

Hunter Hong

Geospatial Scientist & Solutions Architect

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SUMMARY

Geospatial scientist and solutions architect who designs systems that transform Earth-observation data, spatial information, and uncertain evidence into validated decision products for mission-critical environments. Thirteen years in U.S. Air Force Special Warfare; M.S. Human Security and Geospatial Intelligence, USC Spatial Sciences Institute. Methodology lead for a federal GEOINT methodology under the USC-NGA CRADA; product, architecture, and capture experience across special operations, theater cyber, and applied research.

CAPABILITIES

Remote sensing	Spectral analysis · imagery interpretation · change detection · Landsat, Sentinel, MODIS/VIIRS, hyperspectral, thermal · radiometric calibration
Spatial data science	Bayesian inference · evidential reasoning (Dempster-Shafer) · entity resolution · Monte Carlo · spatial statistics · network analysis · calibration
Geospatial engineering Systems	ArcGIS Pro, Enterprise, Online · ArcPy · Python · R · KNIME · TensorFlow, PyTorch · Drone2Map · 3D Analyst · Space Time Pattern Mining
Validation	Reference architecture · DoDAF · CONOPS · federated systems · knowledge graphs · bi-temporal models · APIs · sensor integration · SIEM and CEF
	Uncertainty quantification · probability calibration · sensitivity · inter-rater reliability · QA gates · provenance and lineage · CE95 · ISO 19157 · RMF

EXPERIENCE

2025–2026	USC-NGA Cooperative Research and Development Agreement Methodology Lead / Principal Architect, CBO-TGRA • Originated and architected a four-stage GEOINT methodology to identify and prioritize parcels with foreign or foreign beneficial ownership near U.S. critical infrastructure: configurable spatial universe, calibrated Ownership Confidence Score, independent Geometric Risk Score, terminal fusion. • Designed the evidence model (Bayesian belief networks, Noisy-OR, Dempster-Shafer with Yager), three-tier entity resolution, Monte Carlo viewshed and chokepoint modalities, a bi-temporal knowledge architecture across 42+ sources, and stage-specific validation. • Authored the technical specification; built KNIME, Python, ArcPy, and Esri components; briefed NGA's Director of Counterintelligence; implementing the Washington, DC validation pilot.
2019–2020	Elysian Labs Product Manager, tactical human-machine interaction • Translated special-operations workflows into functional requirements, interface behavior, integration assumptions, and acceptance conditions for CRUX, a programmable hardened controller integrated with ATAK. • Evaluated prototypes under field conditions, classified failures by root cause, separated platform capability from customer implementation, and contributed to pre-RFP capture and federal proposals.
2018–2019	Insight Engines Solutions and product, cybersecurity domain • Expanded the semantic layer of a natural-language investigation platform on Splunk; decomposed analyst questions into intent, entities, CIM fields, and telemetry dependencies; specified data readiness by coverage, normalization, freshness, and completeness.
2008–2018	Defense and intelligence Mission systems · architecture · operations U.S. Indo-Pacific Command, J63 · C2IM / ArcSight

- Contributed capability-gap analysis, data-source mapping, DoDAF definitions, reference architecture, and the classified CONOPS for a federated theater cyber situational-awareness architecture; supported the EOC-Pacific pilot under an Interim Authority to Test.

Combined Joint Task Force-Horn of Africa, J39

- Primary technical author of the winning response to an approximately \$4M annual O&M requirement for geospatial media analysis, with requirement-to-deliverable traceability.

United States Air Force · Special Warfare, 13 years

- Collection planning under weather and timing constraints; communications discipline; operations under limited attention.

SELECTED WORK

CBO-TGRA: Parcel Intelligence Under Uncertainty. Four-stage GEOINT methodology, 42+ sources, evidential reasoning, Monte Carlo geometry, validation architecture, interactive Stage 0 explorer. hunter.sc/work/cbo-tgra/

CRUX + ATAK: Geospatial Interaction for Constrained Environments. Mission discovery, workflow decomposition, requirements, integration architecture, prototype validation. hunter.sc/work/crux-atak/

Spectral Signatures / VineVision. Remote sensing of grapevine water stress evaluated against plant physiology; confidence-gated decision platform, Landsat 9 and UAS workflows, benefit-cost case. hunter.sc/work/spectral-signatures/

C2IM: From Fragmented Telemetry to Mission-Centered Information Architecture. Federated reference architecture, CEF normalization, correlation, mission-dependency modeling, RMF-aware pilot. hunter.sc/work/c2im/

EDUCATION

2026

University of Southern California, Spatial Sciences Institute

M.S. Human Security and Geospatial Intelligence

Geospatial intelligence tradecraft · remote sensing for GIS · spatial systems and product design · human security and disaster management

PRESENTATIONS AND WRITING

Categorizing Chaos: Tropical Cyclones. ArcGIS StoryMap, LA Geospatial Summit, 2025.

Sudan Food Security GEOINT StoryMap. Team submission to the LA Geospatial Summit with faculty endorsement; submission lead.

Spectral Signatures in the Vineyard. Structured review of 2015–2025 research on remote sensing of grapevine water stress, 2025.

Camp Fire After-Action Analysis (2024); **CBO-TGRA technical specification**; published analysis on agriculture and national security.