AN INTRODUCTION TO BEHAVIORAL ANALYTICS FOR REALTIME VIDEO INTELLIGENCE

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THE VIISIGHTS ADVANTAGE

Overview

New and emerging security and health safety challenges demand new solutions to best protect people, property, and assets. viisights' innovative behavioral analytics leverage the latest advancements in imaging and artificial intelligence technology to deliver new benchmarks in video intelligence that transcend traditional real-time monitoring and forensics by providing actionable intelligence to minimize liabilities and prevent incidents from escalating.
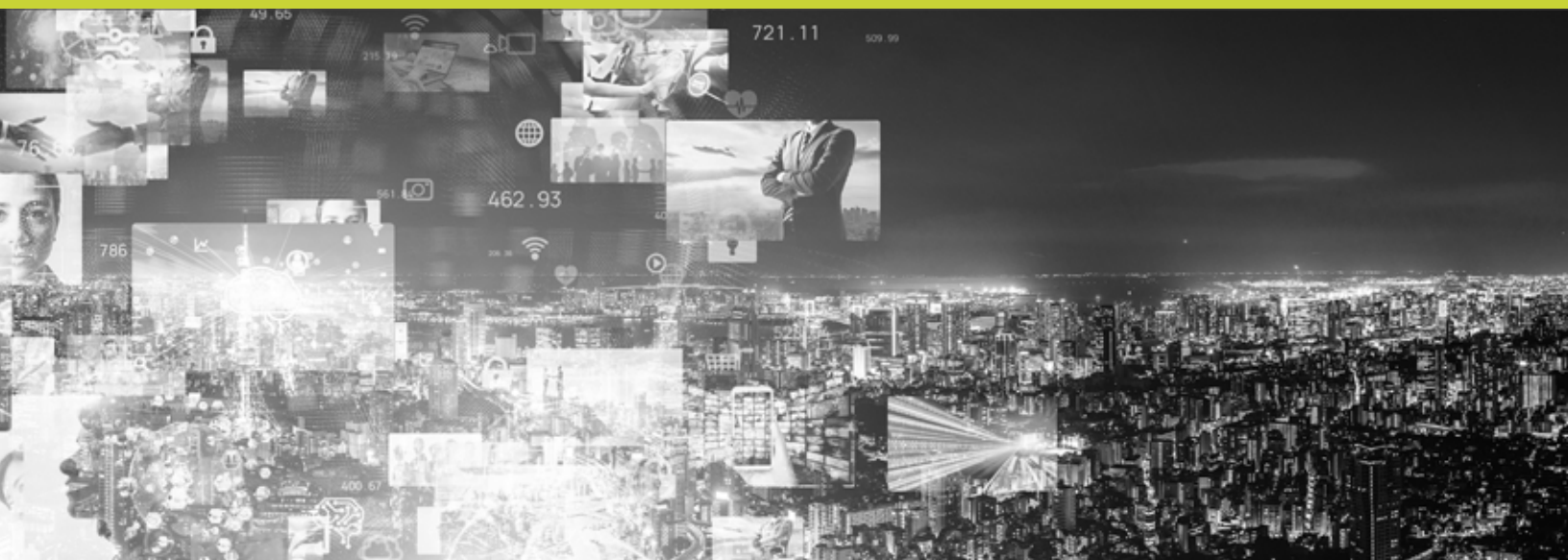
Why We're Different

Unlike conventional video analytics that use old pixel technology to recognize static objects and classify objects, viisights behavioral analytics employ Artificial Intelligence (AI) to automatically detect, analyze, and understand actions and events. This unprecedented level of video understanding is based on a unique implementation of deep neural networks capable of analyzing and defining specific activities using video streams from conventional security cameras.

viisights' behavioral analytics recognize the behavior of diverse objects and their relevant contexts. For example, an individual moving back and forth in a predefined area may simply be loitering or waiting for a bus. However, if the individual is hovering in the vicinity of an ATM, this may indicate a potential problem. viisights automatically identifies the location as a bus stop or ATM – without any manual setup or calibration.

The ability to distinguish a potentially dangerous situation from a normal occurrence provides security professionals with the unique ability to initiate fast and appropriate responses to minimize or even prevent incidents from occurring.

Other common examples of behavior analysis include the ability to differentiate between individuals embracing or fighting, a parade or a riot, or a person falling versus tying their shoelaces.
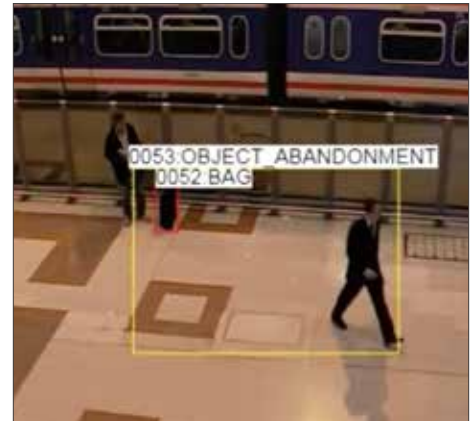
viisights uses deep learning technology to integrate the holistic view of the image and the temporal analysis of the video to provide unique event detection capabilities. These intelligent analytics solutions also continuously learn from video streams to define and prioritize dynamic situations with unique signatures that change over time. This machine learning approach to event detection and analysis ensures that viisights behavioral analytics are both scalable and future-proofed.

