

OLIVER A. ELLISON

Principal AI Platform Engineer | Enterprise Multi-Agent Systems |
Generative AI | RAG | MLOps | Veteran | 5x Author | Girl Dad

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SUMMARY

I design and ship enterprise multi-agent generative AI platforms with retrieval over messy data, rigorous evals and guardrails, and UI teams need and use. I lead architecture and hands-on delivery across data ingestion, vector search, orchestration, monitoring, and cost/reliability. Typical stack: Python, TypeScript, React, Postgres + pgvector, Azure/AWS, Kubernetes, MLflow, tracing/observability. Remote-first, outcome-driven, and production-ready.

EXPERIENCE

Principal Engineer & AI Architect (Founder) 01/2025 - Present

RAIN (Reliable AI Network, Inc) Remote

RAIN builds production-ready enterprise AI platforms (multi-agent, generative, RAG—end to end with rigorous evals/guardrails, strong governance, and operator-grade UIs).

- Architect the Rails pipeline: ingestion, Postgres/vector storage, retrieval, agents or tool use, evaluations or observability, and UI.
- Ship thin, reliable slices quickly; iterate with offline and online evaluations; own SLIs and SLOs for latency, accuracy, and cost.
- Enforce security, auditability, secrets hygiene, and least privilege; deliver React and TypeScript dashboards with human-in-the-loop and safe write-backs; offer architecture, platform builds, RAG and agents, evaluations and QA, and cost/performance tuning.
- Clients include PwC (DeepRisk initiative) and Utilitise — delivered production AI agents, FastAPI microservices, and LangChain-based RAG pipelines with rigorous evaluations and guardrails. Built ETL pipelines using Pandas, Pydantic, and Azure Blob, improving deployment efficiency by 100%.
- Provide architecture, platform builds, RAG and agent workflows, evaluation frameworks, and cost/performance tuning for enterprise clients in finance, utilities, and healthcare.

AI Software Architect 06/2021 - 03/2025

UnitedHealth Group - Optum Remote - MN

Optum (UnitedHealth Group's tech arm) is a Fortune 5 leader in health services and data platforms.

- AI architect and engineer across multiple products: led Provider Risk Assessment and risk scoring; created the Optum POD Provider Outlier Dashboard from POC to MVP to production; delivered additional tools for clinical and operations users.
- Platform and delivery: built LLM and RAG services over claims, clinical, and provider data; ETL to Postgres and vector stores; FastAPI microservices; React dashboards; evals and guardrails; deployed on Azure and Kubernetes with CI/CD (Azure ML, GitHub Actions), tracing, metrics, and cost controls.
- MLOps and governance: deployed models with monitoring, quality checks, retraining, A/B tests. Defined SLIs, SLOs. Ensured HIPAA, PHI security compliance. Collaborated with clinicians, data scientists to increase adoption.

ML Graduate Course Facilitator 06/2021 - 07/2023

Boston University 2 Semesters Yearly

Boston University's online programs, globally recognized for excellence and among the top ranked, are pioneers in digital education. They combine rigorous curricula with innovative design in computer science, AI, and data analytics. As a Machine Learning Course Facilitator at BU, I:

- Co-designed and delivered a mobile ML course with a lead professor, teaching core concepts and emerging agentic AI techniques.
- Led live lectures, graded assignments and exams, and provided individualized mentorship to foster student excellence in applied machine learning.

EDUCATION

Master of Science - MS, Software Development

Boston University
Boston, United States

GPA | 3.71 / 4.0

Bachelor of Business Administration - BBA

South University
Austin, United States

GPA | 3.67 / 4.0

SKILLS

AI & ML; AI Architecture, MLOps, ML Engineering, Generative AI, Deep Learning, AI Agents, RAG Pipelines, Prompt Engineering, LLM Fine-tuning, LangChain, Reinforcement Learning, Vector Search, Model Deployment, Model Monitoring, LLM Evaluation & Guardrails, Fine-Tuning & Embeddings

DATA ENGINEERING; ETL, Pandas, Pydantic, Azure Blob Storage, Data Governance, Data Lakes

PROGRAMMING & FRAMEWORKS; Python, C++, C#, Java, JavaScript, Node.js, .NET, SQL, Bash, FastAPI, REST APIs, React.js, HTML, CSS, Git, MySQL, MongoDB, TypeScript

