

JUSTIN KARR

AI / ML Engineer - Multi-Agent Systems - Production Python

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Active TS/SCI Clearance - Eligible for CI Polygraph

PROFESSIONAL SUMMARY

Senior AI/ML engineer with 7+ years building production AI systems and 20+ years in intelligence operations. I specialize in agentic AI platforms - multi-agent orchestrators, evaluation harnesses, model-routing layers, and production Python pipelines - that move organizations beyond chat interfaces into reliable, measurable, auditable AI execution. Currently architect and operate a live multi-agent platform: 11 specialized agents, 30+ production pipelines, and 4 scoring/evaluation frameworks serving real users. Deep hands-on experience with LLM APIs (Claude, GPT-4, Gemini), tool-use patterns, RAG, structured output, prompt regression testing, and accuracy/latency/cost tradeoff management. Strongest where problems are ambiguous, systems must be built from scratch, and AI must be made dependable enough for real business workflows.

TECHNICAL COMPETENCIES

AI Agents & Orchestration: Multi-agent orchestration, agent lifecycle & memory, tool-using agents, task/model routing, conversational assistants & chatbots (Discord, Telegram, web), multi-turn context handling, human-in-the-loop approval gates, prompt engineering & regression testing, agent safety guardrails

Evaluation & Reliability: Eval-harness design, deterministic + LLM-as-judge scoring, structured-output validation, false-positive reduction, suppression/verification gates, audit logging, accuracy/latency/cost tradeoffs

LLM & ML Stack: Claude API / Claude Code, GPT-4, Gemini, OpenRouter, Ollama; RAG (LangChain, ChromaDB, FAISS, pgvector), embeddings & hybrid retrieval; PyTorch, scikit-learn, Pandas, NumPy, GeoPandas

Software Engineering: Python (expert - async/await, OOP, Pydantic, FastAPI), SQL (advanced), JavaScript, R, C# (NinjaScript); Git, Docker, Linux VPS, cron orchestration, CI/CD

Data & Infrastructure: PostgreSQL/PostGIS, Supabase, Microsoft SQL Server (administration), Notion API, Oracle; Active Directory-based access control; Tableau dashboards & data visualization; RESTful/webhook architecture, OAuth, 12+ production API integrations; JSON/GeoJSON, CSV, XML, Shapefile

Quantitative Research & Execution: Backtesting & walk-forward validation, honest-fill/cost modeling, deflated Sharpe, risk & position sizing, order-management/execution engineering, prop-firm compliance engines, market-microstructure strategy development

PROFESSIONAL EXPERIENCE

Founder & Lead AI/ML Engineer – ATLAS Multi-Agent AI Platform 2025 - Present

Designed, built, and operate a production autonomous AI platform acting as an "AI harness" layer between business goals, LLMs, databases, scraping systems, and human approval workflows.

- Designed and deployed 11 specialized AI agents coordinated by a master orchestrator, running 30+ production pipelines on a single VPS; persistent memory, multi-channel context switching, real-time health monitoring
- Built a model-routing layer (Haiku for speed, Sonnet for depth) with budget tracking, rate limiting, and cost optimization via OpenRouter - reserving high-reasoning models for ambiguous, high-value decisions
- Created a 4-tier hybrid scoring framework (rules + LLM verification across ICP fit, buying power, activity, urgency, reachability) that reduced false positives while preserving recall
- Engineered end-to-end ML pipelines: scrape -> enrich via APIs -> LLM tagging -> automated delivery (5,400+ records, 3,000+ sends); real-time NOAA/SPC storm monitoring with <5-minute response across 11 states
- Built and deployed a conversational assistant to Discord that answers user questions against the platform's own data - retrieval-grounded responses with multi-turn context, running against the same agent and memory layer as the rest of the platform
- Built reliability gates before every outbound action (suppression, verified-email, prior-touch, human approval) with feedback loops for continuous improvement
- Scale: 12+ external API integrations, 76 Python modules, Supabase/Postgres warehouse, real users and revenue

