KEY SKILLS

Multi-Agent Architecture | AI Governance Frameworks | Local Model Fine-Tuning (QLoRA)
Hybrid LLM Routing | Offensive / Defensive Cyber Ops | OT/ICS Security | Reverse Engineering
Systems Engineering (DoDAF, JCIDS) | Risk Management (NIST, EVM) | Requirements Engineering & CCB
Python / React / FastAPI / TypeScript | Production AI Deployment

EXPERIENCE

2025 – Present

Senior Cybersecurity Systems Engineer / Agentic AI Systems Engineer

ARKONA Ecosystem

Odenton, MD

- Architected and deployed a 6-domain autonomous ecosystem with 47 services and 19 AI agents in production — ~349K lines of code, 1,449 commits.
- Built hybrid LLM routing system (MuXD) with prompt optimization across cloud and local models — **measured 47% cloud API cost reduction over 3,000+ daily routing decisions**, with explainable per-request decisions logged via /trace.
- Developed FORGE software factory with 7 AI agents and Skill Builder pipeline: governance task → agent construction → training data → QLoRA fine-tuning on dual P40 GPUs → local model routing. Sandboxed exec sidecar (non-root, timeout-capped) gives each agent real tool-use with auditable results.
- **Closed-loop agent evaluation:** every Claude invocation logs input/output pairs as a training dataset; graduated local models are validated against a held-out task suite per COMET delegation level before promotion.
- Designed COMET AI governance framework: **842 task definitions classified across a 5-level delegation taxonomy**, cross-referenced to NIST AI RMF, ISO 42001, and IEEE standards; every classification emits a RACI matrix and framework citations as machine-readable compliance artifacts (OSCAL, CSV, PDF).
- Researched local model fine-tuning: QLoRA 4-bit quantization, DeepSpeed ZeRO-3 multi-GPU parallelism, automated data curation across Llama 3.1, Phi-4, Gemma 2, and Nemotron architectures.

2024 – Present

Director of Operations

Percival Engineering

Columbia, MD

- Lead operational and strategic employment of OCO & DCO cyber system engineering capabilities against USG priority systems.
- Team lead for cross-functional cybersecurity teams in pursuit of cyber hardening Cyber Physical Systems (CPS).

2023 – 2024

Director of Operations

659th ISR Group

Fort Meade, MD

- Directed operational employment of AF offensive & defensive cybersecurity capabilities for 1,800 Airmen / $7.3M across 4 NSA locations.
- Applied SE principles to optimize cybersecurity strategies; led continual refinement of operational procedures.

2021 – 2023

Chief Cybersecurity Engineer / Deputy Military Technical Director

7th Intelligence Squadron / NSA-C32 WSC

Fort Meade, MD

- Technical leadership for Weapons and Space Cybersecurity Labs — 250+ employees / $36.8M.
- Derived system requirements and stakeholder needs; secured approval for system/component definitions.
- Assessed program risks: probability of occurrence and quantified consequence of failure. Developed CCB Charter.

2018 – 2021

Cyber Exploit Engineer, NSA CNODP

70th Operational Support Squadron / NSA

Fort Meade, MD

- Completed 22-week PhD-level CNODP: Advanced Software Analysis, Reverse Engineering, Network Security, Cryptography, Windows/Linux Internals, OS Security. Followed by 30 months of technical tours.
- Developed IA requirements (C/I/N/A); defined security mechanisms: cryptography, DAC, MAC, hashing, key management.

2017 – 2018

Flight Commander, Cybersecurity Test Flight

18th Flight Test Squadron

Hurlburt Field, FL

- Stood up Operational Test Cyber Flight for AFSOC/SOCOM aircraft & weapon system cybersecurity testing.
- Conducted end-to-end system trade analyses; provided technical direction for complex HW/SW integration.
- Supported JCIDS documentation (ICD, CDD, IA Strategy); participated in IPTs for new capability design.

