DETECT/DEFEND DRONE

Sensor

DSI-GEN2 powered, long-range passive detection providing quick and accurate alerts of drone threats while providing the location and tracking of both the drones and pilots including drone ID including make, model and serial number. Autonomous or operator controlled and a user-friendly software.

Advanced AI-based and machine learning RF solution for long range accurate detection and early-alert on the presence of drones

AI powered defense to Secure your Sky from the growing drone threats

The wireless sensor (Sensor A1000/A2000/A8000) is based on DSI Gen2 (Deep Signal Inspection) technology to passively detect and identify drones within the detection range to provide omnidirectional detection, identification and early warning.

The system adopts an all-in-one design with high integration, infinite scalability, and adaptability.

It can be integrated with other security systems and is suitable for long-term fixed-range protection in airports, critical infrastructure sites, and large entertainment venues.

With an IP rating of 66, it can be installed outdoors under all weather conditions.

Sensor is an autonomous fixed sensor that can be easily integrated with other suite of cameras and sensors, providing an extended area coverage and an effective unified c-UAV responsive platform.

The sensors can be deployed as permanent or temporary solutions.

Due to its compact size, lightweight and easy installation, it can be relocated conveniently.

It can be used as a mobile protection solution if attached to a moving vehicle.

Sensors can detect and track up to 30 drones simultaneously from multiple directions, accurately identifying and alarming in any weather condition 24/7.

Sensor A1000/A2000/A8000

This BSensor is capable of detecting a swarm of at least 45 drones simultaneously.

It could detect, identify, and geo-locate the drone and pilot precisely with a maximum of 10 RMS.

The DSI-GEN2 (Deep Signal Inspection Generation 2) opens a new era in C-UAS technology and industry by providing reliable various information about drones.

Additionally, with DSI-GEN2 the geo-location of drone and pilot could be done with a single unit of sensor.

SENSOR A1000/A2000/A8000	
Technology	Deep Signal Inspection (DSI-GEN2)
Detection Range	Up to 2 km (A1000) 5 km (A2000), 8 km (A8000) (Ideal Conditions)
Geolocation of Drone and Pilot	Up to 2 km (A1000), 5 km (A2000), 8 km (A8000) (10 m RMS)
Detection Frequency	300 MHz to 6 GHz
Product Dimensions	220 mm x 210 mm (Cylinder: Depth x Height)
Weight	3 kg
Ingress Protection Rating	IP65
Operating Temperature	-20 °C to +55 °C
Power Supply	AC 100 to 240 V
Power Consumption	< 35 W
Connectivity	LAN/Cellular
Configuration, Operation, Alarms	IA-WebUI
Software Updates	Local and/or Cloud Subscription
Data Storage	Local and/or Cloud Subscription
System Integration	GraphQL and RESTful API Interface
Interference with Other Systems	No Interference
Simultaneous Detection	45 Drones
Directivity	360° Omnidirectional

Sensor LV

This sensor is capable of detecting a swarm of at least 45 drones simultaneously.

It could detect, identify, and geo-locate the drone and pilot precisely with a maximum of 10 RMS.

The DSI-GEN2 (Deep Signal Inspection Generation 2) opens a new era in C-UAS technology and industry by providing reliable various information about drones.

Additionally, with DSI-GEN2 the geo-location of drone and pilot could be done with a single unit of sensor.

SENSOR LV	
Technology	Deep Signal Inspection (DSI-GEN2)
Detection Range	Up to 24km (Ideal Conditions)
Geolocation of Drone and Pilot	Up to 24km (10 RMS)
Detection Frequency	300 MHz to 6 GHz
Direction Finding Accuracy	< 9°
Product Dimensions	346 mm x 431 mm (Cylinder: Diameter x Height)
Weight	8.5 kg
Ingress Protection Rating	IP65
Operating Temperature	-20 °C to 55 °C
Power Supply	AC 100 to 240 V
Power Consumption	< 35 W
Connectivity	LAN/Cellular
Configuration, Operation, Alarms	IA-WebUI
Software Updates	Local/Cloud Subscription
Data Storage	Local/Cloud Subscription
System Integration	GraphQL and RESTful API Interface
Interference with Other System	s No Interference
Simultaneous Detection	45 Drones
Directivity	360° Omnidirectional

IA-cam A100

State-of-the-art, camera-based security solution that provides 360° detection, intelligent identification, direction-finding, and forensic tracking capabilities. Powered by RTI technology, IA-cam sees what the human eye cannot.

