SightLogix SightSensor

System Advantages Vs Alternative Thermal Cameras

The Thermal SightSensor is a smart video analytic security camera that detects intrusions over outdoor areas and site perimeters. The system uses a high degree of on-board image processing to deliver very accurate detection with low false alarm rates. It is ruggedized to survive harsh conditions while operating over great distances, reducing project costs. The combination of accurate detection, low nuisance alerts and large distance coverage has earned the SightSensor its reputation as the most reliable and cost efficient-solution for outdoor security.

The SightSensor detects intruders that violate video analytic rules that you have defined, placing a red box on intruders and tracking them through the field of view. SightLogix video analytic software is embedded directly within the camera.

Video and target information, GPS location, speed, location, bearing, and other data is sent from the SightSensor over the network to a Video Management System (VMS) or Physical Security Information Management (PSIM) system for display and alarm management. SightLogix works with most major third party systems.

The result of the SightLogix approach is significantly greater accuracy, near-zero false alerts, a manageable number nuisance alarms and a system that takes minutes to configure without tuning or seasonal adjustments.

Key Features and Benefits

SightLogix has taken a different approach from other thermal cameras with video analytics, as described below.

Optimized, All-in-One Edge Device

SightSensor video analytics have been optimized for the specific characteristics of the thermal imagers used in the camera. This removes all of the tweaking and configuration that other cameras require when trying to match one manufacturer's detection software to a different manufacturer's imager. With all-in-one, edge-based SightSensors, such time and effort is unnecessary, saving costs and deployment effort.

Unmatched Video Processing

SightLogix has determined that the only way to provide accurate detection outdoors is to provide a very high degree of video processing inside the camera in advance of the video analytics, a critical step for making outdoor detection repeatable, accurate, and cost effective.

This approach solves the fundamental detection reliability problem with thermal cameras that employ video analytics outside of the camera, or which lack the appropriate level of processing.

By employing a large degree of processing inside the camera, SightSensors use the full dynamic range of the video as it leaves the imager, rather than the traditional model which compresses the video for network transmission. Compression removes most of the finer scene details – up to 99% of the original data – seriously degrading the camera's ability to accurately detect and recognize targets. In fact, on days with restricted visibility due to rain or fog, data compression has caused other thermal cameras to miss virtually all suspicious movement in a scene.

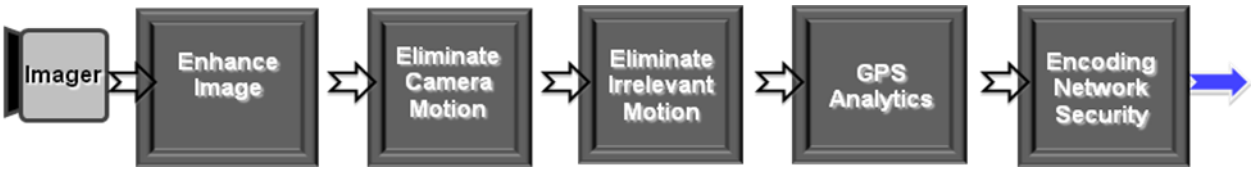


Figure 1: SightSensor On-board Processing is the Key to Accuracy and Low Costs

On the other hand, when the uncompressed imagery is processed by a SightSensor, 100% of the raw scene data is available for analysis. With on-board image processors examining the full visual detail of every video frame, you can achieve a much greater degree of accuracy in detecting motion and recognizing potential threats.

Extended Range Lowers Cost

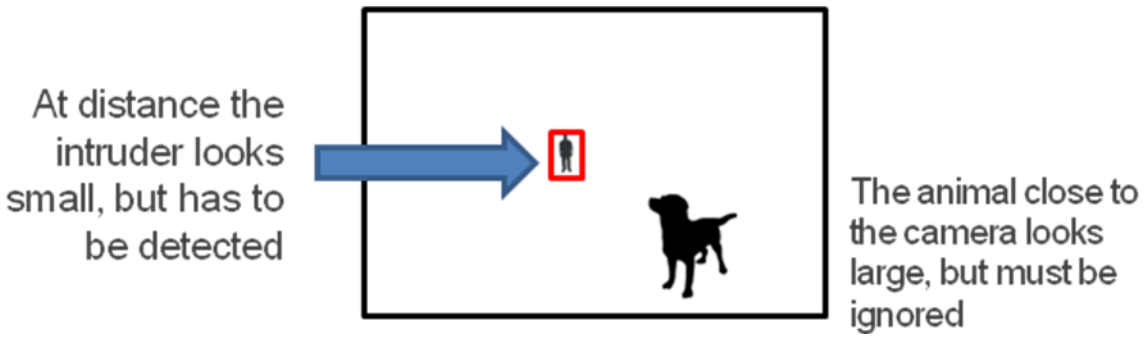
The same image processing used for accurate detection also gives SightLogix cameras extended range and coverage, automatically detecting human-sized targets at ranges that can exceed 600 meters, measured by intruders moving towards the camera, the most difficult detection scenario.