2016 – 2017

Deputy Flight Commander, Cyber Test Flight

46th Test Squadron — Eglin AFB, FL

- Directed 63-member flight conducting cybersecurity tests of DoD aircraft & weapon systems. Co-developed CSRA methodology.
- Quantitative analysis in Reliability, Maintainability, Vulnerability, Survivability; risk mitigation via modeling & simulation.

2015 – 2016

Executive Officer

46th Test Squadron — Eglin AFB, FL

- Led staff for Squadron Commander across 2 Detachments, 7 Flights, 11 locations, 511 personnel.

2014 – 2015

Lead Test Engineer, C2 Air Operations

46th Test Squadron — Eglin AFB, FL

- Led multi-discipline government & industry team for AOC developmental testing.
- Implemented DoDAF views; established formal requirements change management.

2012 – 2014

Systems Engineer, Non-Kinetic Counter Electronics

AFLCMC — Eglin AFB, FL

- Weapon lethality assessments for AF non-kinetic weapons. Managed DoDAF/SOA-compliant architecture requirements.
- SE documentation (SEPs, ICDs, Requirements Specs); AoA participation; lifecycle cost/risk/growth trade studies.

2005 – 2012

Team Lead, F-15 Intermediate Avionics Shop

33d Maintenance Squadron — Eglin AFB, FL

- Managed repair of 600+ F-15 LRUs across 47 radar, nav, EO, comm, and armament avionics systems.

2002 – 2005

F-15 Avionics Technician

18th CMS (Kadena AB, Japan) / Lackland & Sheppard AFB (TX)

- Top graduate, F-15 Avionics (top 5%). Diagnosed 300+ LRUs at Kadena AB.

EDUCATION

Starting Fall 2026

PhD in AI/ML

Agentic AI, multi-agent communication, governance

2015 – 2021

MS, Systems Engineering

Embry-Riddle Aeronautical University

2009 – 2011

BS, Electrical Engineering

University of West Florida

RESEARCH

2025 – Present

Local Model Fine-Tuning & Inference Optimization

ARKONA Research

- End-to-end fine-tuning pipeline on 2x NVIDIA Tesla P40 (48 GB VRAM) using QLoRA 4-bit with LoRA ranks 32-64.
- Evaluated US-origin models (Llama 3.1 8B, Phi-4 14B, Gemma 2 9B, Nemotron 8B) for 7 agent roles.
- DeepSpeed ZeRO-3 multi-GPU parallelism for models exceeding single-GPU VRAM.
- Governance-driven model graduation: cloud inference → training data → local fine-tune → on-premise routing.

2025 – Present

Hybrid LLM Routing & Cost Optimization

ARKONA Research

- MuXD: prompt complexity classification → cost-effective model routing (cloud vs. local) — 47% API cost reduction.

2025 – Present

AI Governance & Task Delegation Frameworks

ARKONA Research

- COMET: 5-level delegation framework grounded in NIST AI RMF, ISO 42001, IEEE standards.

CERTIFICATIONS

DAWIA APDP Level II, T&E	2018	EC-Council CEH	2017
CompTIA CASP	2016	CompTIA Security+	2015
DAWIA APDP Level II, Eng	2014	DAWIA Level I, PM	2013
DAWIA Level I, Sci/Mgr	2013	CompTIA A+	2001

ACHIEVEMENTS

2021 **NSA CNODP Graduate**
Computer Network Operations Development Program

2017 **1st Place Spark Tank Innovation**
USAF/AFSOC MAJCOM Winner

2012 **BSEE Senior Design Published**
EMC 3(2012)609

2005 **Levitow Award**
USAF, Airman Leadership School

2002 **Top Graduate**
USAF, F-15 Avionics

PROFESSIONAL TRAITS

Analytical Mindset | Curious / Creative | Data Driven | Decisive / Grit | Management Skills | Problem-solving | Teamwork | Technical Proficiency | Visionary / Strategic

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