IA-cam is an all-in-one solution, based on Rapid Target Inspection(RTI) technology, offering both camera surveillance capabilities and C-UAS solutions. It integrates AI - enhanced software designed to detect and track drones. With 360° azimuthal coverage, IA-cam - A100 provides a wide coverage area for accurate early warning of approaching UAVs in all directions.

It can be integrated with the C-UAS control center and multiple cams or sensors to provide extended coverage.

Independent operation - The system does not require any auxiliary equipment for functions such as radar or radio spectrum scanning.

Active discovery - Based on the servo pan-tilt, it automatically scans and searches the surrounding airspace and raises the alarm when a drone is found.

Intelligent analysis- Using proprietary advanced intelligent visual analysis and AI recognition algorithms, it can accurately identify various types of drones.

Tracking- Accurately determines the position of drones, and automatically tracks them to obtain recorded visual evidence of airspace intrusions.

IA-cam combines precision pan-tilt servo and AI-based computer vision technology.

It automatically scans and searches the 360° surrounding airspace, raising the alarm when a drone threat is found. Using proprietary advanced intelligent visual analysis and AI recognition algorithms, IA-cam can identify various types of drones.

It can be integrated with other cams or sensors to provide extended coverage.

Its independent operation does not require any auxiliary equipment for functions such as radar or radio spectrum scanning.

IA-cam A100 can determine the position of the drone and perform automatic tracking. It records visual evidence of airspace intrusions, so that the operator can understand any threat with a glance.

IA-Cam A100

IA-CAM A100	
Technology	Rapid Target Inspection
Detection Method	Visual Sensor
Detection Distance	5 m to 1.5 km (Ideal Conditions)
Accuracy of Direction Finding	±1 °
Geolocation	0 to 1.5 km (50 m RMS) (2*3m UAV up to 3000 m)
Angular Range	Horizontal 360 °, Vertical 48 °, 12.8 Seconds Per
Focal Length	Cycle (adjustable)
Product Dimensions	6 mm to 128 mm
Weight	1113 mm × 416 mm (Height × Maximum
Ingress Protection Rating	Diameter)
Operating Temperature	25 kg (Stand Included)
Operating Humidity	IP65
Power Supply	-30 °C to +65 °C (-22 °F to +149 °F)
Connectivity	< 90%
Configuration, Operation,	AC 110 V or 220 V (adaptable with battery)
Alarms	Via LAN to Existing IT Infrastructure
Software Updates	IA-WebUI
Input	Local or Cloud
Data Storage	RJ-45 Port
System Integration	Local or Cloud Subscription
Interference With Other	GraphQL and RESTful API Interface
Systems	No Interference
Zoom	23x Optical
Resolution	3840 x 2160 pixels
Simultaneous Detection	1000 (Within Horizontal Angular Range of 32 degrees

IA-Shield A8000

IA-Shield employs our pioneering DSI (Deep Signal Inspection) technology for passive long-range detection and early-warning of drones.

It receives information without transmitting or impacting the surrounding environment and accurately detects, locates and classifies drones and t heir remote controllers (under good radio-frequency propagation conditions).

IA-Shield can fully block up/downlink signaIs with one click from the operator.

Furthermore it can be configured to block signals autonomously.

• Multiple bands support - 433MHz / 900MHz /1.4GHz / 2.4GHz / 5.8GHz frequency band protocol analysis.