CLOUD DEVOPS; Azure AI, Azure ML, Blob Storage, DevOps, AWS, Docker, Kubernetes, Terraform, CI/CD, GitHub Actions, Azure DevOps, MLflow, Prometheus, Grafana, MLOps Lifecycle Management

ROBOTICS & ROBOTIC SYSTEMS; Soft Robotics, Collaborative Robotics, Human-Robot Interaction, ROS (Robot Operating System), System Integration, Large-Scale System Integration, RPA (Robotic Process Automation)

EXPERIENCE

AI/ML R&D Engineer

Naval Surface Warfare Center (NSWC)

01/2021 - 06/2021

Dahlgren, VA

The Naval Surface Warfare Center (NSWC), a key U.S. Navy division, leads in R&D of naval tech, overseeing 70% of U.S. nuclear arsenal. It advances AI/ML, robotics, and defense tech. As AI/ML R&D Engineer, I:

- Developed and deployed advanced AI algorithms for autonomous robotic platforms supporting national defense missions.
- Collaborated with MDA and DoD on missile trajectory tracking and machine lipreading systems, leveraging deep learning (TensorFlow, PyTorch, OpenCV) for perception, object tracking, and real-time decision optimization.
- Led R&D on adaptive, self-directed algorithms that improved robotic response times and tactical precision under mission-critical constraints.
- Held a Top-Secret Security Clearance, contributing to high-impact, classified projects in surveillance, target recognition, and autonomous defense technologies.

AI/Robotics Engineer

Blue Eagle Robotics

05/2013 - 01/2021

San Antonio, TX

Blue Eagle Robotics develops AI-powered autonomous systems for defense, industry, and research, integrating machine learning, computer vision, and real-time systems for complex environments. As a Senior AI/Robotics Engineer, I:

- Led the design and deployment of AI systems for robotic navigation, perception, and adaptive behavior in dynamic environments.
- Built deep learning and reinforcement learning models (TensorFlow, PyTorch) for real-time object recognition, path planning, and obstacle avoidance, boosting navigation efficiency by 35%.
- Integrated ROS, OpenCV, and multi-sensor fusion (LiDAR, RGB-D) to enhance situational awareness and SLAM. Optimized edge deployment on NVIDIA Jetson platforms, reducing latency by 40% and enabling on-device intelligence.
- Spearheaded a DARPA prototype that demonstrated self-adaptive robotic decision-making in unstructured environments, securing a \$2M contract.

Combat Medic as Non-Commissioned Officer

US Army

01/2007 - 01/2013

Fort Hood, TX &
Deployed to Iraq

Led and trained teams as a Non-Commissioned Officer (NCO), overseeing soldier readiness, performance, and professional development.

- Honorable served and discharged after two combat tours, delivering critical medical care under extreme conditions in Iraq during Operation New Dawn & Operation Iraqi Freedom.
- Coordinated emergency medical response for hundreds of personnel, ensuring rapid triage and treatment in high-pressure environments.
- Awarded 2 Army Commendation Medals, 2 Army Achievement Medals, 2 Overseas Service Ribbons, Iraq Campaign with 3 stars and other honors including the Army Good Conduct.
- Excelled in problem-solving and decision-making in high-risk situations, with skills transferable to crisis management in tech projects.
- Fostered team cohesion and resilience, building trust and accountability across diverse, multidisciplinary groups.
- Managed logistics, inventory, and compliance for field medical operations, ensuring alignment with strict standards.
- Served in imminent danger areas and completed multiple deployments over six years in active war zones.

SOFTWARE PORTFOLIO: TOP 8

Agentic AI Systems Showcase

<https://aurelius-in.github.io/agentic-portfolio/>

High-Volume Recruiter Agent

- Agentic recruiter for high-volume hiring that runs outreach by SMS, WhatsApp, and web, captures consent, screens, schedules, syncs to the ATS, and streams KPIs with a signed audit trail.
- Ships with a polished UI, offline demo mode, and swap-in connectors for real channels and ATS.
- Built with Python 3.11, FastAPI, React + Vite + Material UI, SSE, Docker Compose, and optional Twilio and ATS adapters.

URL: <https://github.com/aurelius-in/high-volume-recruiter-ai-agent>

AdOps Flightdeck

- Multi-agent AdOps control room that plans experiments, generates and guards creatives, paces budgets, explains anomalies, reconciles attribution, forecasts LTV, and exports signed audit JSON on AWS.
- Role-based UX with Project Switcher, 31 workflow agents, live event streams, and audit-ready governance.
- Built with server and web apps, Docker, SSE events, and AWS deployment patterns.