As a result, SightLogix systems reduce the number of cameras typically required for large areas, often eliminating two out every three camera poles and their supporting infrastructure (trenching, networking, power, etc.), lowering overall project costs significantly.

Geo-Registration for Detection Accuracy

SightSensors are “geo-registered” devices, which lets them know the actual location and true size of all pixels in its field of view. From this information, accurate video analytic size rules can be used to eliminate movement which does not represent a security concern – like small animals or blowing debris – while detecting human-sized intruders under all conditions.

For example, a small animal near the camera will look much larger than a man at 300 meters away, as you can see in the figure below.



Using geo-registration, SightSensors ignore the animal at right while alerting on the distant person, even though the animal will cover more of the camera's field of view. The same approach applies to blowing trash, clouds, and other moving things which are always present the outdoors; such non-security related movement will be ignored and will not send alarms. Essentially, geo-registration enables a three-dimensional capability for an outdoor detection camera.

Point-and-Click Calibration

While some thermal cameras claim to support geo-registration, they require a complicated and manual calibration process using GPS readers and multiple individuals walking around the camera's field of view taking measurements. When you consider that this process must be done for each camera along the perimeter, and that some assets can stretch kilometers, such a cumbersome calibration process can quickly lead to mistakes and greatly add to project costs.

For this reason, SightLogix has designed a very easy "point and click" calibration process that eliminates the possibility of errors while reducing the time and complexity needed for setup.

Hands-Free PTZ Control

PTZ cameras play an important role in a perimeter system, providing an up-close view of a detected target along large perimeters. However, trying to manually steer a PTZ onto target can be like trying to find a needle in a haystack.

For this reason, SightSensors use the GPS location of detected targets to automatically direct pan-tilt-zoom (PTZ) cameras to zoom onto the exact location of an alarm in real time, making the target large enough to reliably identify, intercept in real time and record for evidentiary purposes.

Electronic Stabilization Reduces Nuisance Alerts

Thermal cameras are often deployed along open areas that are naturally impacted by high winds or vibrations. It is difficult for smart cameras to detect movement in a scene when the whole field of view is also moving from camera shake. Without image stabilization, these applications can be overwhelmed by nuisance alarms or worse, outright misdetects.

For this reason, all SightSensors electronically stabilize the video before analytic rules are applied, greatly reducing nuisance alerts caused by camera motion.

In-Bound Detection Distances Ensure Proper Coverage

Knowing the camera's true detection range lets you design a dependable system with no coverage gaps. Otherwise, you will end up with a perimeter security system with gaping holes that allow intruders to pass through undetected.

For this reason, all SightSensor detection specs are based on the distance the camera can automatically detect a person walking "inbound" or directly toward the camera. A person walking toward the camera produces very little motion (compared with a person walking across the field of view), which makes the target harder for a smart camera to detect at longer ranges. This is the most difficult detection task for a smart camera, but measuring the detection range in this manner avoids any gaps in coverage.

In Summary: What Makes the SightSensor different from other Thermal Video Analytic Cameras?

- SightSensors use a high amount of on-board image processing. This gives them accurate detection, manageable nuisance alarms and near-zero misdetects compared to any alternative.
    - SightSensors detect twice the distance and four times the area compared to other thermal cameras.
    - Greater coverage means fewer cameras and less infrastructure (half the poles, power, etc), reducing costs.
    - SightSensor video analytics are embedded in the camera, and analyze the raw video right off the imager.
- They're the only video analytic camera geo-registered to filter small objects like animals, trash, etc.
    - They can auto-steer PTZ cameras to zoom, follow and help identify targets.
    - SightLogix detection rates are based on a person walking towards the camera, and detect more accurately at greater ranges.

- They stabilize the image before video analytic rules are applied, overcoming movement from wind and vibrations which often occur outdoors.

About SightLogix

SightLogix makes smart thermal camera systems that protect some of the world's more important sites, including assets in the energy, transportation, chemical, utility, communications, and defense industries. Unlike video surveillance cameras that simply record video for review, SightLogix SightSensors automatically detect security violations in real-time to alert responders with full situational awareness.

Information and Resources

- To perform an online perimeter security design of your facility in minutes, visit: http://www.sightlogix.com/sightsurvey-tool/.
- To read more about SightLogix SightSensor technology, visit: www.sightlogix.com. To request a meeting with a solution specialist, email info@sightlogix.com or call +1 609.951.0008.

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