• Black & White List - able to categorize a drone into a black or white list with a single click. The white-listed drones do not trigger alarms.

• Easy installation and commissioning - the components can be quickly assembled through standard cables with minimal infrastructure construction.

• Scalability - single sensor detection up to 10 km, and the detection distance can be extended by deploying multiple sensors connected with the IP network.

• Compatibility - fully compatible with the C-UAS control center and sensors.

• Robust operation- minimally affected by weather conditions.

The system adopts an all-in-one design with high integrability, scalability, and adaptability.

It can be integrated with other security systems and is suitable for long-term protection in areas such as airports, petrochemical industry sites, critical infrastructure, correctional institutions, as well as large entertainment venues.

IA-Shield A8000

IA-Shield A8000	
Technology	Deep Signal Inspection Gen2
Range of Detection	Up to 10 km (good RF conditions with typical drones)
Geolocalization for Drone	10m (RMS)
Geolocalization for Pilot	10m (RMS)
Detection Frequency	2.4GHz 5.8GHz (433MHz/900MHz/1.4GHz per request)
Jammer Frequency	2.4Ghz 5.8GHz (433MHz/900MHz/1.4GHz per request)
Jammer Range	Up to 2 km (line of sight)
Direction Finding	9° (RMS)
Product Dimensions (W x D x H)	W 400mm D 245 mm, H 480 mm
Weight	22.4 kg
Ingress Protection Rating	IP67
Operating Temperature	-40 °C to +70 °C
Power Supply	AC 100-240 V
Power consumption	<= 500 W
Connectivity	LAN/Cellular
Configuration, Operation, and Alarms	IA-WebUI
Software Updates	Local and/or Cloud
Data Storage	Local and/or Cloud
System Integration	GraphQL and RESTFUL based API interface
Interference ÷àª Other Systems	Zero interference For detection, fully block for jam frequency
Simultaneous Detection	Up to 45 Drones
Directivity	360° Omnidirectional.

IA-P5000 CASE

Portable and lightweight, case is a complete drone detection system that detects, identifies, and warns on UAV communication links in real-time, as well as gathers real-time data such as flight status, routes, and distance. It's a compact casing with a mechanism that allows for real-time tracking of drones and their pilots. The solution supports the detection of both DJI and Non-DJI drones.

Case IA-P5000 is a complete drone detection solution that quickly detects, identifies, and alerts on UAV communication links and collects real-time data such as flight status, routes, and distance.

The touch screen displays detailed telemetry data, including the drone model, serial number, speed, geolocation, altitude, and movements of the drone, as well as the pilot's position.

The mobile case, as opposed to the fixed- deployed unit, is suitable for event monitoring, public safety events, VIP security, and different fields.

Due to its compact, mobile, easy-operating settings, minimal training is required for adaptation of solution.

IA-P5000 Case, provides central monitoring, command, and investigative capabilities while combining data from prior flights (history reports).

It is also scalable and can be integrated with other products based on clients' individual needs and facilitate the integration of various systems.

The monitoring data stream enables users to respond in an educated manner as quickly as feasible.).

- Portable all in one 360 degrees Drone Detector
- Detection Range +3 miles
- Full band detection 70 MHz to 6 GHz
- Detects DJI & Non DJI Drones (Detects up to 45 Drones)
- Detects, tracks both drones and pilots
- ID's make, model, serial number based on +450 drone library
- DSI GEN2 Touch Screen
- +12 hrs operating time on one charge
- IP67
- LAN or Cell Connectivity
- Laptop connection option as second monitor
- Battery Swappable

IA-GUN (W-1320)

IA-GUN is an all-in-one C-UAV solution, capable of both UAV detection and defense.

It can perform drone detection, identification, and direction finding, and is equipped with combat capabilities.

Through omni-directional scanning of radio signals IA-GUN actively searches for drones.

Once a drone is detected, IA-GUN alerts the user to the direction of the drone.

The user can then activate the device's defense mode and take aim.

