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WHITE PAPER

The Analytics Foundry

Custom AI-Powered Video Analytics Solutions to Enable Security Professionals to build and maintain the safest and most productive organizations in the world

Introduction

Security professionals in enterprise, campus, stadium, and law enforcement organizations are tasked with ensuring their respective communities of people, properties and critical assets are safe and secure without enforcing draconian safety measures that disrupt daily life. AI-powered video analytics solutions that deliver total-environment intelligence in real time from any camera source, including video from mobile cameras, have become the choice solution for Directors of Security and forward thinking security leaders. Cameras continue to improve in quality and decrease in price, empowering organizations and agencies with the ability to have eyes everywhere. Video analytics solutions, like Vintra's FulcrumAI, are the brains for the cameras that help enterprises deliver on their goals to enhance and improve physical security.

The safety and security community at large has bought in to the force-multiplying power of video analytics. In fact, the video analytics market is expected to be an USD 11.7 Billion market by 2022 with a CAGR between 2017-22 of 33.7%.[1] The question security professionals are asking is: *what's next?*

THE ANALYTICS FOUNDRY

Internal and external threat matrices to the modern enterprise continue to grow, and with that growth so do the potential use cases security operators are looking to solve with video analytics security solutions. In addition to perimeter control, access management, unauthorized entry, the modern security team must also, among other things, deal with external and internal violence. In fact, when employees are harmed at work, be it from another employee, someone they know in their personal life, or an outside vendor, lawsuits charging the company with "negligence" or "inadequate security measures" cost the company, on average, nearly $500,000 in out-of-court settlements and $3 million in jury awards.[2]

LAWSUITS CHARGING THE COMPANY WITH "NEGLIGENCE" OR "INADEQUATE SECURITY MEASURES" COST THE COMPANY, ON AVERAGE, NEARLY **$500,000** IN OUT-OF-COURT SETTLEMENTS AND **$3 MILLION** IN JURY AWARDS.

Even more alarming from an organizational health and morale standpoint, 25% of workplace violence incidents go unreported.[3] By eliminating factors that lead to workplace violence incidents, an organization can not only prevent more but give a voice, or eyes, to those that were previously afraid to speak up.

The ideal video analytics solution is able to work with many enterprise-grade VMSs and will not only provide a unified solution capable of handling an organization's key security concerns, but can be adapted and customized to fit the specific needs of each deployment. At Vintra, we call this the Analytics Foundry.

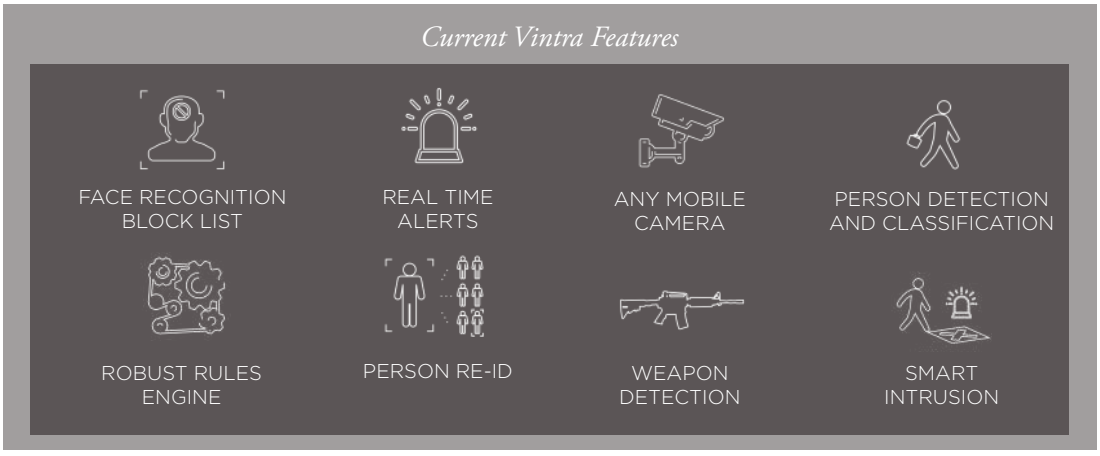
[1] *http://news.sys-con.com/node/4214366*
[2] *https://alertfind.com/workplace-violence-statistics/*
[3] *ibid*

The Analytics Foundry, made possible by proprietary deep learning algorithms, democratises artificial intelligence by putting the power of AI in the hands of the end users. The arc of technological advancement, in general, bends towards more user control and greater customization which in turn yields greater efficiency and productivity. In this paper, we will discuss the force-multiplying power of the Analytics Foundry, how it works, and a few practical use cases that will result in demonstrably better security and safety outcomes.

WHAT IS IT?

