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INTELLIEARTH™ INTEGRATOR-G

Modernizes geospatial data and processing architectures for adopting AI/ML solutions

The Department of Defense (DoD) and intelligence community (IC is challenged with applying emerging artificial intelligence/machine learning (AI/ML) technologies to their datasets at scale. L3Harris' IntelliEarth Integrator-G is designed specifically to meet DoD and IC needs to deploy geospatial intelligence (GEOINT) AI/ML capabilities to the warfighter.

SOLVING CUSTOMER CHALLENGES

Today's data processing architectures and infrastructures aren't flexible enough or designed to simultaneously support the transition of AI/ML from research and development, to integration and test, and finally to production. Performance monitoring and continuous refinement of machine learning models is typically done offline, and upgrades to the models occur once or twice a year at best. An adjacent problem to the flood of new sensors and data providers is the influx of companies offering full-stack solutions to build, test and deploy models to production using commercially-licensed or proprietary platforms for a unique sensor or data type. IntelliEarth Integrator-G supports the rapid integration of models from third parties to avoid stovepipe solutions and exorbitant license costs.

GEOINT FOCUSED

IntelliEarth Integrator-G performs the management of all the associated processes for training, validation and inference within the same system. This unleashes agile machine learning development to create rapid updates and improvements of AI/ML algorithms. We leverage g overnment off-the-shelf (GOTS) software framework, such as a cloud-enabled TRL-9 system, that provides all the necessary functions for MLOps. Contrary to other commercial approaches, users can operate the system without a commercial software license or depend on outreach to public web interfaces to provide the function. L3Harris' solution is specifically designed for geospatial analysis from the ground up, unlike other systems in development that require adaption to specific domains. Our MLOps system enables integrated governance for life-cycle management and tracking.

FLEXIBLE ARCHITECTURE

IntelliEarth Integrator-G is focused on the provision of the following three customizable components of an MLOps system: data management, algorithm governance and production environment. Each component is highly customizable to meet specific needs but built upon the same underlying framework to drive standardization and operational efficiency. Once configured, the system can be deployed to any compute environment and can support federation of data and algorithms across multiple instances.
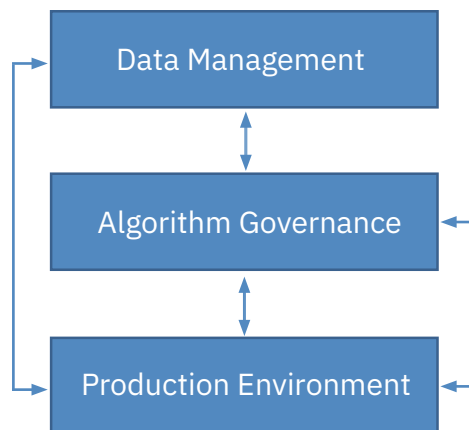

FEATURES

> TRL-9 GOTS solution

> Supports full-spectrum data sources

> Validated geospatial synthetic training data capability (PAN, MSI, IR and SAR)

> Automated mechanisms for label data search and discovery

> Integrated governance enables algorithm life-cycle management

> Robust test and evaluation components help establish trust in AI/ML algorithms

> Natively captures provenance of any observable generated by the system

> Continuous refinement allows analyst feedback to be leveraged for retraining

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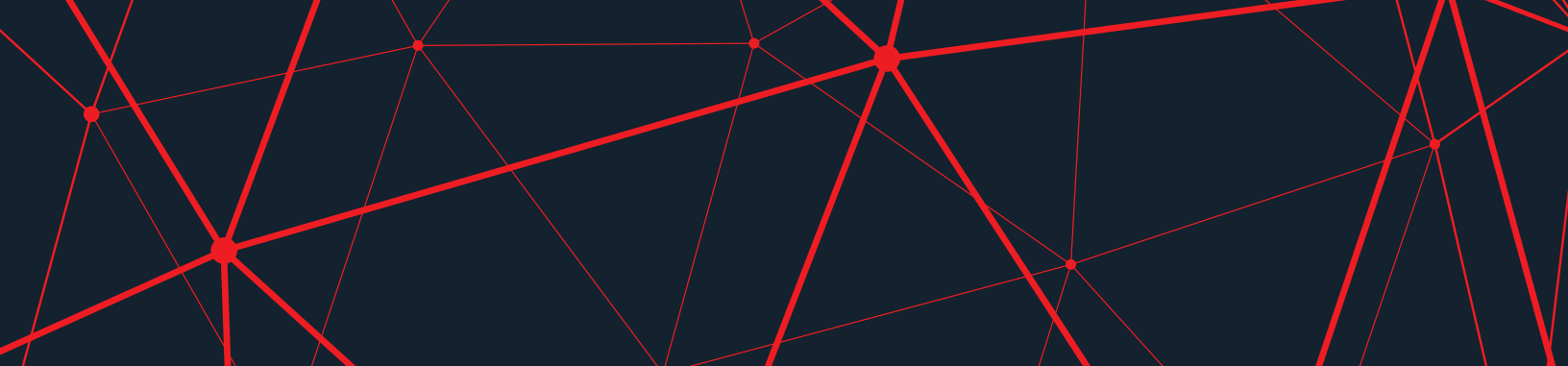
DATA MANAGEMENT

