IntelexVision Insights

A SERIES OF SECURITY INDUSTRY WHITEPAPERS

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Detecting unusual behaviour in public spaces

IntelexVision SEE BEYOND

Protecting public spaces with AI - powered video surveillance

Fire, theft, violence and robbery are all serious concerns for owners of heaviliy transited public spaces such as airports, shopping malls, railway stations, university campuses and hospitals. Other unpredictable threats such as terrorism also demand real-time video surveillance monitoring and detection.

IntelexVision's iSentry AI-powered Unusual Behaviour detection platform, developed for these public space environments has been successfully deployed in multiple countries across the world to protect people, property and assets in complex, fast moving contexts.

Reliable, responsive and accurate monitoring of objects & human behaviour in real-time with fewer control room operators

Hospitals

Airports

Shopping malls

University campuses

Borders

Solar farms

Pipelines

High activity areas: the challenges

Crowded public spaces pose very particular and complex security challenges. People enter and leave frequently meaning a constantly changing environment. Once inside, crowds form quickly with people in close physical proximity to each other. As a result, people's faces, actions and intentions are often obscured from view.

With thousands of people transiting a public space at any given time, how can security professionals know where and how to focus their video surveillance? Whose potentially 'unusual behaviour' do you analyse first, why and for how long?

For years, security experts believed that installing more and more CCTV cameras would deliver enhanced security. There are now over 1 billion video surveillance cameras in the world and that number is increasing.

But with more and more cameras to monitor, control room operators are simply unable to cope with the volume of CCTV feeds. **It is physically and financially impossible to employ the number of operators that would be required to effectively monitor all CCTV in real-time.**

When control room operators spot something that requires closer monitoring, they have to rewind CCTV footage to analyse the incident in more depth.

More often than not, what the operator has spotted turns out to be of little or no relevance. But while they analyse the incident, they cannot analyse the real-time feed, meaning a temporary break in surveillance.

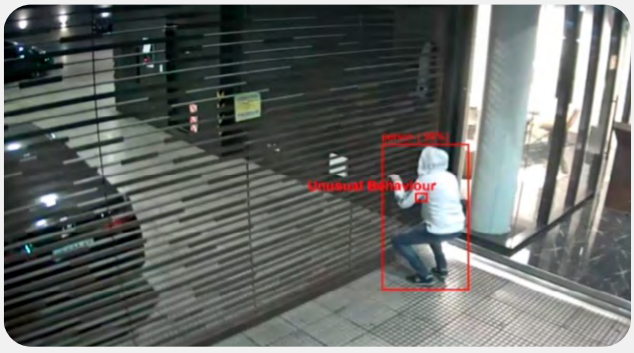
In recent years to overcome this problem CCTV camera feeds have been fed into video analysis software. When the software spots something that requires closer monitoring it will be flagged straight away to a control room operator for analysis.

These video analytic solutions perform reasonably well when identifying a handful of **pre-defined events** that they were programmed to detect. But their rules-based algorithms can neither detect nor manage the majority of abnormal or unusual events that are not covered by specific and pre-programmed rules.

They require heavy configuration prior to use and are resource-intensive demanding massive significant hardware investment, while control room operators waste countless hours analysing the many false positives flagged by the software.

Traditional video monitoring software does not develop by 'learning' from past events. It relies solely on the predefined situations that it has been programmed to look out for.

A smarter, AI-powered solution is required. A solution that enables security control room operators to effectively monitor a substantial number of video feeds in real-time. **That solution is IntelexVision's iSentry platform.**



The solution

How iSentry works

iSentry is an Artificial Intelligence-powered video analysis platform. It can be installed on new systems as well as the vast majority of existing CCTV systems.

Equipped with the latest Artificial Intelligence (AI) and Neural Networks based Machine Learning algorithms, iSentry quickly learns what is normal from an individual CCTV camera feed, so that it can then detect the abnormal. It can be deployed in systems from just a few cameras up to thousands of cameras.

After a norm is established for a particular scene, the system will then create alerts based on exceptions or **'events of interest.'** iSentry then classifies each event upon detection using Deep Learning tools and a logic engine. This provides instant situational context to control room operators so that they can better understand what they are being shown, allowing them to respond appropriately.

iSentry can, for example, know that five or six men huddled around an ATM for a prolonged period may be an event of interest and it can differentiate and understand that a mother standing at the same ATM with her children is not a reason for alarm.

iSentry detects loitering, directional violation, unusual objects entering a scene, running, violence, tailgating, smoke and fire, major leakages, removed or introduced static objects, people climbing walls, entering a perimeter or area, or graffiti painting. iSentry can also carry out pose analysis, (whether someone is standing, sitting, lying on the ground or has fallen) and many other abnormal situations.

