Trent Carter

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Online resume: https://www.trentcarter.com · True Synthesis Inc: https://truesynthesisai.com/
VerdictIDE: https://verdictide.com · L3Harris: https://www.l3harris.com

PROFESSIONAL SUMMARY

30-year systems engineer and architect with deep, hands-on work across AI, cloud, and mission-critical aerospace. Currently founder of True Synthesis Inc, where I design and build VerdictIDE -- a multi-agent AI coding harness with an explicit orchestration kernel, a Latent Vector Model retrieval stack, and the co-op coordination skill that holds multi-agent coordination overhead under 5% of token usage. Concurrently Lead Cloud Architect at L3Harris, where I migrated a government LEO satellite ground system to AWS GovCloud and built an LLM orchestration framework that delivered a 5x improvement in requirements-to-test traceability. Author of 90+ research papers on agent orchestration, LLM context degradation (Cognitive Fidelity Score), interpretable retrieval (Semantic GPS), and the societal dynamics of frontier model deployment. Looking to apply this background to alignment, interpretability, and agentic-system research at Anthropic.

TECHNICAL CORE

AI / ML. LLM orchestration, multi-agent coordination, RAG, agentic workflows, model evaluation, mechanistic interpretability research, prompt engineering, vector retrieval (Mamba/SSM, embeddings), LoRA / distillation, Latent Vector Models (LVM)

Languages & Tooling. Python 3.11, TypeScript / Node, C/C++, Bash, SQL; PyTorch, Hugging Face, SQLite, FAISS, Ollama; Git, Docker / Podman, Ansible, Terraform

Cloud & Infra. AWS GovCloud (VPC, Transit Gateway, PrivateLink, IAM, S3, EC2), RHEL 8/9, Oracle Linux, LDAP/SSSD, STIG compliance, high-availability and air-gapped deployments

Systems & Aerospace. Distributed systems, real-time ground systems, LEO satellite TT&C, Mission Data Processing, ARINC 429 / 628 / 717, DO-178C, F-35 avionics IV&V

PROFESSIONAL EXPERIENCE

True Synthesis Inc (DBA: Verdict / VerdictIDE) · Indialantic, FL · March 2025 – Present

Founder & Principal AI Engineer, True Synthesis Inc (Verdict)

Founded True Synthesis Inc to design and build VerdictIDE, an AI coding harness and orchestration platform for multi-agent software engineering. Sole architect of the platform, the agent skills layer, and the Latent Vector Model research stack that backs it.

- Designed a 5-tier hierarchical multi-agent orchestration platform integrating 14+ LLM providers, with enterprise budget governance, semantic validation (Echo-Loop), and a programmer-pool parallelism model.
- Authored the **co-op** coordination skill -- a Python-mediated, SQLite-indexed substrate that holds multi-agent coordination overhead under 5% of total token usage via cursor-based deltas, claims, bounded live threads, and structured handoffs.
- Built the Latent Vector Model (LVM) research stack: vector-native retrieval, Mamba/SSM-style sequence models, Semantic GPS coordinate encoding, and a vecRAG pipeline. Documented in 90+ research papers.
- Stood up production infrastructure end-to-end: trentcarter.com (Next.js 16 / Vercel), verdictide.com, truesynthesisai.com, public whitepaper library, Gmail / SMTP, scheduled job-search agent, and a Flask + React analytics dashboard backed by SQLite.

VerdictIDE -- product detail

- **What it is.** A multi-agent coding harness comparable to Claude Code and OpenAI Codex, but built around an explicit orchestration kernel rather than a single conversational loop.

- **Architecture.** Hierarchical orchestrator dispatching to specialist agents (planner, coder, reviewer, tester, documenter); coordination via the co-op skill; retrieval via LVM + vecRAG; pluggable model routing across Anthropic, OpenAI, local Ollama, and other backends.
- **Governance.** Per-tenant budget caps, semantic validation between stages (Echo-Loop), and audit-grade event logs mirrored to disk for post-hoc review.
- **Traction.** Public site at verdictide.com, open-published research library at trentcarter.com/whitepapers, and a working agent fleet driving real internal workflows including the nightly job-search pipeline.

L3Harris Technologies · Melbourne, FL · January 2022 – Present

Lead Cloud Architect & AI Integration Lead -- Government Satellite Program

- Architect for two LEO satellite ground systems spanning hardware, OS, virtualization, network, and routing/firewall layers; primary technical interface to the Naval Research Lab for the NEBULA / NOVA architecture.
- Led end-to-end migration of legacy ground systems from on-prem hardware racks to AWS GovCloud, designing for high-availability LEO constellation management and zero-downtime ground-to-cloud (G2C) transition.
- Built an LLM orchestration framework that automates the engineering Digital Thread, linking Level 1-4 requirements to software test plans. Achieved a 5x velocity improvement on traceability work and 100% verification coverage on audited segments.
- Standardized provisioning with Ansible, Python, and Terraform across RHEL 8/9 and Oracle Linux fleets under strict STIG compliance, across multi-VPC management and mission networks.
- Owned virtualization of key SWCIs including Telemetry, Tracking and Control (TT&C), Mission Data Processing (MDP), SV Navigation (SCN), and Mission Planning & Scheduling.