IntelliEarth Integrator-G is storage technology independent and can support data stored within a local network share and/or data stored in the cloud. It is built to prevent multiple copies of the same data sets and can use data files at rest from within their source location. The pedigree of data used within a workflow is maintained throughout the entire process to help facilitate a better understanding of the generated outputs. The data catalog can support raw, processed and detection data (e.g. target observables). Synthetic data generation plug-ins accelerate AI/ML model development for hard-to-find targets in EO, MSI, IR and SAR data. Additionally, the system comes with the Distributed, All-source, Geospatial-analytics Resource (DAGR), which provides a web-based application for search, discovery, retrieval and lightweight exploitation of geospatial and vector data.
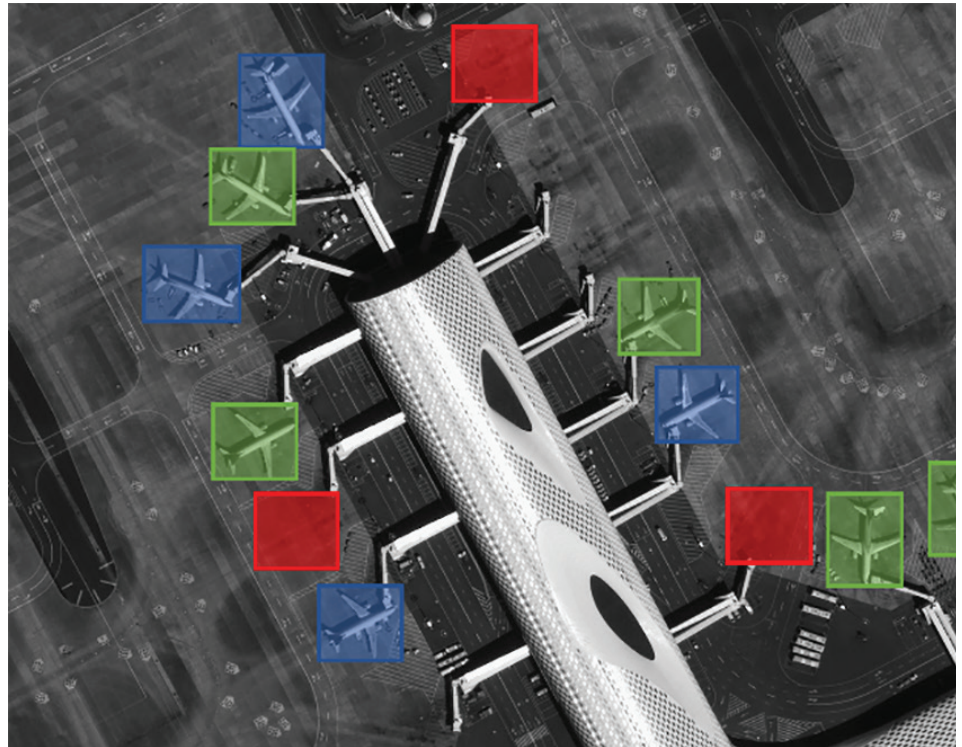
ALGORITHM GOVERNANCE

Algorithm governance leverages IntelliEarth Integrator-G's content and workflow management capabilities to enable life-cycle tracking of machine learning analytics from development to operations. Algorithm upload utilities streamline the algorithm registration process to provide analyst access to algorithms more rapidly. The development history of an algorithm is captured throughout its life cycle, which provides information to users on the verification and validation activities performed.

Algorithm governance can be configured and customized to align to the specific technology transition process and policy of a given organization.

PRODUCTION ENVIRONMENT

Similar to the drive for agile software methodologies and DevOps systems, AI/ML development is a highly iterative process that provides the best and biggest impact by being closely tied to the operations it will support. AI/ML cannot be effectively developed in isolation, walled off from operations, then kicked over the wall to be put in operations for an extended period to wait for another major generational update. IntelliEarth Integrator-G closely ties the inherently iterative development of machine learning to its operational use, providing a mechanism for routine feedback and continuous improvement.

For more information, please contact: intelmanagement@L3Harris.com

IntelliEarth™ Integrator-G

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L3Harris Technologies is a Trusted Disruptor for the global aerospace and defense industry. With customers' mission-critical needs always in mind, our 46,000 employees deliver end-to-end technology solutions connecting the space, air, land, sea and cyber domains.

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