IA-GUN uses radio frequency jamming to interfere with the communication between the drone and its controller, disrupting the drone's flight trajectory.

Small and light-weight, IA-GUN is easy to carry and is highly suitable for mobile deployment for vigilance purposes.

Furthermore, it can be integrated with other security infrastructure, as well as with other sensors.

Note that the operation of radio frequency jammers may require a special permit in certain regions.

Technology Deep Signal Inspection Gen2
Information Display Support LED display, mobile APP
Frequency Band 1.5GHz, 2.4GHz, 5.8GHz (support additional band customization)
Detection Range ≥ 1.5km
Direction Finding Accuracy < 30°
Mitigation Distance ≥ 1km
Working Time ≥ 4h
Working Temperature -10°C to 55°C
Dimension 760mm×373mm×100mm (L×W×H)
Weight ≤5kg (include battery)

DSI (Deep Signal Inspection)

Deep signal inspection (DSI) is an advanced signal detection technology invented by IA Technologies Inc. It leverages the receiving and decoding of the protocols transmitted by wireless signal sources, e.g., the drones, cellphones, IoT devices, etc., to detect and identify the signal sources. To be simplified, we take drones' detection as an example in the following description of the DSI technology.

Due to the advantage that the DSI decodes wireless signal protocols, it provides highly precise detection with identification of drones.

Such precise detection introduces almost no false alarms.

In the meanwhile, DSI supports identification of drones which can distinguish different individual drones even in the same brand and same model, such as multiple DJI Mavic Pro drones.

The identification (ID) of each individual drone will be decoded once it is detected. Such functionality can support swarm attacks of multiple drones.

Further, DSI technology depends on a signal database, which contains different protocol patterns and detection algorithms.

IA Technologies R&D team continues contributing to the database.

As of now, it has covered the patterns and detections of almost all the commercial drones and DIY (do-it-yourself) drone modules in the current market.

Besides, the DSI database is also scalable. More future drones will be added once it comes to the market.

Recently, IA has evolved the DSI technology to generation II (DSI-2) by further decoding the signal protocols to the application layer.

DSI (Deep Signal Inspection)

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From the decoded application layer data, more precise information about the drone has been extracted, including but not limited to the serial number, flying status, GPS location and fly traces of the drone and even the remote controller's real-time location, etc.

Such technology could help sensor identify and geo-localize the drone and its corresponding pilot more precisely with only a single sensor station.

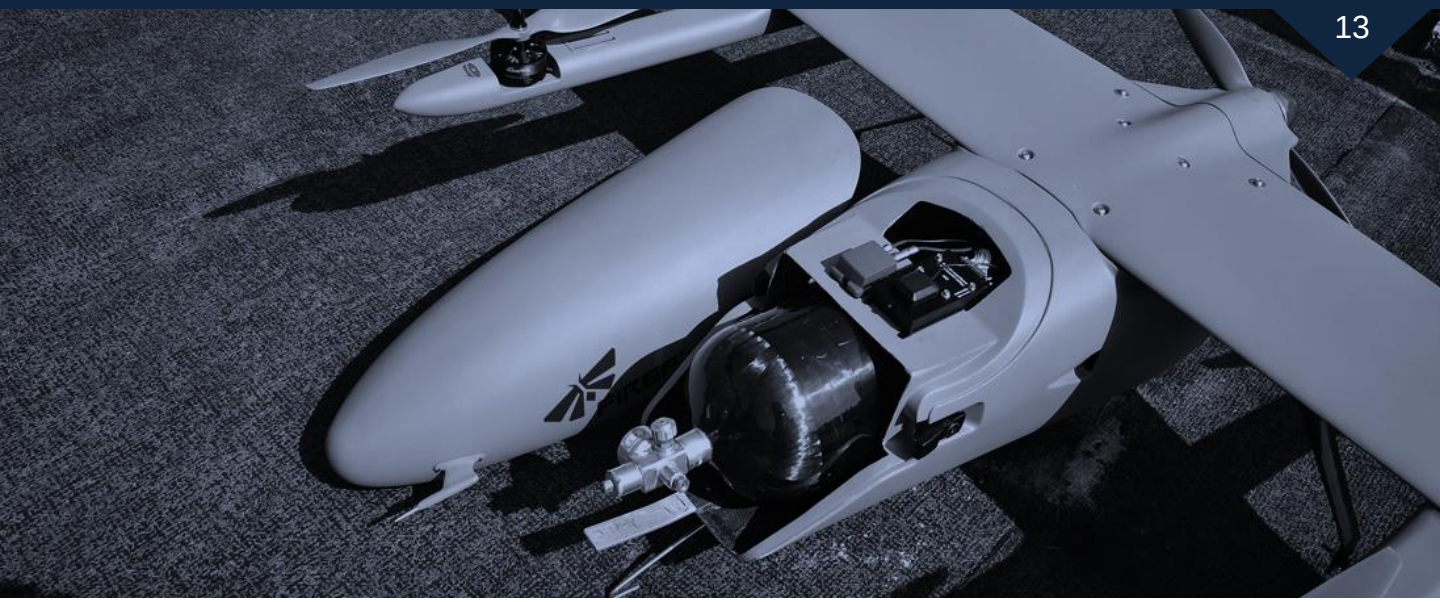
The DSI-2 supports various protocols, such as DJI, crossfire, mavlink, etc. In the meanwhile, Our continues investments to extend the protocol coverages of DSI-2.

