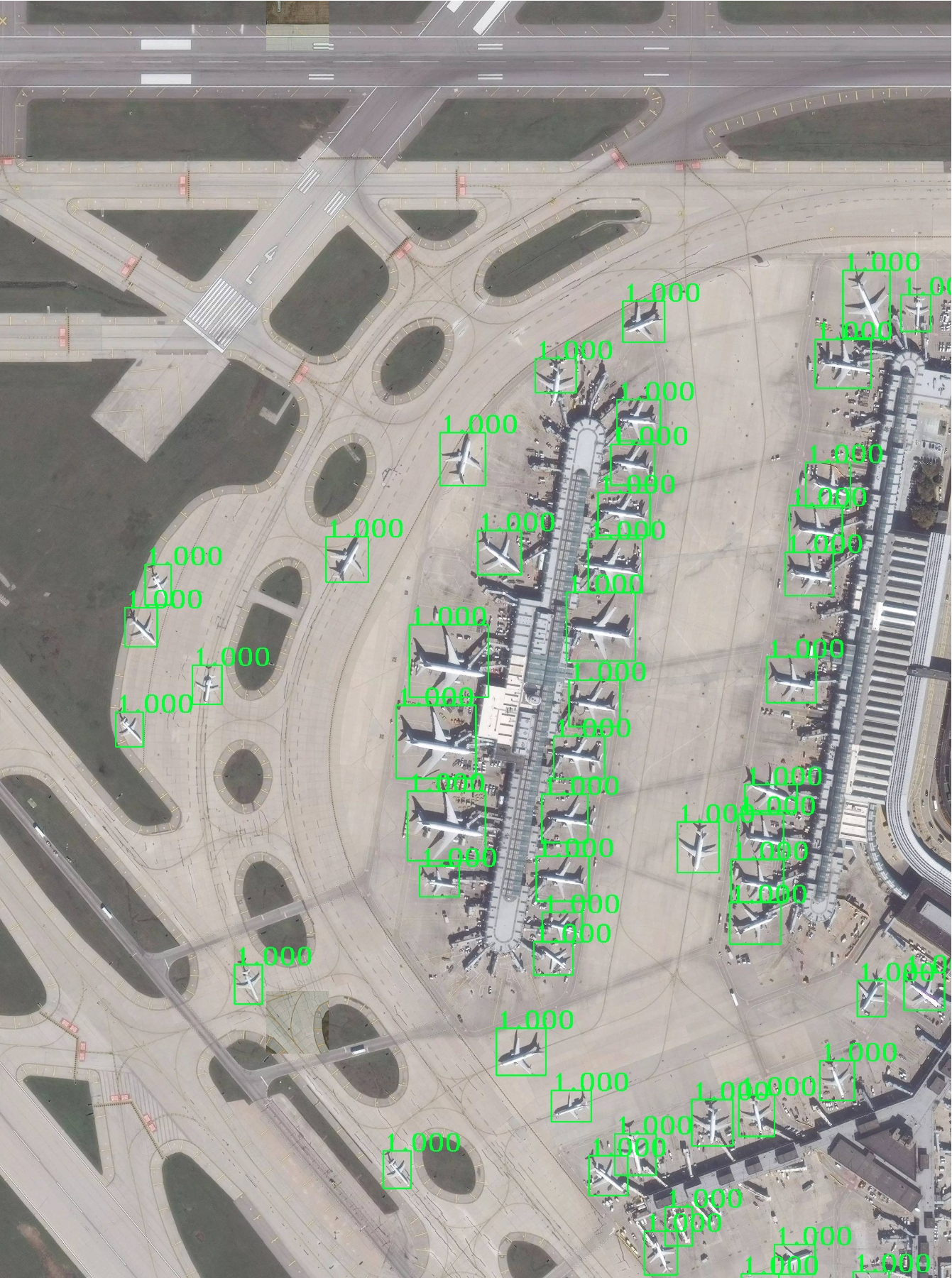


# Deep Learning Model Speeds Up, Automates Satellite Image Analysis

Algorithm trains itself to identify objects, unlocking new geospatial workflow efficiencies







Large airplanes automatically identified at Chicago's O'Hare Airport

Lockheed Martin (NYSE: LMT) develops satellite imagery recognition system using open-source deep learning libraries to quickly identify and classify objects or targets in large areas across the world, potentially saving image analysts countless hours manually categorizing and labeling items within an image. Global Automated Target Recognition runs in the cloud, using Maxar's Geospatial Big Data platform (GBDX) to access Maxar's 100 petabyte satellite imagery library and millions of curated data labels across dozens of categories that expedite the training of deep learning algorithms. Fast GPU's let GATR scan a large area very quickly, while deep learning methods automate object recognition and reduce the need for extensive algorithm training.

*“ Artificial Intelligence models like GATR keep analysts in control while letting them focus on higher-level tasks ”*

GATR teaches itself what the identifying characteristics of an object area or target, for example, learning how to distinguish between a cargo plane and a military transport jet. The system scales quickly to scan large areas, including entire countries. GATR uses deep learning techniques common in the commercial sector and can identify ships, airplanes, buildings, seaports, and many other categories.

“There's more commercial satellite data than ever available today, and up until now, identifying objects has been a largely manual process,” said Maria Demaree, vice president and general manager of Lockheed Martin Space Mission Solutions. “Artificial Intelligence models like GATR keep analysts in control while letting them focus on higher-level tasks.”

GATR has a high accuracy rate, well over 90% on the models we've tested so far. It only took two hours to search the entire state of Pennsylvania for fracking sites – that's 120,000 square kilometers

“I'm not an expert on what oil production sites are, and I don't have to be,” said Mark Pritt, senior fellow at Lockheed Martin and principle investigator for GATR. “This system teaches itself the defining characteristics of an object, saving valuable time training an algorithm and ultimately letting an image analyst focus more on their mission.”

GATR builds on research Pritt's team pioneered during a Intelligence Advanced Research Projects Activity (IARPA) challenge, called the “Functional Map of the World.” The Lockheed Martin team was the only team from a company who placed in the top five.

#### **About Lockheed Martin**

Headquartered in Bethesda, Maryland, Lockheed Martin is a global security and aerospace company that employs approximately 105,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services.