The growth of social media and the widespread use of mobile devices have led to an explosion of photos and videos posted on the Internet. These images are an increasingly important part of research, security, and investigations at all levels of government. But the sheer volume makes it nearly impossible for those assigned to review these images and come up with keywords for every frame to make analysis possible.

Being able to locate and analyze all types of images based on their visual content is something the artificial intelligence community has been working on for the past 40 years. It requires teaching a machine how to see and understand by encapsulating the way a person sees and comprehends using both their eyes and brain.

Working with some demanding customers, including the US government, my company has been able to create software that’s capable of analyzing and searching pictures, video, and satellite images based on their visual content, much like an actual person would. The software can separate man-made items from naturally occurring things, understand context in an image, distinguish faces and facial features, identify, recognize and automatically label objects, detect and recognize text in several languages, and create descriptions on the fly for everything it sees.

The technology makes it possible to recognize, locate, and count objects such as planes on a tarmac, or cars on a road, or in a military supply chain context, for instance, parts and equipment on shelves in a warehouse. All of this generates data that is very useful and can be mined for a variety of purposes, thereby putting some very interesting image-understanding capabilities in the hands of regular users.

Facial recognition is another valuable function in the software. People can be detected, recognized, and automatically named. This capability can be used in a surveillance context (e.g., monitor street cameras to detect, recognize, track people of interest) or to mine and discover faces on social media (e.g., discover connections among people).

There are many other use cases as well. For instance, if you can detect a face, an object, or a text string, you can also redact them. Law enforcement and military staff can now use this technology to automatically create redacted versions of their images and videos where all or specific faces, objects or text in can be blacked out or blurred for subsequent distribution to partners or the public.

Computer vision, machine learning and artificial intelligence, are all very difficult things. We have worked hard to make these technologies work for the user in a transparent way so that they can interact with the system intuitively. For instance, because the software can recognize multiple objects, faces, etc. in a picture, users can express not only simple queries (find me this person or this object) but also more sophisticated ones. They can upload a snapshot of a person and a snapshot of a car, for example, and then request all video segments and images that include one but not the other or both in the same shot, greatly speeding the analysis process.

Pictures and video have long been effective weapons in the fight for national security and are invaluable to our intelligence and defense communities in their efforts to expose and track potential threats. With new advances in AI-based software, we are making powerful analysis capabilities more broadly available.

Joseph Santucci is the President and CEO of piXlogic Inc.
The Visual Search Engine

Visual search solutions that automatically analyze, index, and tag the contents of images and videos, providing an unparalleled level of search functionality.

- **Content Discovery**
  Find pictures or videos that contain specific objects, scenes, text, or people of interest

- **Content Auto-Tagging**
  Automatically label an image or video

- **Content Alerting**
  Inform users when items of interest appear in live video streams or web crawls

The piXlogic product suite offers a comprehensive set of solutions for applications in E-Discovery, Security, and Retail. Whether you are a small workgroup or a large enterprise, there is a version of the piXserve software that addresses your needs.

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