Senior Data Scientist – ECS Federal (NGA Contractor) March 2024 - March 2025

- Developed Python AI/ML solutions automating analyst workflows, delivering hundreds of operational hours in savings and reducing manual processing ~40%
- Built Tableau dashboards and analytic visualizations for NGA stakeholders, turning pipeline output into decision-ready views used by analysts and leadership
- Architected cloud data repositories with adaptive schemas; designed ETL + API-orchestration pipelines for evolving intelligence data

- Mentored team members on production Python, data-engineering best practices, and AI integration patterns

Senior Data Scientist – Integrity First Technologies (NGA) May 2022 - December 2023

- Built Python AI/ML analyst-workflow automation and intelligence data-processing tools in high-stakes environments
- Delivered Tableau reporting and dashboards against operational data sets, working directly with mission stakeholders to define the metrics that mattered
- Led data-governance and standardization initiatives improving reliability, searchability, and reuse of operational data

Business Analyst / GIS Specialist – SAIC (NGA) March 2019 - October 2021

- Led Agile development of data-driven solutions, dashboards, and analytical tools; built automated Python extraction/transformation workflows
- Built and maintained internal web applications for a globally distributed analyst user base - custom CSS/Bootstrap front ends over REST APIs that populated content dynamically, replacing manually maintained pages
- Built and maintained SharePoint sites and pages for NGA users - page construction, content structure, and integration with backing data sources
- Evaluated 75+ companies for data-brokering/acquisition models; presented technical analysis to government stakeholders

Intelligence Analyst & GEOINT Specialist – NGA / U.S. Marine Corps 2004 - 2018

- 16+ years supporting NGA geospatial-intelligence missions; 5 years USMC with three combat deployments; served as NCOIC
- Conducted geospatial analysis, imagery exploitation, and intelligence production; built early automated exploitation workflows

SELECTED PROJECTS

- **Multi-Channel Conversational Assistants** - Customer-facing chatbots delivering FAQ and knowledge-grounded question answering with multi-turn context - deployed across Discord, Telegram, and embedded in websites
- **RAG Documentation Assistant** - Production RAG over multi-version Oracle ERP docs; LangChain + ChromaDB + embeddings, hybrid retrieval, adaptive ingestion without retraining
- **Storm Intelligence Platform** - Autonomous forecast -> pre-load -> pre-sell pipeline; real-time NWS/NOAA integration, GeoJSON parsing, multi-state coverage
- **LEDGER Enrichment Engine** - 7-stage async enrichment (state-registry lookup -> people/address search -> property cross-reference -> investor profiling -> scoring)
- **FlowJunk** - Full-stack CRM/SaaS: PostgreSQL, RESTful APIs, ETL, LangGraph multi-agent automation; ~70% workflow automation improvement

INDEPENDENT QUANTITATIVE RESEARCH (SELECTED)

Applied the same evidence-over-belief engineering discipline to systematic trading – demonstrating reliability, evaluation, and rigor.

- Designed "The Gauntlet," a multi-stage strategy-validation pipeline (dedup -> honest trade-through fills -> placebo/parameter batteries -> walk-forward out-of-sample -> concentration -> cross-instrument -> tick-level fill validation -> live forward paper testing) that systematically kills false edges before capital is risked
- Pre-registered and tested 11+ trading hypotheses; honestly rejected the majority with documented negative results, enforcing a "dumb-baseline" null benchmark most strategies failed to beat
- Built honest-fill and cost models (trade-through vs. touch fills, stop-first-on-same-bar, slippage, commissions, deflated Sharpe) that exposed backtest illusions - a candidate at PF 3.15 collapsed to PF 1.11 under realistic fills and was correctly discarded
- Delivered research infrastructure across asset classes: a .NET 8 / NinjaTrader futures engine, a MetaTrader 5 prop-firm evaluation system, an SPX options IV/Greeks pipeline over 751 sessions, and a strategy x instrument x sizing-overlay harness

EDUCATION & CLEARANCE

- B.S., Cyber Security - Lindenwood University, Saint Charles, MO | 2017
- Signal / Geospatial Intelligence - Army Geospatial School, Fort Huachuca, AZ | 2006
- All-Source Intelligence - USMC Intelligence School, Dam Neck, VA | 2005
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AWARDS & RECOGNITION

NGA Unit Citation | Boeing Pride Award | USMC Good Conduct Award | Navy Unit Citation | Presidential Unit Citation | USMC Letters of Appreciation