Watch for New Trends

Expect to see additional complex algorithms and more accurate detection methods

By Brian Carle

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What technology and industry trends should you keep an eye out for to stay ahead of the pack? In short, complex analytics are growing hotter which is made possible by the trend towards GPU co-processing. Also, the country of origin of security products is gaining more attention as tariffs and government regulations draw attention to the geographic source of equipment.

Facial Recognition

More complex analytics algorithms, such as facial recognition, require substantially more computational power than simple analytics, such as cross line detection. Until recently this attribute has made more advanced analytics and accurate detection methods impractical with available hardware platforms. With the advent and popularization of co-processing technologies, such as Graphics Processing Unit (GPU) co-processing, processing large amounts of video in a short time has recently become affordable and practical. As such, facial recognition is starting to become a reality, and facial recognition products are now penetrating the market even in commercial deployments.

Savvy consumers are incorporating advanced analytics such as facial recognition to make better use of massive amounts of video data. Facial recognition enables video surveillance to detect known persons of interest attempting to enter a secure facility; a task that's nearly impossible for a person to accomplish. While a person can certainly look for another individual, the task becomes impractical when a long list of known persons of interest exists, and detecting all of them is important.

Each consumer segment has its own common targets for detection. Some examples of current and potential facial recognition applications include:

- Airports looking to detect terror suspects
- Casinos watching for known cheaters
- Schools identifying parents without visitation rights
- Retailers identifying known shoplifters

Generally, such deployments limit the number of cameras facial recognition is running on, in order to reduce costs. Both the facial recognition software and the corresponding hardware to process the video can be expensive. Maximizing the ROI potential involves reducing system costs by focusing the technology on areas where the facial recognition is most likely to be successful. This can be done by limiting the number of video channels being processed for facial recognition to just the ingress/egress cameras, or cameras in key locations (like security lanes at airports). Doing so minimizes the corresponding hardware and licensing costs and maximizes the chances of getting alerts on known persons of interest.

Other applications involve public and private partnerships. For some time now, major sporting arenas hosting events have used facial recognition software to compare faces of fans in attendance against databases of wanted criminal suspects. Such a public/private partnership could also be deployed in hospitals for the same purpose.

Search Analytics

Search analytics are a category of analytics products which detect and classify objects in recorded video. During an investigation, large segments of video can be filtered more quickly by specified criteria, harvested from the metadata in the processed video.

Such a product may allow for an investigator to import a sample image of an object or person being looked for. Using the image sample, the analytics will search the corresponding recorded video for a match.

Alternatively, a search analytic may detect and classify all objects in a range of recorded video to allow filtering by category, color and other attributes. For instance, an incident may have occurred on a range of cameras over the past 36 hours. The last 36 hours of video recorded from the cameras located close to the inci-

dent are uploaded into the search analytic tool. Analytics are run to identify and classify objects and record their properties. Later the investigator can filter the video based on object type and properties. If the investigator wanted to find all trucks, moving from left to right in the scene, at a certain rate of speed and which are green in color, the search analytics can now query its database of objects and properties and call up video from the time matching objects were detected. This makes the review process dramatically faster, but has other benefits as well. During a lengthy review process, investigators can become fatigued and lose focus, potentially missing key details. Introducing search analytics reduces the likelihood of missing key video evidence.

As with facial recognition, search analytics require substantial computational power. The amount of computational power available directly impacts the processing time, which can mean the difference between getting results within an hour of the incident or a day later, after video has processed. In situations where search analytics get heavy use, or when time is of the essence, the hardware can add substantially to the overall search analytics solution cost.

Also, with facial recognition, search analytics have benefited from co-processing technologies such as GPU or FPGA based co-processing integration. Such co-processing technologies allow a relatively inexpensive co-processing card to be added to a server platform which dramatically increases the speed of the analytics software running. It is of note that co-processing technologies cannot be used with any software package. Software needs to be written specifically to integrate with a co-processing technology, so work with the software vendor on the best hardware design.

Product Country of Origin

A recent trend with major influence on product selection, especially security cameras, is the country of origin of the manufactured equipment. This year, several factors have influenced the renewed focus on equipment country of origin, including:

- Media within and outside the security industry has written on the influx of cameras developed in nations not traditionally considered to be allied with western nations.
- The United States has imposed tariffs on some imported equipment from certain regions.
- The United States has signed into law the National Defense Authorization Act for 2019, which specifically calls out by name particular camera manufacturer's equipment which cannot be sold to U.S. government entities.

As such, buyers within and outside government organizations are taking a second look at where their security equipment comes from.

Camera providers negatively impacted by these trends generally provide lower cost products. Another impact as a result of this trend which we may see will be reduced pricing pressure on other brands.

The Takeaway

Whether one is in the planning stages of implementing a video security system, has an existing installation or is in the process of an upgrade, being mindful of near-future trends in the industry can help guide expenditures and plan infrastructure builds. With the proliferation of more accessible analytics-capable hardware, facial recognition should increasingly factor in to video security system builds. In addition, current political realities may affect brand choices, and impact camera hardware costs for future deployments.

Brian Carle *is the director of product strategy at Salient Systems.*