


About COLSA

COLSA is a proven leader in innovative technologies that maintains our commitment to customer service above all else. Established in 1980, COLSA has remained steadfast in our commitment to one goal: to serve the company's clients with dedication and excellence.


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Machine Learning Enhanced Signals Analysis

Adaptable, Automated, and Containerized

Legacy Signals Analysis Systems help protect people and assets but are costly, require high levels of subject matter expertise, can be extremely difficult to upgrade and keep mission effective, and typically require down-time or delays for humans to perform analysis. Using Machine Learning (ML) these systems can rapidly adapt to changes in the electromagnetic environment and address new protocols, modulations, and unseen interference types. ML model-based solutions are small, can be represented in software or portable high-speed processors, and can be trained in the field to cope with new data situations.

COLSA's ML-enhanced signals analysis solutions solves challenges related to the increasing complexities of modern and dynamic signal processing environments including satellite communications, radio frequency, electro-optical, and acoustic environments.

Capabilities

Automation

Systems based on COLSA's ML models overcome human error and reduce analysis cycles to near real time.

Collection

COLSA utilizes multiple data collection methodologies to enhance data accuracy, amount of data, and variability. Data from multiple sources such as real recorded SATCOM signals, mathematically generated data, and data generated from open source simulation software is combined and compared to assure data.

Storage

COLSA uses a petabyte-scale storage environment to collect and store live raw, pre-processed, and recorded SATCOM RF data.

Exploration

Using COLSA's team of data scientists, tools, storage, and compute infrastructure, we have uncovered new ways to represent SATCOM protocols, interference models, and RF artifacts using mathematical models that support realistic simulation.

Simulation

Our simulators enable us to generate what can be regarded as infinite labeled data based on our mathematical models of real SATCOM data.

Data Science

From direct support on critical missions to leading-edge Research and Capability Development, Data Science at COLSA is driving solutions development to address the DoD and Intelligence Community's toughest challenges.

Data Analysis and computational sciences (Dacs) Lab ◆

Enterprise-wide Strategies for Data Science ◆

Data Engineering and Machine Learning Operations (Mlops) ◆

Knowledge Management Solutions ◆

Enhanced Signals Analysis ◆

Scientific Machine Learning ◆

ML Models

COLSA's SATCOM ML models present a new way to analyze SATCOM RF data that provides faster answers and a dynamic way to cope with new types of signals that legacy Digital Signal Processing (DSP) techniques cannot easily or quickly do.

Detection

Our generated and recorded labeled data sets allow us to train machine learning models that can detect, categorize, and filter different types of interference.

Notification

Our ML models provide near real time alerts for SATCOM operators.

Portability

Our ML models require minimal resources such as storage space and computational power. This allows models to be deployed on small handheld devices like cell phones and FPGAs.

Services & Approach

We collect data from the customer and collect open data from a hemisphere of satellites which enables us to pull real world exploration and evaluation data sets to fit customer parameters. Collected data is analyzed by our data scientists and mathematical models are built to account for new discoveries within the data sets.

Our data engineers then implement the mathematical models in our simulator platform to generate fully labelled, simulated, SATCOM RF data within chosen configurations in order to train and experiment on various machine learning models. Successful models are selected for further testing and integrated with software defined radio or custom software solutions.

