

Real-Time FPGA-Based Edge AI Vision

C-UAS Detection, Tracking & Classification with FantoVision



Key Technologies Demonstrated

- 2 × CoaXPress-12 image acquisition with PoCXP
- FPGA-based acquisition, preprocessing, and image enhancement
- Ultra-low-latency camera-to-AI pipeline
- Real-Time C-UAS Tracking, detection
- NVIDIA Jetson Edge AI processing close to the sensor
- Reduced CPU/GPU load through FPGA offload
- Multi-sensor imaging and target tracking
- Configurable for application-specific imaging needs
- Compact: 13.4cm x 9cm x 6cm, 750g
- Remote real-time control and monitoring via network connection

Recording & Storage Options

- Edge solutions: up to 8 TB
- Scalable storage for PC/server/cloud-based solutions

Typical Applications:

- Aerospace and defense imaging
- Tracking, detection and classification
- EO/IR imaging systems
- ISR and surveillance
- Unmanned & Robotics
- Aerial imaging and inspection
- UAV and airborne payloads
- Vehicle vision systems
- Multi-camera acquisition and sensor fusion



Gidel demonstrates a real-time C-UAS classification pipeline for detecting, tracking, and classifying aerial targets in challenging operational environments.

The demo combines Aquila Dynamix's C-UAS classification technology with Gidel's FPGA-based imaging and Edge AI Vision platform. It enables high-bandwidth sensor acquisition, deterministic FPGA preprocessing, and efficient AI processing close to the sensor.

By offloading acquisition and preprocessing to the FPGA, the system reduces CPU/GPU load and allows the embedded AI processor to focus on real-time inference.

Gidel FantoVision systems support CoaXPress, GigE Vision, and Camera Link interfaces, combining FPGA processing with NVIDIA Jetson AI computing in a compact Edge AI Vision platform for EO/IR, RGB, ISR, aerospace and defense, aerial imaging, surveillance, and other mission-critical vision applications.

Demo Configuration

Platform: Gidel FantoVision40-CXP12

Camera Interfaces: 2 × CoaXPress-12 cameras with PoCXP

Camera Setup: IR camera + RGB Bayer camera

Sensor Data: 13 MP at 30 FPS

FPGA Processing: FPGA preprocessing and image enhancement

FPGA Compression: Option for high-quality data reduction on FPGA

AI Processing: NVIDIA Jetson-based tracking, detection, and classification

Pipeline: Camera acquisition=>FPGA processing=>AI Processing=>real-time output



North America:

6520 Platt Ave Ste 804
West Hills, CA 91307
+1-617-849-9220
sales_usa@gidel.com

International:

2 Ha'ilan St., Northern Ind. Zone
POB 281, Or Akiva, Israel 3060000
+972-4-610-2500
sales_eu@gidel.com

www.gidel.com