AN INTRODUCTION TO BEHAVIORAL ANALYTICS FOR REALTIME VIDEO INTELLIGENCE

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THE VIISIGHTS ADVANTAGE

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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.
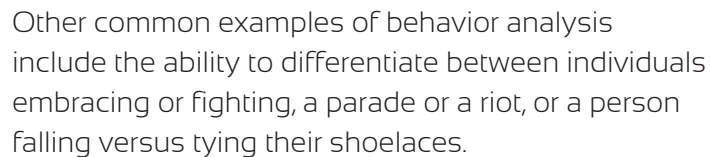
Why We're Different

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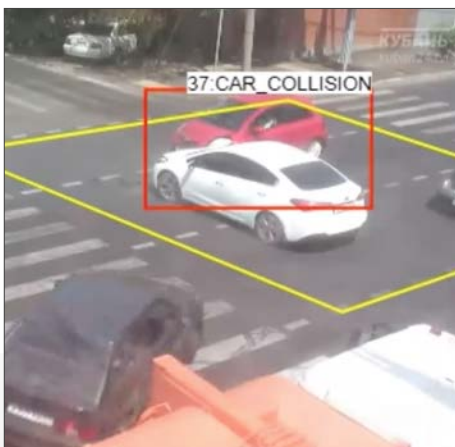
viisights unique capability to transform video streams into actionable insights provides users with myriad benefits, including the ability to...

- 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.
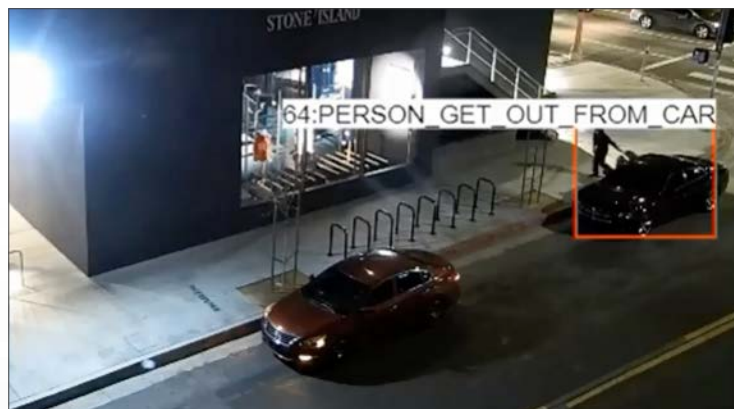
Tangible ROI

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.

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SMART CITIES

Intelligent Behavioral Analytics
Make Smart Cities... Smarter

Cities are increasingly employing multiple technologies to collect data for a wide range of applications such as law enforcement, traffic monitoring, as well as resources and services management. With the continued proliferation of the IoT and new edge devices, data is collected from myriad sources, including video cameras, which continue to be one of the most efficient and effective ways to achieve wide area coverage. In fact, many cities around the world have followed the early examples set by cities like London in the UK and Dallas, Texas in the U.S. by deploying hundreds if not thousands of cameras across their municipalities. When installed and maintained properly, such video systems greatly enhance situational awareness by providing coverage of areas that would otherwise require on-site personnel to effectively observe events and behaviors.

The downside is that large numbers of video cameras require substantial personnel resources to effectively monitor live events, interpret situations and initiate appropriate action. This is both an expensive and error prone proposition due to numerous factors such as personnel monitoring fatigue and commonplace workplace distractions that can be caused by innocuous daily behaviors such as getting coffee or using the restroom.

Brawl | crowd that is about to become violent

viisights innovative behavioral analytics resolves these issues, effectively making smart cities even smarter by automatically detecting events of interest.

A new benchmark in intelligent video technology, viisights behavioral analytics are built on a foundation of advanced Artificial Intelligence (AI) algorithms that understand the content in real-time, instead

of simply classifying objects. This technology provides actionable intelligence to help prevent incidents from escalating and minimize liabilities, dramatically increasing security and safety. viisights unparalleled data analysis capabilities also transcend conventional applications for real-time video monitoring and forensics to deliver true business intelligence.

viisights behavioral analytics accomplish this by "learning" to distinguish between common occurrences like an individual tying a shoelace versus falling to the ground, two people embracing as opposed to fighting, gatherings of people walking down the street versus rioting, or even determine if there has been a traffic accident. Conventional video cameras and analytics simply cannot make human-like distinctions that viisights behavioral analytics deliver.

"viisights unparalleled data analysis capabilities also transcend conventional applications for real-time video monitoring and forensics to deliver true business intelligence."

