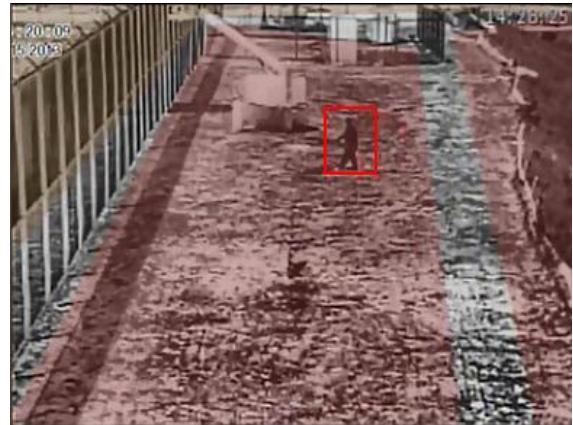




# The Advantage of Embedded Video Analytics

Safeguarding outdoor assets, whether commercial sites like maintenance yards and car lots or critical infrastructure like airports and refineries often comes down to the same thing: Accurate detection and timely information about the unfolding event. While there are many technologies available for outdoor security, smart thermal cameras with video analytics have emerged as the solution of choice for detecting intruders in real time outdoors.



At one time, it was a common practice to place video analytic software on devices outside of the camera, which would send video over the network for content analysis. But recently, after many years of disappointing performance, some camera manufacturers are now embedding video analytic software directly within the camera itself. When combined with more powerful video processors and thermal sensors, these “smart thermal cameras” offer great improvement in detection accuracy, while eliminating the nuisance alerts that once plagued outdoor systems. In fact, today’s smart thermal cameras with embedded video analytics now perform with the same reliability outdoors that we have come to expect from the alarm systems we use in our homes and offices.

Consider the challenges for a smart camera used to detect intruders outdoors. Smart thermal cameras are designed to “see” movement, but outdoors, everything moves. Cameras are mounted high on poles which shake from even a slight wind or vibration, causing the camera to move along with the entire scene. Clouds create moving shadows on the ground. Foliage waves in the breeze, adding more movement to the scene. Rain, snow, and blowing dust can “trick” a camera into sending an unnecessary alert. Such a dynamic environment can wreak havoc on a system not designed to overcome these challenges.

Given these difficulties, today’s more effective smart cameras are specifically designed to work in the

outdoors, despite uncontrolled factors. Specifically, cameras which employ both a high degree of image processing and on-board video analytics have a great advantage in accuracy over solutions that employ analytics on a server, outside of the camera. When video analytics are placed directly within the camera, 100 percent of the raw scene data becomes available for analysis, making it possible to examine the full visual detail of every video frame, eliminating – at the source – all the impediments that would otherwise trigger nuisance alarms.

On the other hand, cameras without embedded analytics must compress the video data for transmission over the network, where it is received by the server or encoder that contains the video analytic software. That's a problem because compression removes most of the finer scene details—up to 99% of the original data—seriously degrading a video analytic system's ability to accurately detect and recognize targets. There is simply not enough video detail available to determine relevant motion – such as a human intruder - from irrelevant motion, such as trash or trees blowing in the wind.

The result has been a huge number of false alerts, which completely undermine trust in the system. After responding to a multitude of perimeter breach alarms that turn out to be nothing more than small animals or windblown branches, even the most conscientious security guards lose confidence in the system and start to ignore its warnings. Worse yet, on days with restricted visibility due to rain or fog, data compression has caused detection cameras to miss virtually all intruders in a scene.

With camera processors examining the full visual detail of every video frame, you can achieve a much greater degree of accuracy with your video analytic solution in detecting motion and recognizing potential threats. Such processing power within the camera can be used to stabilize images electronically before video content analysis takes place. This removes camera motion as a source of nuisance alarms, since video analytics software cannot detect an object entering into view if the whole scene is moving from wind. Such in-camera processing can also filter tree motion as sources of nuisance alarms, determine the true size of all objects in the field of view, and detect intruders with high accuracy and very low nuisances.

There is an economic advantage of cameras with embedded analytics as well, which comes from the very large distances the solutions can reach. When video processing power is used in conjunction with embedded video analytics, smart cameras are able to cover as much as four times the distance and

area of server-based solutions, accurately detecting pedestrians 600 meters away. Longer-range detection means fewer cameras are needed for the application, along with a great reduction in infrastructure costs, such as poles, power and trenching.

Integrating the thermal imager directly with the video analytics – inside the camera enclosure, with a high degree of processing the edge – is the cornerstone of a smart camera's ability to accurately detect targets in the outdoor environment, returning the promise of video analytics for reliable outdoor security.

## About SightLogix

SightLogix smart thermal intrusion detection systems protect energy, transportation, chemical, utility, communications, and government facilities. Unlike video surveillance cameras that simply record video for review, SightLogix SightSensors automatically detect security breaches in real-time with high accuracy to alert responders with full situational awareness. Learn more at [www.sightlogix.com](http://www.sightlogix.com).