Henok Ghebrechristos, PhD

Research Scientist · Agentic Systems Architect · Product Builder

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PROFILE

Technologist working in enterprise IT since 2012, now focused on AI systems and product engineering. Combines deep ML foundations with hands-on product engineering — designing multi-agent orchestration systems, shipping full-stack AI-native platforms, and leading enterprise AI transformation. Proven across the full spectrum: enterprise R&D with nine-figure cost implications, and zero-to-one product builds as a technical co-founder. Particularly experienced in agentic AI architecture — named-agent pipelines with LLM tool use, streaming, session memory, governance and multi-provider model routing — alongside computer vision, real-time systems, and full-stack development. Adept at partnering with executives to align AI roadmaps with business priorities, and at building high-performing multidisciplinary teams. Particularly equipped and passionate about greenfield projects.

SELECTED RECENT EXPERIENCE

Enterprise IT since 2012.

Enterprise applied research

2022 – Present

Research Scientist · Dallas, Texas

- Led the design and deployment of a Retail Agentic Platform with Supervisor/ReAct orchestration, intent-based routing, specialized worker agents, a tool registry, Redis-backed session memory, and I/O guardrails on GKE.
- Delivered a full-stack Enterprise AI Platform on Kubernetes: React chat UI and BFF, vector knowledge API, document ingestion, LLM orchestration, and analytics. Consolidated nine microservice stubs into a single in-process orchestration layer.
- Architected a hybrid Azure and on-premises AI/ML platform that reduced data processing times by 90%.
- Proposed and prototyped computer vision models for automated checkout, smart carts, and shrink/loss prevention.
- Built and led a multidisciplinary AI team delivering a 50% improvement in threat detection and multi-million-dollar cost avoidance.
- Shaped the enterprise AI R&D roadmap and aligned initiatives with C-suite business priorities.

AI-native construction & real estate platform

December 2025 – Present

Co-Founder & Principal Engineer · Dallas, Texas

- Designed and built a multi-agent AI orchestrator coordinating FORGE, SCOUT, SENTINEL, LEDGER, and PROCURE across estimating, contractor matching, risk, payments, and materials, with LLM tool use, streaming, and persistent session memory.
- Built FARO, a context-aware AI assistant with page-context routing, prompt caching, rate limiting, and real-time streaming.
- Developed an AI Deal Analyzer for investment underwriting: market scanning, comparable analysis, scenario modeling, and underwriting recovery flows.
- Architected the platform with React 19, TypeScript, tRPC, Express 5, Drizzle ORM, PostgreSQL, Redis, Stripe, Stream Chat, Resend, Twilio, and Expo/React Native. Implemented model routing across OpenAI, Google Gemini, and Ollama.
- Delivered marketplace, bidding, project execution, milestone billing, escrow, compliance, and real-time messaging workflows.
- Established migration safety matrices, CI/CD governance gates, release readiness scoring, and progressive rollout practices.

Medical transportation platform

2025 – Present

Technical Co-Founder & Lead Engineer · Aurora, Colorado

- Architected a HIPAA-adjacent, multi-tenant medical transportation platform with PHI field-level encryption, tenant isolation, audit logging, and compliance gate controls.
- Built a full-stack monorepo with a Spring Boot REST API in Java 17, React and Vite dispatcher/admin applications, a React Native and Expo driver app, and shared TypeScript libraries.
- Implemented partner onboarding, legal gate controls, and pilot role-readiness automation with full E2E test coverage.

EDUCATION

PhD, Computer Science and Information Systems

University of Colorado Denver · 2024

Thesis: Exploiting Human Learning and Adaptation to Enhance Deep Learning: A Foundational Framework, Metrics, and Experiments

BS, Physics

University of Colorado Boulder · 2010

TECHNICAL SKILLS

Agentic AI & LLMs	Multi-agent orchestration, LLM tool use, ReAct, streaming, prompt engineering, RAG, vector search, OpenAI, Google Gemini, Ollama
Machine learning & vision	Deep learning, computer vision, object detection, optical systems, model training and deployment
Languages	TypeScript, Python, Java, SQL
Frontend	React, Vite, Tailwind CSS, Radix UI, Framer Motion, TanStack Query, React Native, Expo
Backend	Express, FastAPI, Spring Boot, tRPC, Drizzle ORM, Zod
Data & infrastructure	PostgreSQL, Redis, Azure, GKE, Kubernetes, Docker, GitHub Actions, CI/CD
Integrations	Stripe, Stream Chat, Twilio, Resend, Google Maps, QuickBooks