The Analytics Foundry is the next step in the evolution of video analytics. Before deep learning, video analytics solutions required near-perfect conditions, including a fixed background, which made successful implementation of a comprehensive security solution quite difficult and frustrating for the end user. They also required heavy hand-tuning of analytics models, which meant there was no or very limited customization capabilities. In order to identify a sub-type of vehicle, most of the algorithm had to be hand-tuned, like an artist would do with a piece of clay.

Now that there are proven solutions available, like FulcrumAI, that deliver advanced object detection, person identification & classification, blocklists and BOLOs powered by face recognition, person re-identification, vehicle detection & classification and more from any camera source, security professionals can start thinking a step ahead and seek out ways to enhance their ability to solve their organization's unique security and safety issues.



The Analytics Foundry is where companies can have custom analytics created to bridge the gap between their unique needs and the pre-built features that come standard with the solution.

HOW DOES IT WORK?

Conceptually, the Analytics Foundry is fairly simple to understand. A customer notices that, for example, rideshare scooters such as Bird and Lyme are being left all over the exterior of their premises. In and of itself, a scooter is harmless. But left in front of a handicap access ramp or just outside of an elevator, that scooter quickly turns into not only a safety hazard but a potential lawsuit when someone in a wheelchair cannot enter the building, or is trapped in the elevator due to the blockage.

To solve this critical and potentially costly issue, a scooter detector can be created in the Analytics Foundry. The custom detector empowers the end user with the ability to then create an alarm which will notify security operators in real time whenever a scooter is parked in a restricted zone.

Detection Sample

The issue | *Send Vintra an image* | *The solution? Situational awareness.*

When a customer makes a request for a scooter detection, the next step is to take the image of the object supplied by the customer and gather 10s of 1000s more images of that same object, in this case a scooter. The images must be from all different angles, in different lighting conditions, and of different types of the same object.

That data is then labeled through a proprietary process and is munged together with synthetic data, i.e. artificial images of the object. Thanks to our novel approach in creating accurate, custom detectors, the new algorithm is available to the customer in a fraction of the time and with far less resources typically required of traditional analytics.

Syntehtic Data Creation Sample

Actual Images | *Synthetic Data* | *Detector*

OTHER USE CASES

Among the first detectors we built using the Analytics Foundry at the direction of a customer was for long-guns. One of the most pressing, and public, situations that many large companies and organizations are solving for is preventing mass shootings. Weapon and rifle detection is a complex algorithm, but the end result of being able to detect a rifle in real time and in turn alerting security to enact safety measures is potentially life-saving.

On a lighter note, intelligence surrounding Workplace Wellness issues can also be gathered using custom-made detectors. One could track how many times an employee moves from a seated to a standing position, for instance. Studies show that those who sit for eight or more hours a day with little movement experience mortality rates similar to those who smoke or are obese.[4] In this scenario, real time alerts could be set to notify the company's Wellness agent when employees fail to reach certain movement thresholds. Why invest resources towards wellness? To put it plainly, a healthier employee equals a more productive employee.

Another common request comes from companies engaged in construction and/or that deal with highly toxic or sensitive materials. This requires the correct safety gear to be worn at all times in certain areas of interest. To that end, a hard hat detector, often in a specific type and color, is a must-have for construction sites of major enterprises. With the algorithm up and running and an alert set for "no hard hat detected on a person", the appropriate persons can be immediately notified and action taken to avoid potential injury and financial penalties.

OSHA's penalties for employer safety violations have been raised for 2019 and are as follows:

[4] *https://www.mayoclinic.org/healthy-lifestyle/adult-health/expert-answers/sitting/faq-20058005*

[5] *https://www.ehstoday.com/standards/osha-raises-employer-penalties-2019*

The financial incentives alone for investing in solutions that can solve these complex problems should provide the Director of Security and CFO evidence enough to push for adopting an on-premises video analytics solution.

The cameras are already in place, all they need is the brains to know what to look for.

WHO CAN BENEFIT FROM THE ANALYTICS FOUNDRY

- Businesses that need to know that a person is wearing a specific type of identification badge upon entering a secure area.
- Organizations that want to validate that certain work is being done, like the presence of specific cleaning equipment in a zone that carries heavy non-compliance risk.
- Organizations that want to ensure that valuable mobile equipment is never outside of certain zones.
- Organizations that want to understand how their specific equipment or assets are being used, for example, all the time that a person is on a special forklift but not in motion (hence losing efficiency).

WHAT'S YOUR USE CASE?

Do you have a specific security, safety or productivity scenario that a custom-made detector would be able to solve? The Machine Learning researchers, Software Engineers, and our team of PhDs dedicated to computer vision at Vintra are eager to help you solve the unique security and safety scenarios through custom-made video analytics. We stand by the wide-range of analytics that are currently offered in FulcrumAI, and we also strive to continually improve and expand on our technology by using the full power of what our proprietary deep learning-powered solution uniquely affords us.

How can you take advantage of the Analytics Foundry? It's simple. Please visit vintra.io/analyticsfoundry to get the conversation started.

It's time to know what the cameras know.