



Quantum-Inspired Satellite Imagery Processing for Intrusion Monitoring

A global defense organization needed to process high-resolution satellite images—covering over 670,000 km² with RGB, infrared, and synthetic aperture radar (SAR)—to detect potential intrusions in near real-time. The challenge was the massive data volume, high image resolution (30 cm/pixel), and the need for frequent analysis (4 times/hour/location), all while reducing latency and infrastructure costs.

Our solution

We applied quantum-inspired compression to the YOLOv8-x computer vision model, making it 80% smaller and deployable on low-resource edge devices like the NVIDIA Jetson Nano, with no loss in precision.

Results

- ✓ Inference latency reduced by 43%
- ✓ Power consumption lowered by 55%
- ✓ Yearly operational cost reduced from \$459M to \$63M