

# Martin McEnroe

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## AI/ML Strategy Leader & Enterprise Architect | Licensed PE

### AI Solutions Architect | Built Production AI Systems Saving \$4.5M+ | Licensed PE | 21 Patents

Solution architecture leader who transforms business processes through AI/ML at enterprise scale. Led 45-person team with \$9M budget at AT&T, architecting and delivering production solutions that optimized operations, reduced costs by \$10M+ annually, and improved customer and field service processes serving thousands of users daily. Established security frameworks and led security audits for AI-driven applications across multiple cloud platforms. Proven track record managing P&L, exceeding customer satisfaction targets, and translating technical solutions into business outcomes. Licensed PE with 21 U.S. patents, 8 AWS certifications including ML Specialty, Solutions Architect Professional, and Security Specialty, plus CISSP and CCSP security certifications.

### STRATEGIC LEADERSHIP & BUSINESS EXPERTISE

AI Strategy Development & Governance	Strategic Planning & Roadmap Development	ROI Modeling & Business Case Development
Enterprise AI Architecture	Solution Architecture & Pre-Sales	Program & P&L Management
Responsible AI & Ethical Frameworks	Customer Success & Relationship Management	Regulatory Compliance & Risk Management
MLOps Lifecycle Management	Business Process Transformation	Cross-Functional Team Leadership
Change Management & AI Adoption Leadership	Technical Mentorship & Code Reviews	Executive Stakeholder Engagement

### TECHNICAL EXPERTISE

**AI/ML & LLMs:** Generative AI (GPT, Claude, Gemini), RAG Architectures (ChromaDB, FAISS, Pinecone), LangChain, LangGraph, LangSmith (Agentic AI), PyTorch, TensorFlow, scikit-learn, Hugging Face Transformers, Prompt Engineering & Model Evaluation

**Cloud AI Platforms:** AWS (SageMaker, Bedrock, Lambda, Rekognition), Azure (Azure ML, Cognitive Services, Computer Vision, DevOps), Snowflake (Cortex AI, Snowpark, ML Functions), GCP (Vertex AI, Gemini API, NotebookLM)

**MLOps & DevOps:** MLflow (model versioning, experiment tracking), CI/CD Pipelines (Azure DevOps, GitHub Actions, Jenkins), Docker, SonarQube, Model Deployment/Monitoring/Retraining

**Data & Engineering:** Python, JavaScript/TypeScript, SQL, C++, FastAPI, Flask, PostgreSQL, DynamoDB, Redis, Snowflake, Pandas, NumPy, ELT/ETL Pipelines, Time-Series Analysis

**Computer Vision & NLP:** OpenCV, YOLO, BERT, GPT Models, Intent Classification, NER, Text Classification, Semantic Search, Embeddings

**Security & Governance:** Application Security Architecture, CISSP, CCSP, AWS Security Specialty, SonarQube, Penetration Testing, AI Governance Frameworks, Bias Mitigation, OWASP, Data Privacy & Compliance

**Tools & Platforms:** H2O.ai, SageMaker Canvas, Azure ML Studio, Power BI, Tableau, Streamlit, Gradio, VSCode, GitHub Copilot, Poetry, Jira, Agile Methodologies

## PROFESSIONAL EXPERIENCE

THRIVETECH.AI - Plano, TX

June 2022 - Present

### Founder

Founded AI development company designing production-grade systems for athletic performance and education. Architected and developing four major platforms that demonstrate end-to-end AI solution design from concept through deployment architecture and MLOps.

