

SAM MAHDAVIAN, PhD, PMP, PMI-PBA

AI Solutions & Delivery Lead

Agentic systems that solve the business problem. Tested, governed, and safe in regulated production.

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PROFESSIONAL SUMMARY

AI solutions leader who turns ambiguous business problems into agentic systems that hold up in regulated production. I work as a single-threaded owner from discovery and pre-sales through reference architecture, build, and adoption, and every system I ship has to clear one test: it solves the business problem, it is evaluated against real cases, and it is safe to run. Across healthcare, financial services, transportation, retail, and manufacturing I have shipped 40+ systems **and 110+ agents** that together produced **\$40M+ in revenue and \$500M+ in identified client savings**. I also co-founded and run an AI infrastructure-planning startup as CEO. For 15+ years I have been the translator between the C-suite that wants ROI and the engineers who build, pairing LLM/RAG and AWS engineering with executive-facing delivery. PhD (ML / applied AI); PMP; PMI-PBA.

CORE COMPETENCIES

Solutions & Pre-Sales: enterprise AI delivery, solution architecture, discovery to design to deploy to adopt, requirements elicitation across sectors, pre-sales and POCs, buyer-persona and commercial market analysis, ROI and business-case framing, single-threaded ownership, executive enablement.

Agentic AI & GenAI: LangChain/LangGraph, Strands SDK, CrewAI, custom Python; multi-agent orchestration; RAG and vector DBs; guardrails, evals, and human-in-the-loop; prompt engineering; latency/cost/accuracy optimization; AWS Bedrock and AgentCore; Claude and OpenAI.

Production & MLOps: AWS (Bedrock, SageMaker, Lambda, Step Functions, S3, ECS/EKS), Docker, Kubernetes, CI/CD, IaC (Terraform/CDK), model serving and LLMOps, observability, model-risk governance, IAM and cloud security, HITRUST/HIPAA, FinOps.

Leadership & Delivery: team building and mentorship (orgs to ~25), roadmap and solution ownership, GTM, pricing and packaging, Agile/Scrum and SAsFe, storytelling with data, hiring and talent development.

PROFESSIONAL EXPERIENCE

AArete LLC

Director, Data Science & AI · Orlando, FL · 2022 - Present

- Designed the architecture and led the build of **Doczy.ai**, a multi-tenant GenAI platform on AWS (retrieval, prompt orchestration, agentic tool-calling, dynamic model selection, governance, observability). Scaled it to **2.5M+ contracts and 442B+ tokens at 99%+ accuracy** under HITRUST/HIPAA, generating **\$15M+ in revenue and \$330M+ in client savings**. Architecture featured on the AWS Architecture Blog; issued a U.S. patent in 2025.
- Built 40+ systems **and 110+ agents** that each solve a specific business problem, most now in production, on LangChain/LangGraph, Strands SDK, and custom Python over AWS Bedrock and AgentCore. Across the portfolio these systems produced **\$40M+ in revenue and \$500M+ in identified client savings**. Every one is evaluated against real cases before release, tuned for latency, cost, and accuracy, and built human-in-the-loop and audit-first.
- Run discovery and pre-sales as a single-threaded owner across 10+ Fortune 500 engagements. I sit with executives and business teams, map the real pain by sector, and convert ambiguous problems into structured SOWs and roadmaps. Recently won a **\$700K+ engagement with an equipment-finance lender**, plus **\$2.5M+** in competitive government and industry RFPs.
- Own production deployment (Docker, ECS/EKS, CI/CD, IaC, Bedrock/SageMaker serving) and authored the firm's AI-governance framework: model-risk management, bias and drift monitoring, explainability, prompt-injection defense, confidence-scored human-in-the-loop, and a four-stage maturity model that gates every system before it ships.
- Lead and mentor ~15 AI scientists and engineers across backend, frontend, and DevOps, plus a business-translation layer that turns stakeholder needs into specs and prompts. Run the firm-wide AI delivery program: **~\$1.3M budget, 10+ concurrent workstreams**, a six-gate value framework, and value-based pricing that protects margin as delivery cost falls.
- Lead executive AI-enablement through several workshops; one for 40+ leaders at an S&P 500 leading global manufacturer produced a **30% productivity increase and 20+ prioritized use cases**. Earlier (Manager / Sr. Data Scientist), built an AI/ML Accelerator that cut modeling cycles ~75% and an ML suite proving a **4.1% registration uplift worth \$9.6M** in new annual revenue.