Equally important, viisights innovative behavioral analytics allow municipalities to easily and cost-effectively leverage their existing capital investment in video camera systems to improve overall safety, security, and the quality of life of their constituents. The low cost of entry provides city officials 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 one or a thousand video streams, viisights behavioral analytics never blinks, ensuring that events of interest and potentially threatening situations never go undetected, and city operations run smoother. Authorized personnel and system operators are notified as soon as an event of interest is detected, including:

- Violent activity
- Crowd gathering, crowd size estimate, and crowd behavior characterization
- Trespassing in restricted areas
- Suspicious activity such as contextual loitering, vandalism, falling, and weapon detection
- Traffic buildup, collisions, or infractions
- Environmental safety hazards like smoke and fire
- Waste management and control events

Reduce and Prevent Overall Crime

Since most crimes are conducted beyond the eyes of law enforcement, automatic real-time detection of suspicious or criminal activity can initiate immediate remedial action to help thwart criminal activities and prevent domestic incidents from escalating. Public awareness of this advanced application of technology in their community can also prove to be a powerful deterrent to criminal and vandal behavior.

Improve Emergency Response Times

As soon as a defined event of interest or an imminent threatening situation is detected, viisights behavioral analytics notifies predetermined personnel or system operators to initiate action. This unique ability to detect situations and dispatch first responders in all but real-time greatly reduces response times to crime scenes, accidents, environmental hazards, flash floods, fires and more, which can effectively save lives.

Improve Pedestrian and Vehicular Mobility and Safety

Whether you're in Los Angeles, London or Luanda, driving across town or crossing the street can be a dangerous endeavor at any time of day. viisights behavioral analytics can help improve pedestrian and vehicular safety by instantly detecting potentially dangerous situations, traffic delays and accidents, and notifying the appropriate responders to take action.

> viisights unique video understanding technology dramatically reduces false positives

Enhance Citizens' Quality of Life Through Better Resource Utilization

Nothing makes constituents happier than a clean and safe city. The ability to automatically detect accumulating litter or overflowing trash receptacles, the need for street sweeping or snow removal, loitering, or individuals in need of social assistance allows authorities to immediately initiate remedial actions.

Reduce False Alerts

viisights unique video understanding technology dramatically reduces false positives, which increases personnel efficiencies and overall safety and security while reducing operating costs. Eliminating nuisance alarms and investigations allows personnel to focus on real events of interest and other services they otherwise would not have the time to provide.
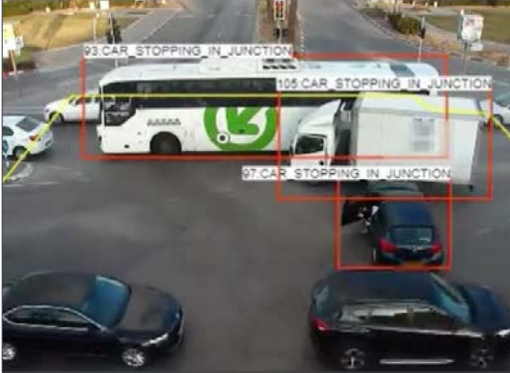
Leverage Existing Investments in Video Technology

viisights behavioral analytics offer a low cost of entry by leveraging your municipality's existing investment in video cameras and technology. The innovative behavioral analytics solution also offers versatile configuration options to maximize hardware utilization with near edge architecture.

A Scalable, Future-proofed Solution

Whether your budget allows you to connect a few dozen, or a few thousand cameras, viisights behavioral analytics are infinitely scalable. Add camera feeds to specific locations when you need them, and at your own pace.

Case Histories

Ashdod, Israel Provides Greater Safety and Security with viisights' AI-driven Behavioral Understanding Technology

viisights has deployed a smart city traffic monitoring system in Ashdod, Israel to quickly address events of interest such as accidents, disturbances to traffic (for example, vehicles stopping in a junction or on a sidewalk), road hazards (for example, people getting in and out of vehicles in dangerous areas) and to monitor traffic flows and report on various statistics.

Read More

León, Mexico Improves Urban Mobility and Safety with viisights' AI-driven Behavioral Understanding Technology

viisights has been chosen by the city of León, Mexico to improve city safety, security, and help prevent the spread of the novel coronavirus virus. The unique behavioral analytics solution is being implemented to identify suspicious behavior, violent activity, weapon detection, crowd behaviors, perimeter protection, traffic monitoring, and environmental changes such as smoke or fire.

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