multiple PPE Validation	Supports simultaneous detection of multiple PPE items on a single person or multiple people.
12	Non-compliance Alert	Triggers an automatic Non-compliance Alert if one or more required PPE items are missing.
13	Low Latency	Performs live detection with a latency of less than 1 second for instant results.
14	Zone-Based Detection	Allows configuration of specific PPE rules for different zones (e.g., entry gates, work areas).
15	High Accuracy	Achieves a detection accuracy of ≥ 90% in good lighting conditions.
16	Low False Positives	Maintains a low False Positive Rate of less than 5% in real-world factory and construction site scenarios.
17	Camera Integration	Integrates with cameras using standard ONVIF streams or direct connections to supported IP cameras.
18	Visual Alerts	Provides immediate Visual Alerts via on-screen pop-ups or bounding box overlays on the live feed for non-compliances.
19	Event Logging	Maintains a detailed Event Log, storing each event with a timestamp, snapshot, and camera ID in the database.
20	Report Export	Generates daily, weekly, and monthly PPE compliance reports in PDF and Excel formats.
21	Alert Forwarding	Supports Alert Forwarding via Email and SMS to notify key personnel.
22	Threshold Settings	Allows configuration of Threshold Settings to trigger alerts for any missing PPE or specific required combinations.

23	Zone-Specific Rules	Allows for setting unique PPE Rules Per Zone, such as requiring masks only in a designated medical area.
24	Schedule-Based Rules	Offers Schedule-Based Rules to enable or disable detection during defined shifts or specific time slots.
25	User Roles	Includes User Roles, allowing administrators to configure detection zones, sensitivity, and notification policies.
26	Exclusion Zones	Allows for the definition of Exclusion Zones to ignore detection in irrelevant ROI areas or backgrounds.
27	Privacy Features	Offers a Face Blurring feature to anonymize individuals for privacy compliance (GDPR/ NDAA).
28	Compliance Dashboard	Provides a PPE Compliance Dashboard for graphical representation of compliance rates per camera, zone, and time.
29	Event Search	Includes a powerful Event Search to filter events by camera, PPE type, time, or compliance status.
30	Snapshot View	Provides a Snapshot View to easily view and download event images or short video clips.
31	Export Options	Offers multiple Export Options to export logs and statistics in PDF, CSV, or XLS formats.

3 Analytics Module 2: People & Occupancy Counting

This module provides real-time, accurate people counting to monitor occupancy levels in various departments and workshops. This is critical for emergency management, ensuring safety officers have a precise headcount at all times. The system distinguishes between known employees and unknown individuals. v(1em)

System Functionalities: People Count

1. Records the number of people in a department to meet safety requirements for emergencies like fires or other calamities.

2. Identifies and provides the number/count of people currently within a premise or department.

3. Indicates the real-time count of people in a particular department or workshop on a live dashboard.

4. Differentiates the count to show the number of known people versus the number of unknown people.

5. Allows individual departments to view their own specific people count data.

6. Provides a central console for safety officers to view real-time data from all departments across the yard.

7. Monitors all entry and exit gates used by a department to ensure the people count is accurate.

8. Groups multiple entry/exit gates for a department into a single logical unit to provide an exact, real-time people count.

9. Counts the number of people entering and exiting any predefined area.

10. Supports both bi-directional and multi-zone counting for complex environments.

11. Displays a real-time count on the dashboard and generates alerts when predefined thresholds are breached.

12. Generates daily, weekly, and monthly statistical reports.

13. Accurately counts the number of people entering and exiting through user-defined virtual lines or zones.

14. Detects and differentiates between ingress (entry) and egress (exit) movements for bi-directional counting.

15. Displays a live feed of count data, filterable by camera, zone, and direction.

16. Maintains a real-time number of people inside a defined area with Occupancy Tracking.

17. Supports multiple counting zones per camera (e.g., doors, gates, lobbies).

18. Achieves an accuracy of ≥ 95% in good lighting and within defined entry/exit zones.

19. Runs analytics flexibly on either edge-enabled cameras or centralized GPU-based servers.

20. Supports a minimum frame processing rate of 15 fps to ensure highly accurate counting.

21. Allows configuration of custom alert rules based on time schedule, zone, or camera group.

22. Generates detailed event logs that include a timestamp, zone ID, and the count for each event.

23. Features a centralized live dashboard showing real-time people count data from multiple locations at once.

24. Provides Trend Analysis tools for visualizing historical data and identifying daily, weekly, and monthly trends.

25. Exports reports and data to PDF, Excel, and CSV formats.

26. Allows users to define custom zones and Regions of Interest (ROI) using virtual tripwires or counting zones.

27. Offers configurable count reset rules, including automatic (daily/hourly) or manual resets.

28. Enables or disables analytics during defined time periods using schedule-based operation.

29. Includes a camera calibration interface to optimize accuracy in various environmental conditions.

30. Ensures secure data-transmission for all count data and alerts through encryption.

31. Provides role-based access control (Admin, Operator, Viewer) with permissions to manage zones and view data.

32. Integrates in real-time with your existing Video Management System (VMS).

33. Guarantees a detection accuracy of ≥ 95%.

34. Operates with a latency of less than 1 second for instant, real-time updates.

4 Video Analytics Platform & Dashboard

Live Viewing, Monitoring & Operations

● The VA solution should provide a single, unified GUI dashboard application for viewing live video feeds and analytics data from the VA and VMS.

● A live, consolidated event feed should show all alerts from all analytics as they occur.

● It should display real-time visual alerts (e.g., color-coded bounding boxes, overlays) directly on the live video feed to instantly highlight non-compliance or events.

● It should provide an inbuilt alert and ticket management system for acknowledgment, escalation, or resolution.

Management, Reporting & Search

● Centralized, graphical dashboard with at-a-glance analytics (PPE compliance rates, live occupancy) by zone, camera, and time.

● Advanced event search filters by date, time, camera, analytics type, compliance status, or employee name, including snapshots or video clips.

● Generate/export comprehensive reports in PDF, CSV, Excel formats.

System Configuration & Rule Management

● Unlimited customizable zones per camera, including ROIs and virtual tripwires.

● Enable or disable analytics based on time schedules.

● Create granular alert rules based on analytics type and camera zone.

● Support auto/manual counter resets for occupancy management.

System Architecture & Integration

● Deep VMS integration and support for ONVIF-compliant IP cameras.

● Secure HTTP/2 or gRPC APIs and MQTT support.

● Flexible deployment on edge-enabled cameras or GPU-based servers.

● Up to 30 disaster recovery and 30 backup policies supported.

Performance & Scalability

● Scalable analytics licensing with flexible configuration per camera.

Security & Compliance

- Role-based access control (RBAC) per user.
- Strong encryption for all transmitted data.

Platform Customization

- White-label support for logo, theme, login page, and branding.

OEM Certifications

- Cert-IN Empanelled
- CMMI-DEV Level 3
- ISO 9001 – Quality Management
- ISO 14001 – Environmental Management
- ISO 20000-1 – IT Service Management

Find out more

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