

SmartCatch™ | Perimeter Intrusion with Loitering Monitoring Technical Specification

Vidient SmartCatch is an accurate and effective solution for detecting perimeter intrusion in sensitive areas. Using existing CCTV infrastructure, SmartCatch software monitors, identifies and tracks objects for security policy violations and enables quick response through real-time alerts and instant video replays. At the core of SmartCatch is a set of advanced video algorithms capable of performing complex behavioral analysis, tracking numerous objects and simultaneously identifying security threats in even the most complex environments. Perimeter Intrusion with loitering monitoring is one of many available SmartCatch behaviors.

DEFINITION

SmartCatch Perimeter Intrusion behavior is a video-based perimeter protection system. The system detects, tracks, and classifies "target objects" as humans, vehicles (including water vessels,) and other objects in a real time video image, and generates an Alert notification when the "object" enters or loiters within a defined Region of Interest (ROI) or Zone Area in the camera view. Each ROI can have different naming capability. Multiple ROIs are supported per single camera view each with a different Alert trigger response.

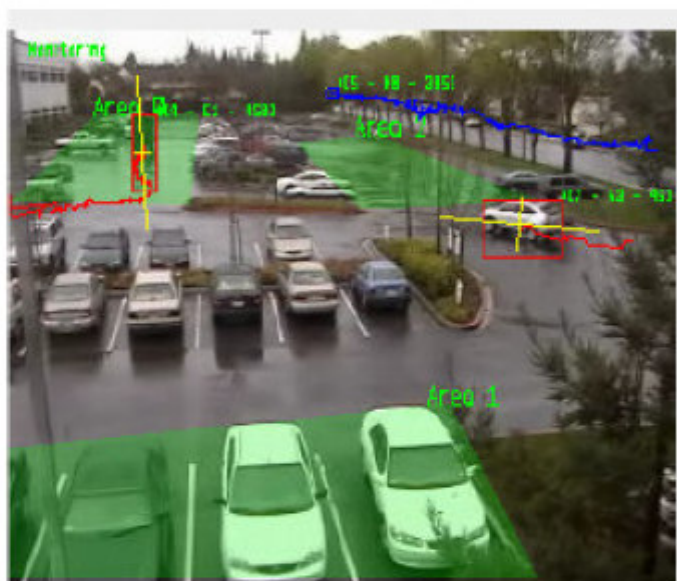
Two types of Alert violations can be detected: intrusion or loitering. An object entering into a ROI will trigger and an Intrusion Alert.

However, if an object enters into a ROI and stays within the ROI for a configured period of time the behavior will trigger a Loitering Alert.

An additional capability for intrusion detection is that an Intrusion Alert can be generated based solely on the type of intruding object: by human, by vehicle, by humans or vehicles, or by any object. These Alerts can also be configured with a Situation Policy to also handoff the object control to a Pan-Tilt-Zoom (PTZ) camera to zoom into the detected object for closer observation and more detailed recording of DVR content.

In addition, the SmartCatch Perimeter behavior can be configured to track objects without generating any Alert. In this mode, Perimeter monitoring behavior can be used with GPS support to track a GPS location of the object. SmartCatch includes compatibility with leading GIS (Geographic Information) systems. With GPS, object's spatial information will be continuously updated at periodic intervals.

Built-in to Perimeter Intrusion algorithm is a heuristic-based logic to reduce the background updating frequency when the background is unchanged and increase the background updating frequency when significant changes are detected. This strategy is useful for reducing the effect of illumination changes and small camera motion. The behavior handles shadows and other environmental conditions too, like poor weather, wind, and other environmental motions not related to object tracking. Additionally, camera shake is a common problem for surveillance cameras yet the perimeter monitoring behavior can adjust for shake as well as minor camera movements using a camera motion estimation and motion compensation technique.



SPECIFICATIONS

- General
 - Type of use: indoor and outdoor
 - Input video processing format: CIF, MPEG4
 - Video processing size: 320x240 (NTSC) or 352x288 (PAL) or higher; High resolutions can also be down-sampled or cropped to minimum processing size
 - Detect object: as small as 2x2 pixels
 - Video size to classify object: begins at 3x5 pixels for human and 4x4 pixels for vehicle
 - Day and night time (with some illumination at night time)
 - Slowly varying illumination
 - Infrequent occlusions are okay
 - GPS support using a Situation Policy
 - PTZ camera handoff for close up object interrogation using a Situation Policy
- Perimeter Region of Interest (ROI)
 - Number of regions of interest: 1 to 10
 - Humans, vehicles, and other objects approaching the ROI
 - Humans, vehicles, and other objects entering the ROI
 - Track humans, Vehicles, and other objects moving between ROIs
- Alert triggers:
 - Vehicle only intrusion
 - Vehicle & human intrusion
 - Human only intrusion
 - Any object intrusion
 - Loitering human objects
- Track objects emerging from and on water
- Noise Filter
 - Moving foliage
 - Snow, Rain, Wet conditions
 - Shadows cast by objects
 - Water reflection
 - Tidal movement
 - Water Waves
 - Reoccurring object such as flags
- User Configurations
 - ROI with Alert type
 - Name of the region
 - No overlapping ROIs
- Software & Hardware
 - SmartCatch Video Processing Unit (VPU) Software
 - Minimum hardware specifications: Intel Xeon 2.8GHz, 1Gb RAM, 80 GB HDD

CAMERA POSITIONS

