

5G
NETWORKS

PolyEdge™ Multifunction Sensor

Empowering Every Wireless Device with Sensing & Compute Intelligence

Tiami Networks is at the forefront of integrating fifth-generation (5G) connectivity with advanced edge computing, revolutionizing how wireless devices interact and function. Our unique approach combines data and radar sensing, machine learning (ML), and 5G technology in a single, powerful solution, transforming numerous industries and sectors.

The PolyEdge Multifunction Sensor improves public safety and security in urban and rural areas by enabling non-intrusive surveillance that respects privacy concerns. Our compact, self-powered 5G-Based Passive Radar System uses existing electromagnetic energy from cellular transmitters and evaluates their echoes for detection when reflected by vehicles or people.

It excels at drone detection, asset tracking and surveillance, vehicle tracking and navigation, pedestrian tracking, occupancy sensing, and numerous smart home applications.



Solution Highlights

Unique Sensing Capabilities: Unlike traditional cameras limited by environmental factors such as fog, rain, dust, or blockages, our technology thrives. By sensing 5G waveforms and not merely relying on positioning or triangulation, it provides a more consistent and reliable detection mechanism.

Deployment & Integration: Our sensor can be effortlessly deployed, without the need to overhaul existing infrastructure. Think of it not as a base station or smartphone, but as a distinct sensor capable of on-device detection and classification.

Coverage & Range: From tracking individuals and vehicles in close proximities to identifying UAVs or different car types outdoors, its capabilities are vast. In indoor settings, a single sensor covers up to 5,000 square feet. For outdoor low-band 5G applications, the range extends to half a mile.

Analytics & Cloud: Leveraging the IoT core, analytics can either be processed in the cloud or on-premise, providing flexibility in data management. There's no mandate for a cloud connection, as local processing is feasible with an IoT core box.

PolyEdge™ Multifunction Sensor

PolyEdge Principle

Connect

Our PolyEdge Multifunction Sensor is a versatile node in any 5G infrastructure, offering impressive radar functionality. Efficient in various settings, it complies with global industry standards.

Compute

Central to our solution is embedded machine learning, powered by Intel® FPGA technology. This facilitates rapid data analysis and enhances decision-making. The fusion of Intel Agilex® SoC FPGAs with our technology heralds a new era in 5G and edge computing.

Track

We utilize 5G (and 4G and Wi-Fi) as a radar signal of opportunity allowing object and movement detection without direct 5G device interaction. This capability is effective for outdoor vehicle and pedestrian sensing and indoor person tracking.

Technology Partnership

Tiami employs advanced 5G signal processing and proprietary ML algorithms, enhanced by Intel's AI framework. We leverage Intel's AI platform and FPGA AI Suite for hardware-ready machine learning models, optimized for real-time 5G-based sensing.

Operational Frequencies

Our solution utilizes a 2-antenna FPGA operating in the 0.6 - 3.7 GHz range. With multiple operators using 5G we have near-nationwide coverage in the US. Coverage outside the US is expected as 5G is deployed globally.

Applications

Drone and Unmanned Aircraft System Detection

Offering enhanced tracking and surveillance capabilities, and with no active transmitters it's jammer resistant and invisible to radar search.

Public Safety and Security

Improving public safety and security in urban and rural areas by enabling non-intrusive surveillance that respects privacy concerns.

Smart Home and Office Applications

Enabling advanced smart home and office automation through gesture recognition and movement tracking without the need for cameras.

Vehicle Tracking and Navigation

Facilitating advanced vehicle-to-vehicle and vehicle-to-infrastructure communication, crucial for the development of autonomous driving and smart city infrastructure.

Industrial and Manufacturing

Enhancing safety and efficiency in manufacturing processes through precise tracking and monitoring of equipment and personnel movement.

Asset Tracking and Surveillance

Offering superior asset tracking and surveillance capabilities, especially in environments where traditional cameras are ineffective, or privacy concerns are paramount.

