



COGNITIVE EW

ML-powered electronic warfare solution that rapidly detects, fingerprints and classifies radar signals

Cognitive electronic warfare (EW) is the field of next-generation machine learning (ML) and AI-enabled electronic warfare solutions. It helps military operators stay informed, defended and effective against agile and complex RF emitters, pulsed radars and low probability to detect signals. By deploying advanced ML algorithms at the edge, Cognitive EW strives to provide rapid signal recognition, RF fingerprinting, adaptive countermeasures, and real-time intelligence for enhanced situational awareness, rapid reprogramming and targeting across air, land and sea throughout the electromagnetic spectrum.

Mission Application

Cognitive EW covers multi-domain solutions that apply AI/ML and adaptive techniques to detect, classify and respond to complex radar signals of interest, including indication and warning (I&W), signals intelligence and electromagnetic warfare.



Advantages

- **AI-Driven Signal Recognition:** Uses machine learning to rapidly identify and categorize complex and agile RF signals of interest.
- **Extended Detection Range:** Potential to operate at lower signal-to-noise ratio (SNR), providing increased detection capability.
- **Real-Time Intelligence:** Enables rapid signal indexing and exploitation at the edge for immediate electromagnetic warfare targeting and rapid reprogramming.

Features

- ML algorithms continuously improve radar signal classification through AI-driven analytics.
- RF fingerprinting identifies radar systems of interest based on unique signal characteristics.
- Generates Pulse Descriptor Words at lower SNR, increasing detection range over existing capabilities.
- Edge-deployable architecture enables real-time, in-theater radar signal identification and analysis.
- Multi-domain functionality supports air, land, sea and EMS operations, ensuring operational flexibility.
- Development of synthetic RF IQ data allows adaptable and rapid operational scenario representation of data to train ML algorithms more efficiently.
- ML algorithms splice, bin and correlate similar data for fusing into a common model.



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