



Using AI to deliver superior detection rates and less false positives for essential Critical Infrastructure protection

A revolutionary solution to increase perimeter and area protection at isolated infrastructures on the remote Ecuadorian coast, improving both detection and control room efficiencies *and* overcoming the technological challenge of running video analytics on thermal pan tilt cameras.

The challenge

The obvious goal is to detect possible intruders in real time with maximum precision, day or night, with a minimum number of false positives. Given that the total monitored area is very extensive with a lot of environmental noise and regular movement of people and vehicles in specific areas of the shrimp farms, it presents a significant challenge.

It is virtually impossible to cover the whole area with any intrusion detection solution, principally because there is no infrastructure that can physically cover the entire shrimp farm perimeter. In addition, to install fixed cameras on the entire perimeter would require hundreds of sensors, making it cost prohibitive.

In partnership with Totem

Totem is an Ecuadorian company specialising in the **engineering, construction and integration of electronic security systems**, both nationally as well as internationally. It currently monitors more than 7,500 cameras, making it one of the largest video monitoring centres in South America.

One of Totem's most important vertical industries is providing 24/7 real-time video monitoring to approximately 80,000 hectares of shrimp farms in Ecuador, Colombia, Honduras, Panama and Peru. Shrimp farming is a large-scale and critical industry with farms typically located on the coast, with inadequate perimeter fencing to protect them



Large-scale shrimp farms

from intruders. Each shrimp farm contains many ponds, each of which may contain values as high as \$100,000 in shrimp, making them a possible target for theft, given that they can be accessed using small boats via the sea, or by foot from adjoining swamp areas.

The solution



The solution was to install a reduced quantity of thermal pan tilt zoom cameras on high towers capable of surveilling the whole area in search of possible intruders, as the cameras move from one preset to the next, fulfilling a pre-determined 'camera guard-tour.'

Apart from installing cameras, the additional difficulty lies in finding video analysis software capable of:

- **Acquiring a scene** within a few seconds
- Accurately **detecting motion within the scene** that is not caused by environmental noise (such as wind, rain, etc.)
- **Generating alerts** on true detections rather than false positives and all of this within a few seconds' time frame, before the camera moves to the next preset

The unique advantage of IntellexVision's iSentry platform

IntellexVision's iSentry platform addresses all of these challenges. It will very quickly learn the scene on a new pan tilt position and then report true intrusion attempts. It will also contextualise the intrusion attempt with metadata on snapshots and video and pass it to the iSentry rules engine. If the event meets pre-determined conditions of severity it will then send the snapshots and video feed of the event to an operator in a video monitoring centre for further analysis. At this point, the operator can determine whether the event can be dismissed or should be elevated to an alarm condition.

Detection of intrusion on a pan tilt camera is in itself extremely difficult as they move from one preset to another and stay fixed on a given location only for a short time. This can allow prospective intruders to time their move for the moment after the camera has passed by a given preset, since it will take some time to come back to the same location. iSentry solves this problem by generating random presets each with a given weight, rated by probability of

possible intrusion. This means the camera will return to a given preset randomly and more often to those presets with higher weight.

But that is not all. Given that many presets may contain areas in the scene where movement is allowed and in fact expected, iSentry allows for the configuration of exclusion zones on each preset of a pan tilt camera that will prevent alerts from being generated on expected normal movement within that preset.

The iSentry solution also uses sophisticated Business Intelligence tools to provide information on how operators in the control room are handling incidents, for example, how long each operator needs to process and acknowledge an incident. This data is essential to the continuous improvement process, enabling the increased efficiency of installed equipment as well as the ongoing and performance enhancement training of control centre operator teams.

“ The iSentry solution was deployed on hundreds of our shrimp farm pan tilt cameras, generating a huge improvement in operator efficiency as well as a great reduction in false positives. Amongst the most important contributions of iSentry, however, was the company's technical innovation and support structure, which allowed us to adapt to some very demanding and difficult requirements in a very hostile environment. We are planning to deploy this solution in other similar customers. ”

Luis Fernando Uribe Blum, President, Totem Security