L3Harris Technologies · Melbourne, FL · April 2020 – January 2022

Software Integration & Test Engineering Lead and Architect -- F-35 Program (SAS BU)

- Architect of the F-35 SOF/Qualification Integration System; led a multi-discipline software team responsible for IV&V of flight-critical avionics software.
- Designed and maintained the software integration portion of the system responsible for direct requirements verification and support of internal firmware for the F-35 avionics suite.
- Built advanced testing protocols for Safety-of-Flight activities, ensuring qualification met stringent aerospace performance and safety requirements.

Thales Avionics · Melbourne, FL · September 2019 – April 2020

Project Design Authority / Systems Architect -- Iridium Certus

- End-to-end technical authority for the Iridium Certus avionics system: AISD, PIESD, in-flight entertainment, connectivity, and ground systems.
- Led project sizing (SOW, WBS/OBS) and technical coordination across all engineering disciplines; primary technical interface to OEMs (Airbus, Boeing) and connectivity providers.
- Authored SSS, SRS, Design Validations, CONOPS, and the Compliance Matrix under DAL-D / DAL-E and DO-178C standards.

Thales Avionics · Melbourne, FL · March 2016 – September 2019

Engineering Manager / Integration, Verification & Validation Manager

- Owned all IV&V resources and activities for complex In-Flight Entertainment and SATCOM programs; managed strategy, hiring, and delivery across the IV&V WBS.
- Architected aircraft network systems including Geofencing, SATCOM, WLAN, ARINC 429 / 628 / 717, and TCP/IP over VLAN segmentation for isolation and security.
- Acted as Work Package Manager, owning short- and long-term integration schedules and the supporting Systems Integration Lab (SIL) infrastructure.

EARLIER CAREER

iBox Printers, Inc. · Palm Bay, FL · January 2014 – January 2016 · *VP of Engineering*
Managed a $1M R&D budget and led electrical, mechanical, chemical, and test engineering teams; owned cost management, regulatory compliance, capital planning, and proposal support.

BahnTech Corporation · Melbourne, FL · May 2009 – January 2014 · *VP of Engineering*
Architected and shipped 48+ iPhone / iPod applications serving millions of users; managed a multi-million-dollar engineering budget and ran yearly financial milestones for software and hardware.

Sequans Communications · Cupertino, CA · March 2007 – September 2009 · *Field Applications Engineering Manager, North America*
Led customer software / hardware integration and interoperability for WiMAX 802.16e products across the Americas; managed a team of wireless applications and systems engineers.

Conexant (formerly Harris Semiconductor / Intersil) · Melbourne, FL · March 1997 – March 2007 · *Senior Wireless Systems Engineering Manager*
Architected complex wireless networks for 802.11 a/b/g/n protocols, radios, and security testing; primary engineering contact and trainer for the global Field Applications Engineering team; created wireless test tooling and SMAC code for WiFi.

NCR / AT&T (NCR), Fleet Mortgage Group · Columbia, SC · March 1990 – March 1997 · *Senior Systems Manager / Systems Engineer / LAN Administrator*
Led teams of systems engineers managing Windows NT enterprise LAN/WAN environments at scale (1,200+ clients); taught internal TCP/IP courses.

SELECTED WHITEPAPERS & RESEARCH

co-op: A Low-Token Coordination Layer for Multi-Agent Coding Harnesses

A Python-mediated, SQLite-indexed coordination skill that lets a small group of coding agents share state, claims, blockers, and handoffs while holding total coordination overhead under 5% of token usage.

https://www.trentcarter.com/whitepapers/whitepaper_co_op_agent_coordination_skill

From Genius to Glitch: A Validated Framework for Quantifying AI Cognitive Decline as Token Use Increases

Introduces the Cognitive Fidelity Score (CFS), a multi-factor formula for how LLM performance degrades under context load, and validates it against Lost-in-the-Middle, Task Interference, and reasoning benchmarks.

https://www.trentcarter.com/whitepapers/from-genius-to-glitch

The Oracle Gradient Effect (Superset)

Argues that value extracted from AI oracles is bounded by the user's cognitive ceiling, with implications for evaluation methodology, deployment safety, and societal-scale alignment of frontier models.

https://www.trentcarter.com/whitepapers/the-oracle-gradient-effect

Full library: https://www.trentcarter.com/whitepapers

EDUCATION

University of South Carolina · Physics / Mathematics · 1987 – 1990

LINKS

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