URL: <https://github.com/aurelius-in/adops-flightdeck-multi-agent>

Agentic AI Health Navigator

- Next-gen healthcare navigation platform with **agentic AI**, intelligent triage, provider matching, and personalized care recommendations.
- **Multi-modal reasoning (deductive, inductive, abductive), memory systems (episodic, semantic, long-term), and cross-agent collaboration.**
- Built with FastAPI, React, TypeScript, PyTorch, PostgreSQL, Redis, ChromaDB.
- Deployed with Docker/Kubernetes, full observability, HIPAA-compliant security, and Grafana/Prometheus.

URL: <https://github.com/aurelius-in/AI-Health-Navigator-for-Patients>

PUBLICATIONS

The Agentic AI Week: Ship Weekly, Prove Daily, Scale Safely	08/2025
Available on Amazon in Paperback and Kindle	
<i>Oliver A. Ellison</i>	
A field guide to shipping credible agentic AI in 30 days. Covers the rails that matter—tool registry and contracts, orchestration and guardrails-as-code, receipts/traces, and CFO-ready metrics—so teams can ship weekly, prove daily, and scale safely without drama. Built for executives and engineers; focuses on p95 speed, write-back completeness, and cost per verified outcome.	
🔗 https://www.amazon.com/dp/B0FNLHKCN7	
The AI Architect's Handbook: Designing Scalable and Intelligent Systems	03/2025
Available on Amazon in Paperback and Kindle	
<i>Oliver A. Ellison</i>	
The AI Architect's Handbook: Designing Scalable and Intelligent Systems is a 500-page, textbook-style reference for building enterprise AI. Covers data pipelines, model development, deployment, and operations, with 100+ diagrams and tables. Gives architects and leaders practical patterns and governance to design robust, scalable systems.	
🔗 https://a.co/d/lkCBTNs	
The AI-Driven Organization: Strategies for Success	05/2024
Available on Amazon in Paperback and Kindle	
<i>Oliver A. Ellison</i>	
Provides practical frameworks and real-world case studies on implementing artificial intelligence to enhance operational efficiency, support strategic decision-making, and foster innovation. Covers core concepts in AI adoption, including technical readiness, change management, and ethical considerations, tailored for business leaders and executives navigating digital transformation.	
🔗 https://www.amazon.com/dp/B0D61QHZP8	
AI Strategy and Implementation: A Practical Guide for Leaders	07/2023
Available on Amazon in Paperback and Kindle	
<i>Oliver A. Ellison</i>	
A tactical resource for executives and technology leaders on developing and executing effective AI strategies. Covers key areas including AI readiness assessment, governance frameworks, risk management, model deployment, and organizational change. Features real-world case studies and practical tools to support the successful adoption of AI across enterprise environments.	
🔗 https://www.amazon.com/dp/B0D1QKP41H	
Artificial Intelligence in Robotics: Transforming the Future	02/2023
Available on Amazon in Paperback and Kindle	
<i>Oliver A. Ellison</i>	
A comprehensive reference exploring the integration of artificial intelligence within robotics systems. The book examines key applications such as autonomous navigation, predictive maintenance, robotic perception, and human-robot collaboration. It provides an in-depth look at how machine learning, computer vision, and reinforcement learning are shaping the next generation of intelligent robotics. Written for engineers, technologists, and professionals working at the intersection of AI and robotics, the book also addresses technical challenges, ethical considerations, and future directions in the field.	
🔗 http://tinyurl.com/3am3pn56	

SOFTWARE PORTFOLIO: TOP 8

AutoOps Sentinel

- **FastAPI + React/MUI**, featuring real-time log/metric ingestion, anomaly detection (Z-score, IsolationForest, MAD), and incident forecasting.
- Dashboards, timelines, and exec-ready narratives with automated remediation via YAML policies, runbooks (Kubernetes, Docker/systemd), RBAC, and Slack/Teams integration.
- LLM-backed planner for multistep fixes, with CI/CD (GitHub Actions), containerized deployment, migrations, and simulated production data for polished demos.

URL: <https://github.com/aurelius-in/AutoOps-Sentinel>

Agentic Claims Triage AI

- Agent-driven decision support system for insurance and healthcare claims, built with FastAPI, PostgreSQL, Redis, and Docker.
- Multi-agent workflow (classification, risk scoring, routing, compliance) with explainable AI (LLM/NLP + SHAP) and human-in-the-loop oversight.
- React/TypeScript dashboard delivering analytics, audit trails, and visual model explanations; secure APIs with logging, redaction, and policy enforcement.
- Production-ready CI/CD pipelines with observability (Prometheus/Grafana) simulating enterprise-grade MLOps.