- GlucoPulse - Personal CGM Analytics with Snowflake: Building data pipeline using Snowflake, Snowflake Cortex AI, and Snowpark for Python to analyze 96,000+ continuous glucose monitor readings. Designed ELT pipeline with data quality transformations (pivoting, coalescing, type casting). Implementing Snowflake Cortex AI COMPLETE function for NLP-based classification of lifestyle notes and Snowpark Python stored procedure using scikit-learn IsolationForest for anomaly detection. Developing time-series analysis using SQL window functions to identify glycemic variability patterns.
- Aletheia - Context-Aware Vocabulary Assistant: Developing GenAI-powered browser tool for real-time definitions with webpage context. Designing JavaScript extension (Manifest V3) to capture user-selected text with serverless backend on AWS using API Gateway, Lambda (Python), and DynamoDB. Integration with Amazon Bedrock for contextual text analysis. Architecture includes API key authentication with usage quotas for cost control and RAG pipeline using LangChain with vector databases (ChromaDB or Pinecone).
- Iconoscope - Azure ML Video Analysis Platform: Designing Azure-native video analysis platform using Azure ML, Computer Vision, and OpenCV for cyclist form analysis. Architecting CI/CD pipeline with Azure DevOps for automated model deployment. RAG architecture with LangChain to generate technique feedback from video frame analysis and MLOps workflow with MLflow for experiment tracking.
- VeloForm - Real-Time athletic form analysis: Architecting MLOps pipeline for computer vision (YOLO) and real-time LLM coaching platform on Google Cloud. Designing FastAPI/Docker deployment for model serving on Vertex AI Gemini models using LangGraph-based RAG architecture. Building telemetry data pipeline with Cloud Storage and BigQuery and managing model lifecycle with MLflow.

TEXAS DEPARTMENT OF TRANSPORTATION - Austin, TX

September 2023 - April 2024

### AI Strategic Consultant

*AI Strategic Consultant | September 2023 - April 2024*

Developed comprehensive AI governance and strategic implementation framework for state-wide transportation agency, balancing innovation with regulatory compliance and responsible AI adoption.

- Authored 76-page AI strategic plan encompassing 32 epics, 213 use cases, governance controls, and risk assessments. Applied **LDA (Latent Dirichlet Allocation)** topic modeling to analyze stakeholder feedback and identify high-priority AI applications across transportation operations.
- Conducted extensive stakeholder interviews across operational divisions to identify high-value AI opportunities meeting federal and state regulatory requirements. Translated technical AI capabilities into business value propositions for non-technical executives.
- Created phased implementation roadmaps balancing technical feasibility, compliance constraints, and organizational change management. Established AI ethics framework and bias mitigation strategies for public-sector deployment.

AFINITI - Washington, DC

March 2021 - June 2022

### Vice President, Product

Product leadership for AI-powered customer-agent pairing platform optimizing enterprise contact center operations through behavioral analytics and machine learning.

- Led hands-on security initiatives including architecture reviews, penetration test remediation, and **SonarQube** vulnerability remediation. Collaborated with security teams on API security hardening and authentication protocols using **Python** and **C++** codebases.

- Managed product strategy and prioritization across quarterly and sprint planning cycles. Balanced stakeholder requirements for new ML algorithms, operational improvements, and production issue resolution.
- Defined cross-functional product development processes spanning engineering, AI research teams, MLOps, and go-to-market. Provided technical thought leadership on cloud strategy and AI operations initiatives.
- Hands-on DevOps work using **Docker, Jira, Git, and CI/CD pipelines** across GCP and Azure cloud environments. Contributed to infrastructure automation and deployment optimization.

AT&T - Plano, TX

September 1991 - October 2020

### **Director, Data Science & Artificial Intelligence (AI)**

**Director, Data Science & Artificial Intelligence (September 2017 - October 2020)**

Hands-on architect and individual contributor leading development of enterprise-scale AI/ML solutions. Architected end-to-end systems from concept through production deployment, serving thousands of daily users with measurable business impact. Collaborated with 45-person cross-functional team and managed \$9M labor budget while maintaining active coding and architecture responsibilities.

