1. Modern AI / ML Technologies Used

Dr. Stephen has worked hands-on with applied AI systems, emphasizing operational decision support rather than abstract model research.

Core AI / ML Technologies

Retrieval-Augmented Generation (RAG)

Document ingestion (PDF-based research corpora)

Recursive chunking strategies optimized for technical and historical material

Vector similarity search using FAISS

Deterministic prompt templates for role-safe reasoning

Embedding-based Semantic Search

Dense vector representations for long-form research documents

Cross-domain retrieval (technical, historical, strategic)

LLM Orchestration

Controlled use of large language models for synthesis, not authority

Guardrails to prevent hallucination or classified disclosure

Explicit “Not in corpus” handling for missing facts

Human-in-the-Loop AI

Systems designed to support expert judgment, not replace it

AI used as an analytical proxy, not an autonomous decision maker

AI Philosophy

AI is treated as:

A cognitive amplifier

A pattern synthesizer

A reasoning interface over structured knowledge

—not as a black-box oracle.

2. WarSim Project – Architecture Overview

WarSim is a strategic modeling and simulation framework designed to explore hybrid cyber-kinetic conflict dynamics.

Architectural Layers
1. Input Layer

Structured scenario variables (social cohesion, command continuity, logistics stress)

Deterministic parameters combined with stochastic triggers

JSON-defined simulation inputs for reproducibility

2. Simulation Core

Discrete-event modeling

Probability-weighted outcome branching

Feedback loops representing escalation, degradation, and recovery

3. Analytical Engine

Information entropy as a stability metric

Identification of nonlinear tipping points

Sensitivity analysis across domains (cyber, logistics, morale)

4. Output Layer

Scenario outcomes (stalemate, escalation, collapse)

Confidence bands rather than single predictions

Designed for decision framing, not prophecy

Key Design Principle

WarSim is not predictive AI.
It is a decision-stress tool that exposes where assumptions fail.

3. Experience With Classified Networks (Public-Safe Statement)

Dr. Stephen has professional experience working in classified and restricted environments under standard U.S. government security frameworks.

What Can Be Stated Publicly

Familiarity with air-gapped systems

Compliance with need-to-know access models

Operational discipline around COMSEC and OPSEC

Experience designing and reasoning about systems where:

Telemetry is incomplete

Logging is constrained

Auditability is delayed

What Will Not Be Discussed

Specific network names

Agencies or customers

Tools, locations, or architectures

Operational timelines or missions

This constraint is intentional and reflects professional security standards.

4. Architecture of the Interactive Portfolio

The interactive portfolio is itself a demonstration artifact, not a marketing site.

System Architecture

Frontend: Streamlit (cloud-deployable)

Knowledge Layer: PDF-based RAG

Vector Store: FAISS

Inference Layer: LLM used strictly for synthesis

Deterministic Logic: Rule-based scoring modules (supply chain risk, entropy simulation)

Key Design Choices

No hidden prompts

No fabricated citations

All claims traceable to retrieved documents

Explicit separation of:

Deterministic scoring

Retrieved evidence

Generated synthesis

Why This Matters

The portfolio demonstrates:

Systems engineering judgment

Secure AI deployment patterns

The ability to operationalize research into tooling

5. Recent Data Engineering Work

Dr. Stephen's recent data engineering work focuses on decision-relevant pipelines, not vanity dashboards.

Representative Projects

Supply Chain Risk Pipelines

Vendor metadata ingestion

Firmware dependency mapping

Risk tier scoring tied to mitigation playbooks

Simulation Data Engineering

Scenario input normalization

Batch simulation execution

Result aggregation with confidence bounds

Forensic Data Structuring

Chain-of-custody-aware data handling

Evidence normalization for cross-tool analysis

Engineering Priorities

Determinism over novelty

Explainability over opacity

Resilience over throughput

6. Cross-Domain Reasoning Model

A defining feature of Dr. Stephen's work is cross-domain synthesis.

Domain	Contribution
Networking	Deterministic infrastructure logic

Cybersecurity	Adversarial thinking and failure modes
Data Engineering	Scalable, auditable pipelines
History	Pattern recognition across time
AI	Cognitive augmentation, not automation

This integration allows translation between:

Technical failure → strategic consequence

Historical precedent → modern system risk

Data artifact → executive decision

7. How Recruiter Questions Are Handled by the AI Proxy

The AI system is explicitly instructed to:

Answer only from retrieved corpus material

State “Not in corpus” when facts are absent

Avoid speculative or embellished claims

Redirect sensitive questions to methodology rather than disclosure

This ensures:

Trustworthiness

Legal safety

Professional credibility

Closing Statement

Dr. Stephen Dietrich-Kolokouris is not positioned as:

A résumé keyword optimizer

A generic “AI expert”

A speculative futurist

He is positioned as:

A systems thinker who builds decision-grade tools at the intersection of technology, security, and human behavior.