IA sensor series products are powered by the DSI technology for drone detection, identification and geo- localization. The software-defined radio (SDR) module is built in the sensors to receive wireless signals.

The implementation of the DSI technology is running over a multi-core CPU and GPU for signal processing which consumes the received wireless signals.

The multi core GPU (>=384 cores) rapidly accelerates the signal processing for DSI detections and identifications.

It yields almost real-time outputs for drone detection. With the power of DSI technology, IA sensors provide one of the best C-UAS solutions in the market.



TDOA Technology

Time-Difference-of-Arrival (TDOA) technology is an advanced method of determining a transmitter location by measuring the time differences for a transmitted signal to reach each node of a receiver network.

A network of spatially separated sensors can use TDOA measurements to determine the location of a drone that is detected simultaneously by at least three of the sensors in the network.

With network nodes separated by several kilometers, this technique is accurate to within tens of meters for drones that are within the perimeter of the network.

The radio frequency communication signal from a drone to its controller is always framed by some form of synchronization sequence which is used by the controller's receiver to acquire and maintain the timing of the radio link.

A sensor trained to recognize this synchronization sequence can eavesdrop on this radio link and estimate its timing relative to the sensor's time base.

Then two such sensors with a common time base can measure a TDOA from the drone and, using the radio wave propagation speed, translate this to a range difference.

With the drone and the sensors considered to be in a plane, the range difference defines a hyperbola of points passing between the two sensors, with each point representing a possible location of the drone.

Either of these sensors paired with a third sensor on the same time base can determine a second hyperbola of possible drone locations, and the intersection of the two hyperbolas would determine the drone location uniquely.

RTI Technology

Rapid Target Inspection(RTI) is optimized for tiny targets in high-resolution 4k images.

By employing AI-assisted scanning strategies, our powerful camera network can quickly pinpoint long-distance objects for target inspection.

Due to highly specialized training, the camera can discover targets that are only a few pixels in size.

We utilize the deep features generated by our artificial neural network to distinguish between target objects and other flying objects, such as birds and airplanes.