A new benchmark in video technology, viisights behavioral analytics deliver unprecedented levels of intelligence using commodity NVIDIA GPU processors in a unique system architecture that significantly reduces the hardware footprint required for advanced analysis in near real time.

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viisights unique capability to transform video streams into actionable insights provides users with myriad benefits, including the ability to...

- Automatically detect and predict events of interest such as violent and suspicious activity, crowd behavior, perimeter (protection) violations, public health violations (eg. COVID-19), traffic congestion and accidents, environmental and personal safety threats, and occupancy and mobility counting.

- Improve security monitoring accuracy and efficiency by eliminating the need for personnel to monitor large numbers of cameras simultaneously.

- Reduce personnel cost associated with monitoring large security systems and responding to false alarms.

- Improve SOC/security personnel performance by allowing them to focus on real events of interest and provide additional services.

- Improve overall safety and security through automatic detection, analysis, and reporting.

- Deliver implementation versatility in the Cloud or locally for one, some, or all networked security cameras.

Privacy Protection

The heightened level of situational awareness and risk mitigation provided by viisights solutions is further complemented by the inherent ability of their behavioral analytics to ensure personal privacy protections. This is accomplished by analyzing the general behavior patterns of individuals, groups, vehicles, and traffic-flows without identifying faces or license plates. For high-security or law enforcement applications that require identification and authentication functionality, viisights behavioral analytics can be integrated into systems employing face and license plate recognition solutions.

Key Advantages

Actionable Intelligence

viisights patented video understanding technology employs cognitive computing and holistic video analytics to understand video more like humans do and deliver intelligence in real-time. A breakthrough in video analytics technology, viisights provides actionable intelligence on the events that matter most to help minimize potentially dangerous situations, reduce liabilities, mitigate risks, and help maintain compliance to new and emerging mandates.

> **viisights provides actionable intelligence on the events that matter most.**

Autonomous Operation

viisights provides the ability to not only automatically detect in real-time what has happened, but to predict events before they occur based on preliminary behavioral patterns. This autonomous functionality enables the user to operate with the goal of preventing events of interest by responding before a scenario escalates.

False Positive Reduction

viisights unique video understanding technology makes critical decisions based on a sequence of images in a sliding window of up to 3 seconds – not a single image. This technique dramatically reduces false positives and increases the recall rate, which increases personnel and SOC efficiencies while reducing costs.

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Tangible ROI

In addition to cost-reductions associated with false alarm reduction, viisights behavioral analytics offer a low cost of entry by leveraging existing video camera feeds. The analytics software solution supports two configurations:

1. Maximizing server utilization – maximum streams per server.
2. Near edge architecture – limited number of streams for low energy consumption device.

> viisights behavioral analytics offer a low cost of entry by leveraging existing video camera feeds.

viisights behavioral analytics are ideal for a wide range of use cases including safe and smart cities, transportation hubs, banking and financial institutions, corporate campuses, and education campuses.

Learn more by visiting
viisights.com/solutions

EDUCATION
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Making Schools Safe Havens For Education With Intelligent Behavioral Video Analytics

Schools and campuses may never be quite the same after the pandemic 2020-21. Many teachers and students struggled with remote learning, while school administration faced difficult decisions about when and how to bring students and staff back into facilities. As we all welcome a return to "normal", many of the same longstanding challenges continue to plague school administrators. The most severe and threatening issues being related to incidents involving active shooters and bullying, as well as the ability to better monitor and identify problematic situations such as fighting, vandalism, and other potentially damaging situations that impact learning environments.

While technology seems to hold the key to resolving some of these issues, it has fallen short to a large degree based on recurring incidents impacting students, personnel, and physical assets at schools and campuses. Video technology is a perfect example. While cameras provide schools and campuses with a great tool for wide area coverage of grounds and interior locations, they come up short when it comes to detecting incidents and situations as they are unfolding in real time, or better yet before they happen, so that they can be prevented from escalating before any damage is done.

Part of the problem lies with the intrinsic nature of medium- to large-scale video camera systems typically deployed at most schools and campuses. Such systems require trained personnel to continuously monitor live events, interpret situations and initiate appropriate actions. This is both an expensive and error prone proposition that is proving ineffective as a reliable preventive or protective measure.

New advances in behavioral analytics can resolve these issues, effectively making schools and campuses safer by automatically detecting events of interest - working and integrating with existing video management and access control systems for seamless deployment. This includes the ability to automatically initiate a lockdown in the event weapons are detected, potentially saving lives.

