ENSCO offers the ability to deliver trained AI models and system integration for detecting and classifying signals of interest.

ENSCO’s autonomous signals intelligence (SIGINT) collection capabilities provide detection and classification of complex Radio Frequency (RF) signals in dense RF environments. This capability runs in real time on low-SWaP platforms and can be updated quickly as new and emerging threats are encountered. RF detection and classification using AI offers the ability to quickly scan for new signals, to capture, annotate, and train Convolutional Neural Networks, then detect and classify in real time.

Traditional approaches require hand-engineering feature extraction and matching algorithms that often take months to design and deploy. However, Artificial Intelligence (AI) manifestations like machine learning and deep learning utilize a development flow that can result in a neural network trained on a new RF signal class in only a few hours. Additionally, the AI approach takes the entire RF signal chain into account and mitigates deficiencies. This provides RF signal detection and classification in milliseconds.

Applications

ENSCO AI/RF/Software-Defined Radio (SDR) capabilities support a wide range of applications, including situational awareness for multiple complex environments:

- NAVWAR
- GPS/comms jamming
- RADAR warning
- Pattern-of-life monitoring
- Time-sensitive targets – fast threat detection
- Cooperative/uncooperative communications detection in complex RF environments
- Detection of unknown signals

ENSCO’s autonomous SIGINT collection capabilities can be applied to numerous problems in the SIGINT/RF surveillance space. Product offerings will continue to be revised as more capable GPUs and SDRs are available, allowing for higher inference rates and evaluation of more bandwidth. Data augmentation methods that model various channel impairments and noise environments will continue to be improved. Today’s capability combined with these continual updates will provide more effective signal detection and classification.

AI Capabilities

- OmniSIG SDK – label, train, and deploy neural network quickly
- OmniSIG Sensor - **Real-time inference of 40 MHz of spectrum in milliseconds**
- SigMF metadata output
- Data augmentation - reduces test data volume requirements

RF Development and Test Capabilities

- Advanced RADAR pulse library
- Custom waveform generation up to 44 GHz, 4 GHz BW
- Advanced signal analysis up to 50 GHz, 1 GHz BW

SDR Platforms

- Epiq Solutions Sidekiq SDR Platforms
  - Real-time RF samples into OmniSIG
  - Capture signals up to 18 GHz, 200 MHz BW

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