



COMPUTER VISION

## AUTOMATE THE ANALYST TASK FOR ACTIONABLE INTELLIGENCE

CLIENT: Intel Agency

Today's analysts struggle to manually process massive amounts of still and streaming video content with the speed and human insight needed to derive actionable intelligence.

In ground-level imagery, our ML algorithms automatically identify objects of interest (such as humans, buildings, or cars). By combining the output data, we deliver advanced scene analysis and characterization, giving users increased visual understanding and intelligence. For example, analysts can identify expatriate communities overseas by identifying and combining landmarks, restaurant signs, and clothing types.

For wide-area motion imagery (WAMI), we develop powerful custom convolutional neural networks (CNNs) to detect, track, and link motion tracks of vehicles and targets of interest for precision-point data and increased activity-based awareness.



SENSOR / IOT

## PREDICTIVE MAINTENANCE: FAILURE IS NOT AN OPTION

CLIENT: Large Commercial System Integrator

When big machines break down, it means big money. If a key component in an aircraft or oil rig fails, maintenance crews must take the machinery out of service for repairs, often waiting weeks or months for parts delivery. This breaks down the logistics pipeline, causing rising costs and significant delays.

By applying our expertly-trained ML models to active 24/7 sensor and monitor data like pressure, temperature, vibration, and fuel usage, we calculate "time to failure" for every single component on a piece of machinery.

Crews use this information to conduct preventative maintenance on parts and systems. They can get ahead the problem, replace failing components BEFORE they break, and greatly reduce the amount of time the machinery is out of service.



#### NATURAL LANGUAGE PROCESSING (NLP)

## LET'S CHAT: AUTOMATED TEXT SEARCH AND DISCOVERY

CLIENT: Intel Agency

Chat rooms are noisy, real-time activity feeds used for socializing, information exchange, and often, conducting criminal activity. Analysts actively monitor chats for intelligence, but their current tool is "simple search" and doesn't deliver relevant, actionable results.

In partnership with Google, we use ML and NLP to greatly enhance the functionality and range of the current monitoring tool. By automatically extracting data structure from chats and related databases, we move the tool beyond manual keyword input and filtering to a powerful ecosystem of relevant search and discovery.

Analysts can monitor for topics such as bomb making or anti-American sentiment, and the tool will automatically find related information and recommend new chat rooms, greatly improving situational awareness and real-world disaster response.



#### DATA MANAGEMENT

## TRAINING DATA @ SCALE: BIGGER, BETTER, FASTER

CLIENT: Intel Agency

To automatically target objects of interest in massive amounts of images and streaming video, ML models need large amounts of accurate, consistent, and comprehensive training data. The raw data must be manually labeled, which requires expertise, technology, a human workforce, QA/QC, and storage—all at significant effort and cost to the mission owner.

Utilizing our cleared 800-employee administrative workforce, we deliver a low-cost, quick-turnaround labeling solution capable of producing tens of thousands of target labels in under 14 days. By producing highly-accurate target labeling, we can deliver equally fast object detection. In one instance, our Data Science team produced 946 discreet detects in .05 square kilometers (the size of Vatican City) just 23 days after labeling the first image.

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