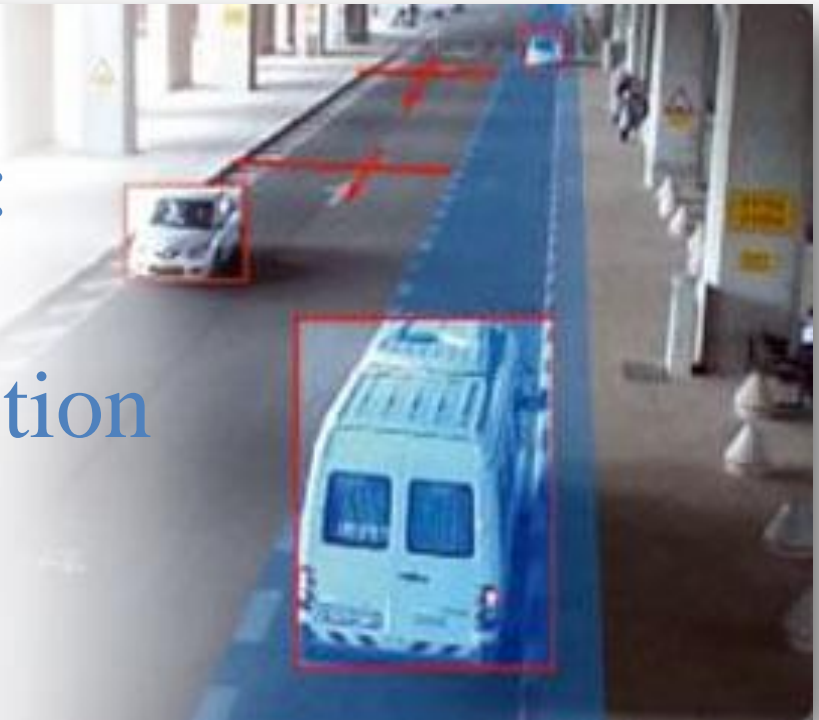


Interactive Surveillance Solutions

Video Analytics: Understanding Rules and Exception based Reporting

3xLOGIC Discussion Guide



Video Analytics

Video analytics can be a valuable and effective tool to assist in detecting gaps in training or management, or help you spot and praise good behaviour. Analytics can help you grow revenues by transforming the way your customer data and behaviour is analyzed and reported.

3xLOGIC's VIGIL Video Analytics comes with a variety of pre-configured Rules and user-definable Exception-based Reports engineered to address a number of typical video analytics employed by retailers today.

By establishing a set of user-defined exception-based rules, Loss Prevention (LP) managers can receive real-time alerts anytime that events or actions fall outside of these parameters. In this way,

Loss Prevention can not only increase its effectiveness, it can begin to transform itself from a reactive to a responsive, proactive resource for the entire organization.



Figure 1: Traffic travelling through this area is considered to be entering or exiting the store.

Basic Video Analytic Rules

Tripwire – This Rule provides for basic traffic counting (people or vehicles) using a single Tripwire threshold (Figure 1). This Rule counts the number of people entering and exiting an area based on a single tripwire line drawn on the threshold between two areas. Alarms can be generated when any given number of people enter or exit the area within a set period of time.

This Rule tends to be the easiest to set-up. If this Rule is to be used for People Counting it requires a dedicated overhead view camera over the entryway to the site with enough field of view for the engine to determine that an object in question is a person before and after crossing the Tripwire.

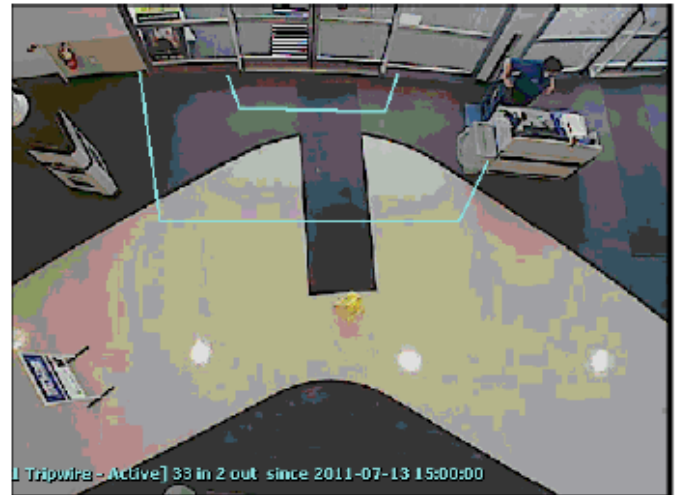


Figure 2: The employee at the desk can move around without crossing both Tripwires and creating a false-positive, and all traffic entering through the door will be counted.

Multiple Tripwire – This Rule provides similar functionality to Tripwire but uses two tripwire lines drawn between two areas (Figure 2). A person must cross both tripwires to now be counted thereby increasing the number of false-positives being captured as compared to a single Tripwire. This Rule is best suited for areas where large amounts of traffic pass through.