Brane Mobility (SPLUSM LLC)

Co-Founder & CEO · Orlando, FL · 2020 - 2022

- Co-founded and lead **Brane Mobility** as Co-Founder and CEO, a cloud-native B2B SaaS that turns raw mobility and urban data into multi-scenario, stakeholder-ready insights in minutes for city planners, public agencies, and enterprises. Built and led a **~25-person** cross-functional org (GenAI and data scientists, data engineers, full-stack developers, UX/UI) and **awarded \$625K in grants**.
- Architected the platform as two integrated systems: an advanced **data-management layer** (a four-level dataset-to-KPI hierarchy with automated ETL, data validation, a custom KPI formula builder, and user-data integration) and an **end-to-end five-step analysis workflow** (project definition across 18 problem types, hotspot identification, multi-objective optimization, sensitivity analysis, and automated Word, PDF, and slide reporting).
- Designed the **AI Decision Engine**: neural-network forecasting, genetic-algorithm multi-objective optimization, sensitivity analysis, and an AWS Bedrock Gen AI copilot that guides users in natural language. Ran multi-city pilots showing **~18% operational efficiency gains**.

UCF College of Engineering & Computer Science **Lead Data Scientist & Researcher** · Orlando, FL · 2017 - 2020

- Delivered two production applications with end-to-end data pipelines used by the **U.S. Department of Transportation** for traffic and cost forecasting; secured competitive USDOT and NSF funding. Led applied-AI research in forecasting, optimization, and simulation, producing **20+ peer-reviewed publications**.

Stratus International Contracting Co. **Senior Data Analyst** · 2011 - 2017

- Built a PMO optimization framework (hybrid genetic algorithm plus constraint-based simulation) and stood up the firm's first PMI-aligned PMO, cutting **21% of cost and 32% of time** across major projects in three years.

SELECTED PRODUCTION AI SOLUTIONS (BUSINESS OUTCOME FIRST)

- **Cut payer-policy and claims analysis time 90% with a 10% accuracy gain** for a top-5 health payer, surfacing millions in recoverable overpayments. A **9-agent LangGraph pipeline** generates 200+ Snowflake-ready SQL queries per policy; reused across payers.
- **Cut invoice processing time 92% with a 5% accuracy gain** across an airline, a manufacturer, and a large health system with a straight-through **invoice agent on AWS Bedrock** (Textract plus validation), routing only exceptions to a human.
- **Surfaced spend savings across 14,765 suppliers and 47,489 parts** for a Fortune 500 airline: a **10-agent hand-orchestrated pipeline** plus a React command center delivered a **98% task-time reduction and a 20% accuracy gain**.
- **Cut unit-cost claims analysis time 35% with a 4% accuracy gain** for a state Medicaid program using a **7-agent LangGraph** cognitive loop, taking a five-day analysis down to hours.
- **Protected margin on thousands of daily financing deals** for an equipment-finance lender. An **8-agent pricing engine** (XGBoost risk scoring, reinforcement-learning optimization, SHAP explainability) is targeting a 15 to 20% margin improvement and 60% faster decisions, explainable for compliance, for a newly won \$700K+ engagement.
- **Made underwriting transparent and regulator-ready** with an **11-agent LangGraph system** that scores 11 risk dimensions under a Chief Underwriter orchestrator (XGBoost + SHAP, every decision explained). Open source.
- **Built contract review that ships itself**: a 7-agent clause-assessment engine rates every clause P/A/D/U from a tool-called rubric (criteria never hard-coded), with deterministic guards, an independent QC agent, and human routing for anything uncertain; **85% of assessments validated to auto-approve**.
- **Caught the fraud rings rules miss** with a **3-agent LangGraph** investigation (graph neural net plus LLM) over a 3D transaction graph. Open source.

EDUCATION & CERTIFICATIONS

Ph.D., Engineering, University of Central Florida. Dissertation: machine-learning algorithms for forecasting (ML / applied-AI methods). **M.S., Engineering, UCF.** Executive Education, Business Administration, Harvard Business School.

Certifications: PMP · PMI-PBA · Certified SAFe Practitioner · Advanced Data Science Fellowship (The Data Incubator) · **Claude Certified Architect, Anthropic (expected 2026)** · **AWS Solutions Architect Associate (expected 2026)**.

PUBLICATIONS, PATENTS & RECOGNITION

Patent & features: U.S. Patent (2025), GenAI contract-intelligence method (Doczy.ai) · featured on the **AWS Architecture Blog** · founder of Modern AI Academy, teaching how agentic AI is built and shipped.

Research: **20+ peer-reviewed publications, 451 citations, h-index 9** (Google Scholar), in IEEE Access, MDPI, and the ASCE Journal of Construction Engineering & Management. Most-cited: drivers and barriers to connected, automated, shared, and electric vehicles (IEEE Access, 130+ citations). Reviewer for the Journal of Intelligent Transportation Systems and TRB.