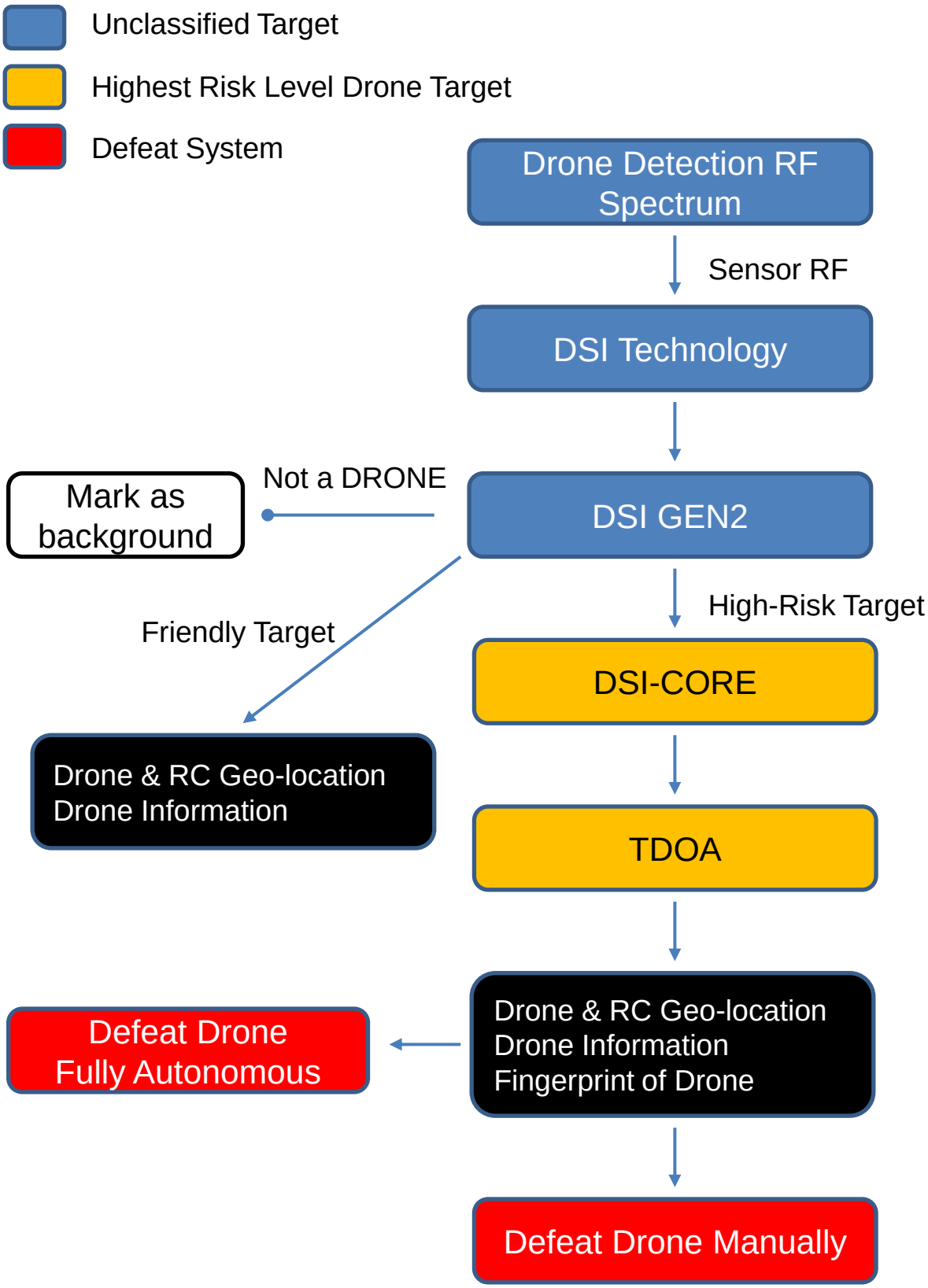
We designed a hierarchical representation for detected objects and an intelligent ranking algorithm to ensure rapid target inspection.

Our engine can score detected objects and focus on the most relevant targets even when interference is present.

Furthermore, by incorporating temporal information, the camera system is able to maintain short-term memory of visual regions of interest.

By observing frames in succession, the engine prioritizes targets based on their risk level

Wireless-based Solution Workflow



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