Advanced Motion Alarm – This Rule provides the ability to detect traffic motion of people, vehicles, or both within a specified area. An alarm is generated if an object is detected within a specified area. Rule relies on motion being detected within the prescribed area.



Figure 3: Here you can see that the Occupancy Count Rule is configured to encompass the area in front of the register where a customer would stand.

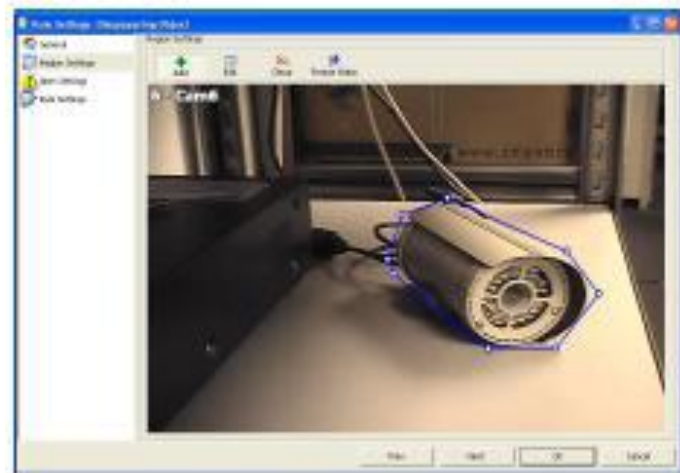
Occupancy Count – This Rule counts the number of people within a pre-described area based on parameters drawn in the scene (Figure 3). Alarms can be generated when a specified number of people are identified within that area such as till or teller lines. This Rule can be used to determine the number of people in line and how long they have been in line.

This Rule is often used in conjunction with Point-Of-Sale (POS) systems enabling exception-based reporting alarms like — refund/return with no customer present. A dedicated overhead view camera over the area in question with a wide camera angle is required to leave enough space outside of the bounding box to determine that an object in question is a person before entering the region.

Density Alarm – This Rule detects motion by comparing the amount of foreground data to background data within a specific area rather than actually counting people in that area. As an example, this Rule can be used to trigger an alarm for a teller line where a threshold has been exceeded pertaining to the amount of people in line at any particular time.

Scene Change – This Rule provides the user the ability to protect the camera from being tampered with by detecting changes in a particular scene, for cases where the camera has been moved or pointed in a different direction.

Appearing Object – This Rule detects objects that appear within the area in one spot long enough to become part of the background. For example, the Appearing Object Rule could be used in a “No Parking” zone to trigger an alarm if someone parks there. It can also be configured to trigger an alarm when a vendor delivery is made or objects like a briefcase or a purse are left unattended. This Rule works best with a wide-angle camera.



Disappearing Object – Gives you the ability to protect a stationary item from being removed from the scene. This Rule detects objects that disappear from the image. A region for this Rule is drawn tightly around a specified object. This Rule is designed to work best with a narrow camera view. A prime example for this Rule might be a museum that has configured the Disappearing Object Rule to trigger an alarm if someone removes a valuable object or painting.



Figure 4: Overhead placement is critical to ensure that your Overhead People Counts are accurate.

Overhead People Counting – This Rule counts the number of people in a specified area using a camera mounted on the ceiling with a straight down view (Figure 4). This Rule is often used in conjunction with POS systems enabling exception-based reporting alarms like refund/return with no customer present.

A dedicated overhead view camera over the area in question with a wide camera angle is required to leave enough space outside of the bounding box to determine that an object in question is a person before entering the region.

Loitering Alarm – This Rule provides an additional analysis of motion in a scene. This Rule detects people loitering in a specific area. This Rule can be used to define areas where loitering represents a risk, or can be used for marketing purposes to help assess the effectiveness of a new retail display, sign or end cap.



Figure 5: VIGIL can track how many customers are currently within a defined region in the cameras field-of-view and send out an alert when that number exceeds a pre-determined amount.

Queue Monitoring - Can be used to improve customer service and response by monitoring metrics such as the length of customer wait times at registers or service counters, or by monitoring the number of customers in those lines and alerting store managers when queues exceed pre-defined thresholds (Figure 5).

This can be a powerful tool in achieving more accurate staffing levels or resource allocation. Accuracy of the Queue Monitoring analytics

requires a dedicated overhead view camera mounted over the center of the queue region with a field of view wide enough to encompass the entire queue area.

Combining Video Analytics with POS Transactional Data

Synchronizing your surveillance video with POS transactional data in conjunction with video analytics and user-defined exception-based rules give you a powerful tool kit for analyzing and detecting fraud. This intelligent approach to loss prevention can help uncover errors, training or skill deficiencies, as well as questionable or dishonest practices.

