Leif Heaney

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SECRET Clearance
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AI/ML & Systems Engineer

Bridging Artificial Intelligence and Systems Engineering to Solve Real-World Challenges

AI/ML and systems engineer specializing in the design, development, and deployment of production AI applications, as well as the architecture and integration of complex systems.

- **Agentic AI & Multi-Agent Orchestration**
- **Edge AI & On-Device Inference**
- **Multimodal AI & Computer Vision**
- **Federated AI & Distributed Intelligence**
- **Data Pipelines for ML Training & Inference**
- **Data Engineering & Analytics**
- **Machine Learning & Predictive Analytics**
- **Intelligent Automation**
- **Cloud & Platform Engineering**
- **Responsible AI & Governance**
- **Defense Tech & Intel (C5ISR & ISR)**
- **Model-Based Systems Engineering (MBSE)**
- **Systems Architecture & Design**
- **DevOps & Infrastructure as Code (IaC)**
- **Requirements Engineering & Traceability**
- **Systems Integration & Testing (SI&T)**
- **Digital Engineering & Digital Threads**
- **Modeling & Simulation (M&S)**
- **GeoAI & Geospatial Intelligence (GEOINT)**
- **Mission & System-of-Systems Engineering (SoSE)**
- **Distributed Systems**

Professional Experience

REVEAL TECHNOLOGY, Bozeman, MT 2026

Systems Engineer

Architected and secured AWS deployments for a petabyte-scale, AI-enabled geospatial intelligence platform integrating global location telemetry, behavioral analytics, and geospatial data, while managing the full system lifecycle.

- Architected and implemented an agentic AI operations framework and execution harness comprising 20+ specialized agents and 22 reusable runbook skills, automating routine platform workflows while enforcing read-only production access by default and auditing infrastructure activity through AWS CloudTrail.
- Re-engineered end-to-end deployment and teardown workflows into automated runbooks, reducing full-system deployment time from 3 to 4 hours to under 30 minutes.
- Deployed edge AI and computer vision models in Docker and Kubernetes for disconnected, intermittent, and limited (DIL) environments, backed by geospatial pipelines and data lakes for model training.
- Designed and implemented defense-in-depth security controls across 40 client environments, including AWS KMS encryption for infrastructure state during the Terraform-to-OpenTofu migration, AWS Secrets Manager in place of plaintext application credentials, and least-privilege IAM policies.
- Established continuous verification through GitHub Actions CI/CD, Codacy, and fail-closed audits of infrastructure drift, security posture, vulnerabilities, and encryption key health; remediated 80+ AWS Security Hub findings.
- Developed automated Terraform and OpenTofu test suites, introduced previously absent pull-request validation for the core infrastructure module, and uncovered 19 security bypasses through adversarial testing.
- Managed the complete lifecycle of 75+ client systems, including provisioning new environments, retiring legacy instances through backup-gated teardown, and executing renewals, data-scope modifications, and data cutovers.
- Parameterized client environments across platform versions, data schemas, geographic access controls, and feature flags, eliminating code changes for new deployments and enabling one-command environment updates.
- Designed and developed an application for token-efficient multi-agent orchestration, optimizing agent coordination and workflow execution, alongside a secure, searchable internal knowledge base featuring AI-powered Q&A.
- Implemented infrastructure-as-code CloudWatch dashboards and alarms to enhance platform observability, while governing Snowflake environments across two accounts and identifying a configuration change that would have silently removed a spending cap.

THE MITRE CORPORATION, McLean, VA 2021 to 2025

Systems Engineer, Intermediate
Spearheaded systems engineering across the program lifecycle, from requirements definition to deployment. Translated complex mission needs into actionable capabilities and verifiable requirements. Maintained traceability via MBSE / SysML, digital twins, and digital threads.

- Built an MBSE reference architecture and high-fidelity digital twins, improving system resilience and traceability.
- Designed and delivered 12+ DoDAF / UAF views and SysML diagrams for federal programs (DoD, DHS, and HHS), documenting complex system architectures, interfaces, and behavior.
- Automated data processing with end-to-end ETL pipelines and custom ML models, including OCR (Tesseract) and computer vision, to enable data-driven decision making.
- Prototyped federated learning workflows to train models on distributed, sensitive data without centralizing it.
- Developed interactive GIS dashboards that integrated license-plate reader (LPR) technology and open-source GIS data within QGIS, facilitating pattern-of-life analysis and identification / prioritization of 3 high-risk locations.
- Hardened COMSEC systems by implementing DoD Zero Trust Architecture (ZTA), ensuring regulatory compliance.
- Planned and executed V&V / T&E, M&S, and data analytics, quantifying system performance and reliability.

CAPITOL TECHNOLOGY UNIVERSITY, Laurel, MD 2022 to Present

Adjunct Faculty, Computer Science Department
Delivered undergraduate and graduate instruction in computer science, software development, and information assurance to 300+ students over 4 years.

- Led two full curriculum redesigns for CS-120: Intro to Programming with Python, teaching 8 sections over 4 years.
- Delivered graduate-level instruction in IAE-574: Assured Software Analytics for 3+ years.
- Taught undergraduate courses CT-206: Scripting Languages and CT-376: JavaScript for 2+ years.

Education

CAPITOL TECHNOLOGY UNIVERSITY, Laurel, MD

- **MS, Computer Science**, Focus in Artificial Intelligence (GPA 3.9) 2022
- **BS, Computer Science** (GPA 3.5) 2020

Clearance

SECRET | S&T EOD IT 5C, Medium (DHS) | MBI, Moderate (IRS)

Tech Stack

- **Languages & Software Development:** Python, TypeScript, JavaScript, SQL, R, C#, Java, Bash, PowerShell, FastAPI, Flask, React, Node.js, REST, GraphQL
- **LLMs & Agentic AI:** RAG, GraphRAG, LangChain, LangGraph, LlamaIndex, Claude Code, Claude/OpenAI/Gemini APIs, Claude Agent SDK, OpenAI Agents SDK, MCP, Ollama, vLLM, llama.cpp
- **AI, Machine Learning & Computer Vision:** PyTorch, TensorFlow/Keras, Hugging Face, scikit-learn, XGBoost, OpenCV, YOLO, spaCy, Tesseract, OCR, multimodal AI, federated learning
- **MLOps & AI Evaluation:** MLflow, Kubeflow, Databricks, LangSmith, Langfuse, model evaluation, experiment tracking, model lifecycle management
- **Data Engineering:** PostgreSQL, Supabase, Snowflake, BigQuery, pgvector, FAISS, Neo4j, pandas, NumPy, ETL/ELT
- **Cloud, Security & DevOps:** AWS (EC2, S3, VPC, IAM, KMS, Secrets Manager, CloudWatch, Security Hub, CloudTrail), Azure, GCP, Docker, Kubernetes, OpenTofu, Terraform, Git, GitHub, GitHub Actions, Codacy, CI/CD, pytest, Zero Trust Architecture (ZTA), COMSEC
- **Systems Engineering:** MBSE, SysML, UML, DoDAF, UAF, Cameo/MagicDraw, IBM DOORS, Digital Twins, Digital Threads, V&V, T&E, M&S
- **Geospatial Intelligence & GIS:** Esri ArcGIS, QGIS, PostGIS, GeoPandas, Geospatial Intelligence (GEOINT)