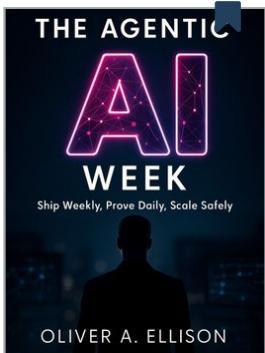
URL: <https://github.com/aurelius-in/Claims-Triage-AI>

Enterprise Wellness AI

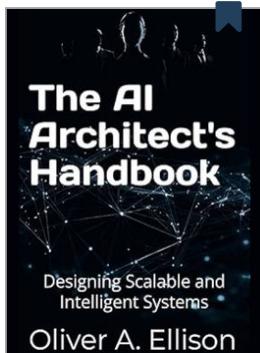
- Enterprise wellness platform with a 5-agent AI architecture (Companion, Recommendation, Risk Detection, Analytics, Privacy)
- Agent architecture (Companion, Recommendation, Risk, Analytics, Privacy) for organizational health, burnout detection, and resilience.
- FastAPI plus PostgreSQL, Redis, ChromaDB, and Celery backend with React and TypeScript dashboards and enterprise integrations (Slack, Teams, HRIS, Outlook).
- Privacy-first approach with HIPAA, GDPR, SOC2 compliance, differential privacy, and OPA governance.
- Deployed on Kubernetes and Helm with full observability using Prometheus and Grafana.

URL <https://github.com/aurelius-in/MindTrace>

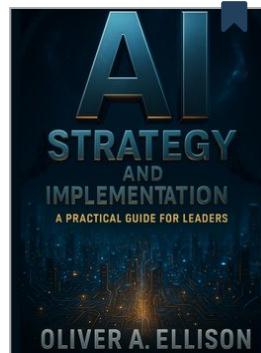
BOOKS



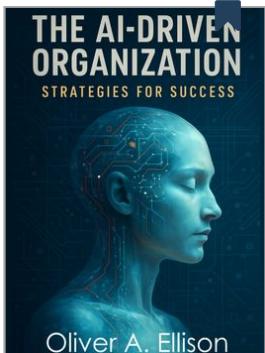
The Agentic AI Week
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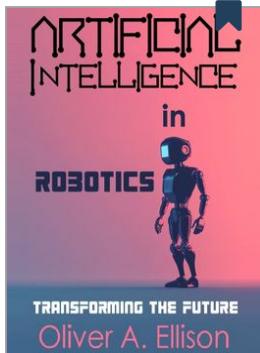
The AI Architect's
Handbook
Oliver A. Ellison



AI Strategy and
Implementation
Oliver A. Ellison



The AI-Driven
Organization;
Oliver A. Ellison



Artificial Intelligence in
Robotics
Oliver A. Ellison

WORK REFERENCES

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SOFTWARE PORTFOLIO: TOP 8

AI Governance Dashboard

- Enterprise AI governance platform with an LLM proxy, policies-as-code, safety guardrails, and cost monitoring.
- Enterprise governance platform for AI systems with an LLM proxy, policies-as-code, safety guardrails, and real-time cost monitoring.
- Features policy enforcement (OPA), automated compliance checks, and production-grade MLOps pipelines for trustworthy deployments.
- Built with FastAPI, React, PostgreSQL, Redis, and containerized (Docker/Kubernetes) with full observability via Prometheus/Grafana.

URL: <https://github.com/aurelius-in/AI-Governance>

AI Document Agent (aiDa)

- Intelligent, multi-agent document analysis platform for regulatory compliance and business intelligence.
- Multi-agent document analysis for compliance and business intelligence (ingest, classify, extract, risk, monitor).
- Real-time React/TS dashboard with analytics, audit trails, and agent trace views.
- FastAPI backend with PostgreSQL, vector search, and OpenTelemetry for scalable operations.

URL: <https://github.com/aurelius-in/Smart-Document-Bot>

AWARDS

Advanced Tech Award - Optum

Army Achievement Medals

Army Commendation Medals

Army Good Conduct Medal

Army Service Ribbon

Iraq Campaign Medal - 3
Campaign Stars

Non-Commissioned Officer
Professional Development
Ribbon