A new benchmark in intelligent video technology, viisights behavioral analytics are built on a foundation of advanced Artificial Intelligence (AI) algorithms that detect and analyze video content in real-time. The technology transcends conventional video applications for event video monitoring and forensics by providing actionable intelligence. This helps prevent incidents from escalating, dramatically increasing security and safety and minimizing liabilities.

> " A new benchmark in intelligent video technology, viisights behavioral analytics are built on a foundation of advanced Artificial Intelligence (AI) algorithms that detect and analyze video content in real-time. "

viisights behavioral analytics accomplish this by learning to distinguish between common occurrences like students hugging versus fighting, or being pushed to the ground versus falling. The same levels of intelligence can be applied to exterior events to automatically detect vandalism and weapons, fender benders in the parking lot, rioting versus rallying, or the difference between brandishing a cell phone or a gun. Conventional video cameras and analytics simply cannot make the human-like distinctions that viisights behavioral analytics deliver.

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Equally important, these behavioral analytics allow schools and campuses to easily and cost-effectively leverage existing capital investments in video camera systems, creating safe and secure educational environments that are more conducive to learning. The low cost of entry provides school administrators with a win-win proposition and a long-term solution with a tangible and significant Return on Investment (ROI).

The numerous benefits provided by viisights behavioral analytics include...

Automatically Identify Events of Interest

Whether applied to dozens or hundreds of camera video streams, viisights behavioral ensure that events of interest and potentially threatening situations never go undetected. SROs and designed administrators are notified the moment an event of interest is detected so they can take corrective action. Examples include:

- Prediction and alerting for bullying, fighting or violent activity
- Vandalism and theft
- Crowd recognition, size and behavior
- Occupancy analytics
- Trespassing in restricted areas and zones
- Suspicious activity such as contextual loitering
- Weapon detection with the ability to differentiate between a holstered and brandished weapon
- Traffic monitoring, collisions, and other vehicle related incidents
- Life safety monitoring for smoke, fire and other environment hazards on school or campus grounds

Reduce and Prevent Vandalism

Since most mischievous and/or criminal activities are conducted beyond the eyes of SROs (School Resource Officers) and administrators, automatic real-time detection of suspicious and abnormal behaviors can initiate immediate remedial action to help thwart potentially threatening incidents from escalating. General awareness of this advanced application of technology within schools can also prove to be a powerful deterrent to individuals with bad or harmful intentions.

> "Automatic real-time detection of suspicious and abnormal behaviors can initiate immediate remedial action to help thwart potentially threatening incidents from escalating."

Improve Emergency Response Times

viisights behavioral analytics unique ability to detect behavioral related situations and issue notifications in real-time greatly reduces response times to potential and active events. The ability to react quickly, can help to better protect people, property and assets and minimize exposure to liabilities.

Detect Weapons Before They Enter Your School

More accurate and effective than traditional active shooter solutions, viisights behavioral analytics can recognize a person holding a weapon in a threating position. The presence of the weapon not being held in a threatening position would not trigger an alert but will be when the weapon is brandished or prepared for use, or a series of identified threatening motions is detected. viisights behavioral analytics recognize and analyze various data points to help distinguish real events from false alarms, and help identify a dangerous situation even before a shot is fired.

Improve Vehicular Safety

Student drivers are often distracted when surrounded by friends at school. viisights behavioral analytics can help improve vehicular safety and accountability by instantly detecting campus driving violations, accidents and potentially dangerous situations, and notify the appropriate responders to take action.

Protect Restricted Areas From Unauthorized Use

Tailgating

Schools and campuses typically endure continuous activity with high levels of foot traffic moving about publicly accessible and restricted areas. This poses a significant challenge for SROs tasked with monitoring numerous cameras in real-time. viisights adds video intelligence to conventional camera systems with the ability to automatically identify when unauthorized personnel have entered secured areas, effectively increasing security both during school events and after hours when access to facilities should be limited.

Occupancy, Social Distancing And Group Density Analysis

Even prior to the pandemic, schools and campus facilities are required to comply with strict occupancy restrictions. viisights behavioral analytics can determine group density (classified as "low", "medium" or "high") to help enforce occupancy compliance requirements. These advanced analytics can be applied for everyday activities in cafeterias, gyms and resource areas such as libraries, and for after school events like sporting events, social gatherings, rallies and more.

Environment & Personal Safety

Virtually every school and campus facility are required to have robust life safety fire and smoke detection systems in place. viisights intelligent analytics can supplement these systems to detect fire and smoke in surrounding outdoor areas such as parking lots, wooded areas or sports fields where these systems are not deployed. Personal safety is improved with automatic alerts for slip and fall situations, or close proximity to a dangerous area or equipment.

Leverage Existing Investments in Video Technology

viisights behavioral analytics offer a low cost of entry by leveraging existing investments in video surveillance cameras and technology. The innovative behavioral analytics solution also offers versatile configuration options to maximize server utilization with near edge architecture.

Learn more on how to make your education campus smarter and safer by visiting
viisights.com/campus