3xLOGIC's VIGIL Intelligent Video Management System has the ability to monitor, identify and tag transactions deemed to be suspicious. By defining the rules, or exceptions you are interested in tracking, you drive the investigation into uncovering how these exceptions are impacting your operation (Figure 6). VIGIL actively monitors your environment and identifies transactions—in real-time—deemed to be suspicious.

Reports can be generated by a variety of parameters including cash register, time, employee number, amounts, exception kind, and transaction type, and accessed from any computer connected to your network. When coupled with the relevant video clips, you have a true picture of what truly transpired.



Figure 6: Exception-based Reporting combined with Overhead People Counting monitors and alerts you whenever a cashier processes a return or a void when no customer is present.

Integrator Responsibilities

Analytics is effective at tracking trends, not generating exact numbers. In most applications,

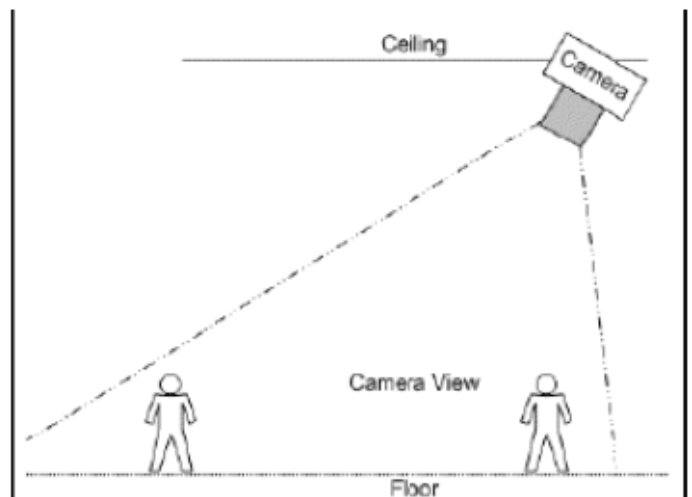
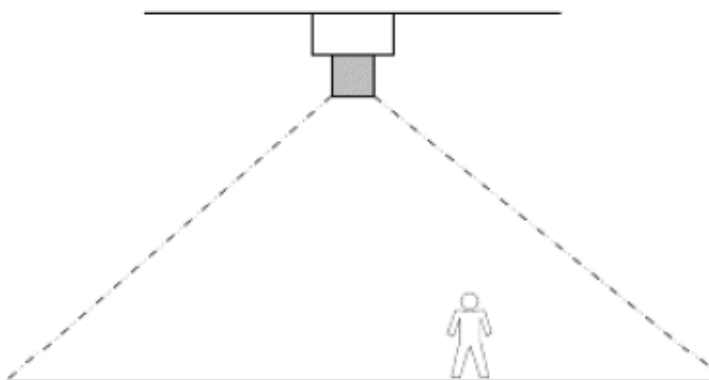
the estimated accuracy of retail analytics is approximately 75%.

Installation of dedicated analytics cameras with correct orientation and positioning for the specific type of analytic rule being used are required.

- ◆ Estimate 4 to 6 hours per site for initial configuration and audit of analytics.
- ◆ Final confirmation of setup and configuration to be conducted by 3xLOGIC's QA department.
- ◆ Remote connectivity is mandatory for each site to ensure that issues encountered can be quickly identified and resolved.
- ◆ Analytics Anomaly Reporter (the application that identifies if a camera is reporting abnormal numbers) requires daily monitoring. We have found that a 250 store site running People Counting could require up to 10 hours per week to maintain.

Overhead Cameras:

Overhead camera angle:



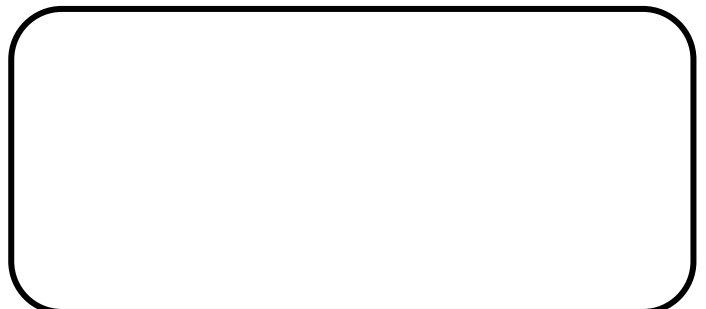
Focused On Your Success

Our success relies solely on the success of our authorized partners. Together we are forging new opportunities and delivering solutions that exceed our client's expectations and allow them to operate their businesses more effectively.

Our partner program is built on a foundation of mutual trust and mutual gain—a program in which each benefits from the strengths of the other, and in doing so provides the highest level of customer satisfaction and service possible. In doing so, we enable you to focus on what you are best at; while together we meet the direct needs of the client.

Contact us for more information.

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