Its Deep Learning engine recognises multiple classes of objects even at difficult angles. Additional capabilities have recently been added such as the ability to monitor for Health & Safety compliance, for example, the wearing of hard hats, high visibility jackets, eye protection glasses, face shields or facemasks for COVID compliance.

iSentry´s powerful Logic Engine can largely and autonomously fulfil the function of a video surveillance operator. More than 80% of the time it will be capable of reaching a correct decision regarding an event of interest, based on the number and combination of object types that trigger an alert, the time of day and object size, or even the likelihood of accurate classification.

Any incident that iSentry cannot confidently classify automatically or determine through the rules engine whether to dismiss or alarm is then transferred to a human operator for further investigation and decision-making. iSentry empowers control room operators to solely focus on those decisions at which humans excel. iSentry also enables control rooms to function effectively with **far fewer operators, as massive quantities of video** can be meaningfully and accurately monitored, and processed by the platform.

iSentry vs. video verification analytics

To reduce the number of false alarms many Video or Alarm Monitoring Centres use Video Verification Platforms to determine if there are people or vehicles in specific snapshots of alerts, typically generated by on-camera motion detection analytics. This can lead to a reduction in overall alarms by as much as 50-70%.

While this sounds impressive, control room operators are still left with an insurmountable quantity of false alarms to deal with on every shift.

iSentry is different.

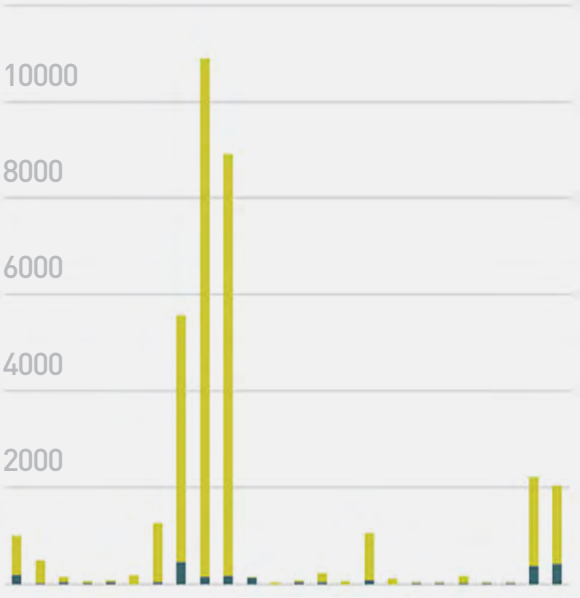
The iSentry platform uses AI to first detect and then intelligently classify alerts. As a result, the number of alerts control room operators receive is **90-95% lower than standard video verification systems**. With iSentry, fewer operators can perform more, and to a much higher standard, freeing personnel to work on other higher value-added tasks.

Case studies

Case 1: Reducing Opex

We tested iSentry's Unusual Behaviour on a 25-camera system against traditional video verification software platforms. iSentry escalated 2,086 alerts to operators, against 32,616 alerts from standard video verification software. **iSentry also reduced escalated operator alerts by 94%** greatly increasing efficiency and lowering alert-related operational costs.

Comparison camera by camera



Comparative analysis of the alerts generated by each camera-to-camera system

iSentry Video verification SW

Case 2: Reducing Opex

In a major city, iSentry monitors many thousands of cameras in real-time. Our system's AI and Deep Learning powered alert detection has become so precise that our system now only presents 1% of total recorded video to a control room operator for review.

The accuracy of their recall of events of interest flagged by iSentry is 90%+. Prior to our system being installed, this was between just 5% and 10%.

Prior to iSentry's installation, one control room operator was responsible for managing up to 80 cameras with very poor incident detection performance. With iSentry, the same operator can monitor a daily average of **350 cameras and up to 800 cameras at off-peak times.**

Case 3: Reducing Capex

iSentry was installed by a major bank across hundreds of branches with an average of 30 CCTV cameras per branch. As a result the total amount of video to be reviewed was reduced to less than 1% of the previous quantity, without missing any event of interest.

This significant reduction in video footage and the efficient hardware and software architecture of iSentry has led to very low bandwidth demands on the central Control Room together with a reduced need for operator consoles. This has led to major CAPEX savings.

The benefits of iSentry

UP TO
40%
REDUCTION
IN CAPEX

Fewer cameras needed and less related infrastructure
Effective monitoring with fewer cameras across your venue and estate

Maintain your current CCTV system iSentry is hardware-agnostic working effectively with most existing CCTV systems

UP TO
75%
REDUCTION
IN OPEX

Fewer operators needed
Operators can monitor 10x more cameras than before

Fewer false alarms
With fewer false alarms, costs related to unnecessary security personnel visits and interventions are reduced

iSentry is a smart, non-invasive security platform that does not use facial recognition technology nor any Personal Identifiable Information while delivering a higher detection rate.

AI-powered CCTV analysis from iSentry

Major cost savings with a **90%-95% reduction in false positives** compared with most advanced camera analytics software systems

Operators can **monitor 10x** the number of cameras

Works with most existing **CCTV systems**

Used by governments and businesses **worldwide**

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