- **TAVI - NLP-Powered Customer Service Chatbot:** Architected and developed intelligent automation solution using **Python, TensorFlow, BERT models, AWS Lambda, and DynamoDB**. Built custom intent classification pipeline processing 10,000+ daily interactions with 92% accuracy. Implemented named entity recognition for extracting customer context and designed conversation flow management system. Deployed on **AWS serverless architecture** with auto-scaling Lambda functions and DynamoDB for session management. Reduced support costs by \$4.5M within 15 months and improved first-call resolution by 30%. Led technical implementation across engineering, operations, and business stakeholders from concept through production deployment.
- **SNAP - Computer Vision Field Operations Tool:** Architected AI-driven mobile application using **Python, OpenCV, Azure Computer Vision, and Azure DevOps**. Developed custom image classification models for automated field job evaluation, processing technician photos for quality assessment and compliance verification. Implemented real-time inference pipeline with edge optimization for mobile devices. Built complete **CI/CD pipeline using Azure DevOps** for automated testing and deployment. First cloud-native solution deployed at AT&T enterprise scale, optimizing workflows across national footprint and delivering \$5.8M annual cost reduction with 30% field productivity improvement. Established reusable architecture patterns and deployment frameworks adopted by subsequent AI initiatives.
- Implemented comprehensive security and privacy protocols for all AI deployments using **security best practices and automated scanning**. Ensured data protection aligned with telecommunications industry regulations and conducted security assessments for cloud-native applications. Led security audits and vulnerability remediation for AI-driven systems.
- Provided hands-on technical mentorship on code, ML models, and CI/CD practices to junior and senior engineers. Conducted code reviews using **Git and GitHub**, established coding standards, and led technical design sessions for complex system architecture challenges.
- Architected and executed 75+ analytical studies over 2 years to identify operational root causes, proposing 10 automation projects to reduce order-processing costs and support expenses. Applied **Python, Pandas, and NumPy** for data analysis and visualization.
- Partnered with SVP-level executives to shape AI strategy, secure funding for \$20M+ initiatives, and drive cross-organizational alignment. Presented technical architecture, business cases, and ROI models to executive committees, winning approval for transformational AI programs.

### **Lead Member Technical Staff, Enterprise Architect (May 2013 - August 2017)**

- Founding chair of AI and Data Science Architecture Review Board (ARB/TRB). Developed data science platforms as product offerings for internal and external customers, providing consulting and technical leadership on AI/ML initiatives.
- Championed implementation of Stack Overflow on internal cloud infrastructure, writing **SQL scripts** and producing data visualizations to reach 31,000 internal AT&T users. Built internal knowledge-sharing platform increasing developer productivity.
- Led technical evaluations and architectural comparisons: R vs SAS (Analytics), MicroStrategy vs Tableau (BI), GitHub vs Atlassian (DevOps), Data Lake security architecture, **Python vs Java**, AWS vs Azure vs GCP (cloud platforms). Provided technical recommendations influencing enterprise-wide technology standardization.
- Served as product manager for 'RCloud' internal data science platform supporting **R and Python** development. Led training sessions on Python, R, API usage, and AI architectures within Communities of Practice, training hundreds of engineers.

### **Director, Emerging Video Services, Corporate Strategy (July 2012 - April 2013)**

- Led cross-company post-mortem investigation of multi-day, multi-state U-verse service outage. Identified systemic infrastructure weaknesses and implemented reliability improvements preventing recurrence. Developed 60 use cases for video services architecture spanning consumer, business, and wholesale markets.

**Additional AT&T Accomplishments (1991 - 2020)** Held progressively responsible roles from Individual Contributor to District Manager to Director levels across technology architecture, systems engineering, and strategic planning.

- AT&T Bell Labs: Contributed to advanced research and development network and internet initiatives.
- Director of Program Management for AT&T's IP Backbone.
- Led Network Operations and Engineering teams.
- Contributed to wireless communications development resulting in multiple patents.
- Resolved year-long network migration crisis by architecting solution increasing deployment efficiency 100-fold in 45-day project.
- Successfully pitched and secured funding for multiple AI initiatives from Senior Vice Presidents at AT&T.

## **EDUCATION**

- **Master of Computer Science**, University of Illinois Urbana-Champaign, IL (2017)
- **Master of Science**, Electrical Engineering, University of Maryland, College Park, MD
- **Bachelor of Science**, Electrical Engineering, University of Maryland, College Park, MD

## **CERTIFICATIONS**

### **Professional Engineer (PE) - Texas, Electrical Engineering**

**Security Certifications:** CISSP, CCSP, AWS Security Specialty

**AWS Certifications:** Machine Learning Specialty, Solutions Architect Professional, Data Analytics Specialty, Data Engineer Associate, Database Specialty

**Azure Certifications:** DevOps Engineer Expert, Security/Compliance/Identity Fundamentals, AI Fundamentals

**Project Management:** PMP (Project Management Professional), PgMP (Program Management Professional)

**IEEE:** Senior Member, Wireless Communication Professional (WCP)

## **PATENTS & ACHIEVEMENTS**

- Inventor of 21 granted US patents in AI, cloud computing, cybersecurity, IoT, and wireless applications