

Intelligent Video Analytics for: The Critical Infrastructure Market



Honeywell's new intelligent video analytics software enables enhanced security and surveillance solutions by automatically monitoring video of people, vehicles and objects, and their associated behaviours, within a camera's view. Honeywell's intelligent video analytics software monitors up to 20 objects with more than 35 specific behaviours and events. Intelligent video analytics continues to automate monitoring tasks for high risk sites will ensure a higher level of security and efficiency by working 24/7, providing accurate and reliable continuous monitoring, scaling to a large number of cameras, and catching events that human operators may overlook.

Intelligent video analytics can secure critical infrastructure facilities for perimeter monitoring, event detection, and facility optimisation.

Applications: Perimeter and Boundary Control

- Delivers real-time alarms upon identification of a person attempting approach to, or vertical climb on, a security fence.
- Quickly establish virtual perimeters – Set alarms on virtual fences or “trespass lines” on gates, sectors where fencing is impractical, or early-warning boundaries outside of fences.
- Restricted zone protection – Easily implement detection of entry or exit of people or vehicles from protected zones including high value targets such as parked aircraft, fuel storage tanks, munitions storage, bridge supports, power plants, substations, water treatment plants, dams, or similar infrastructure targets.
- HazMat zone protection – Protection of and alarming on people or vehicles entering dangerous or hazardous areas.
- Detecting people or vehicles “casing” a facility by slowing, stopping or making U-turns and returning.
- Advance detection of vehicles speeding toward boundaries in a possible attempt to breach the perimeter.

Management and Optimization of Critical Facilities

- Facility access – Monitor all entry and exit points to a facility and establish rules to differentiate normal and unacceptable events or behaviours.
- People counting:
 - Measure people flow at specific entry and exit points in the facility, floor and/or building sector with real-time or periodic reporting.
 - Enable collection of periodic personnel movement data for use in facility optimisation.

- Traffic monitoring of parking lot entrances, exits, restricted areas, or major arteries for abnormal (slow) movement, traffic jams, wrong direction, speeding, illegal U-turns, failure to stop, stopping in restricted zones.
- Detect and alarm when people or vehicles enter or leave dangerous or hazardous areas.

Success Story

The Problem

A Fortune 500 company with hundreds of remote locations throughout North America approached us to solve some key problems:

1. **Cost of monitoring:** With hundreds of locations, this customer couldn't afford to monitor videos of each facility, even if they used motion-based recording for events. So they were looking for a more efficient, more reliable way to handle their data.
2. **High operating costs:** The end user had high costs of operation because they ran large facilities in remote locations. They thought they were losing revenue due to customers avoiding payment by driving around instead of through the payment area. In some facilities, they suspected that losses were amounting to thousands of dollars each day.
3. **Regulatory compliance:** State law required that this customer store an average of one year of incident data per location and as many as three years of incident data in the state of Pennsylvania. If found to be non-compliant, a site could be shut down. The cost of a shutdown in terms of lost revenues and fines associated with reopening was about \$2 million per site. The company had experienced three shutdowns in the 12-month period prior to using Active Alert®.

The Solution

Active Alert was deployed in several locations using analytics to track high value equipment, critical fence lines, virtual fence lines, and personnel and visitors in and out of the facilities. All facilities were monitored from one off-site command center.

The Results

Within six months, several trends were identified and operational changes were made:

1. **Cost of monitoring:** At the start of the evaluation, three full-time staff were required to handle access alarms from 800 locations and video alarms from 100 locations. Two years later, the same command center was handling access alarms from more than 1,000 locations and video alarms from more than 200 locations, as well as handling video forensics, with the same staff. This 40 percent increase in efficiency was made possible because analytics dramatically reduced false alarms in addition to giving them better efficiency, higher reliability, and fast video search capabilities when incidents occurred.
2. **Operating costs:** When cameras were set above portals to the critical infrastructure sites to monitor vehicle flow in and out of each facility, it was observed that some visitors would try to bypass the payment areas. We set up directional zones and restricted zones to alarm on vehicles that tried to bypass. Initially, there were several alarms per week as drivers were caught trying to bypass the system. Over time, alarms per site decreased and revenue per site increased, as drivers were forced to pay for loading/unloading materials and waste at the facilities. Some sites saw revenue increases of thousands of dollars per day.
3. **Regulatory compliance:** Because of the small footprint of the Active Alert system alarms, the customer was able to record, store and forward much smaller pieces of video data than ever before. Since 2005, the end user has installed more than 150 Active Alert

systems at more than 170 locations. Since those systems were installed, there have been no costly shutdowns due to non-compliance.

Overview of Advantages

- Increases levels of security, improves staff productivity and efficiency with reduced manpower costs for monitoring.
- Multiple applications: security enhancement, visitor management, visitor processing, productivity enhancement, facility optimization and safety enhancement.
- Detecting, tracking, and recording of event meta-data for every entry and exit from a scene, for later forensic analysis of newly-defined events or behaviours not originally believed to be of interest.
- Powerful video forensics that permits user definable, event-specific behavior retrieval in seconds or minutes rather than hours or days, even in very large systems.
 - Ability to play back and analyse archived video and apply a variety of rules to discover events and relationships formerly of no interest.
 - Compare and evaluate traffic flow patterns between different facility locations/layouts over the same time period.
 - Review personnel and visitor movements related to undesired events or behaviors to identify meetings with accomplices.
- Discrimination between objects of interest and environmental backgrounds.
 - Ability to ignore tree motion, rain, snow, birds, or animals.
 - Accommodates widely ranging lighting conditions such as strong shadows and high contrast scenes.
- High performance analytics algorithms enable real-time tracking of up to 20 objects and more than 35 events.
- Easy deployment and intuitive setup of the object and event rules for each video channel; different analytics rules for different periods of the day as needs change.
- Deployable for both analog and digital video systems.

Not only is video analytics an outstanding advancement in perimeter protection and loss prevention for critical infrastructure, it is also increasing in its importance and demand for use in other markets as well. Instead of having operators monitor multiple cameras, video analytics identifies behaviours of interest and immediately alerts the security officer to suspicious activity. Ultimately, this allows security officers to focus their attention on the most important activities and monitor the highest potential for risk, and enables security professionals to make better decisions and react faster to events.

For more information: www.honeywell.com/security/uk

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