

# D. JAMES FUSILIER

Senior AI/ML Engineer | Full Stack Developer | MLOps & GenAI Architect

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## PROFESSIONAL SUMMARY

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Senior AI/ML Engineer and Full Stack Developer with 7+ years of experience architecting production-grade machine learning systems, GenAI solutions, and end-to-end MLOps pipelines. Currently serving as an AI Software Engineering Fellow at Handshake AI (UHD) and Machine Learning Specialist at Invisible Technologies, specializing in RLHF pipeline optimization, LLM alignment, and technical model evaluation. Deep expertise in the full ML lifecycle—from data engineering and supervised learning through LLM fine-tuning, agentic workflows, and real-time inference. Proven ability to deliver measurable outcomes: 30% reduction in customer response times, 15% decrease in unexpected equipment failures, and scalable AI integrations across enterprise stacks (AWS, SageMaker, FastAPI, React). Adept at leading cross-functional teams and bridging the gap between cutting-edge AI research and production reliability.

## CORE COMPETENCIES

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**AI/ML & GenAI:** RLHF, SFT, Preference Modeling, RAG, Prompt Engineering, LLM Fine-Tuning, Agentic Workflows, Applied NLP, Model Evaluation, MLOps, Benchmark Design

**Frameworks & Libraries:** TensorFlow, PyTorch, LangGraph, LangChain, Hugging Face, Scikit-learn, NumPy, Pandas, FastAPI, Node.js

**LLMs:** Claude (Anthropic), GPT-4o, Gemini, Llama 3.1, Mistral

**Programming Languages:** Python, SQL, JavaScript/TypeScript, React, Java, Swift, C#, PHP, HTML/CSS

**Cloud & Infrastructure:** AWS (SageMaker, EC2, S3, Lambda, CloudWatch), Azure, Datadog

**Databases & Vector Stores:** Vector DB, Milvus, Pinecone, MySQL, DB2

**Dev Tools:** GitHub Copilot, Claude Code, Cursor, GitHub Codespaces, VS Code, Xcode, .NET

**Methodologies:** Agile/Scrum, CI/CD, Waterfall, Applied AI Engineering

## PROFESSIONAL EXPERIENCE

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**Machine Learning Specialist** *Dec 2025 – Present*

**Invisible Technologies | New York, NY (Remote)**

- ▶ Lead structured evaluation of Virtual Agent performance using standardized ML metrics, focusing on Task Completion Rate and Conversational Naturalness across large-scale JSON data logs.
- ▶ Design and iterate on complex reasoning tasks to transition LLMs from baseline solutions to optimized, production-ready workflows — consistently improving model robustness and generalization.
- ▶ Architect evaluation scripts and reference implementations for new benchmark tasks by identifying SOTA datasets and analyzing frontier research papers.
- ▶ Perform advanced LLM debugging, probing for failures in optimization, fairness, regularization, and transformer architecture; produce detailed failure-mode documentation for applied NLP systems.
- ▶ Deliver structured SFT feedback and refined training data that measurably improves accuracy, reliability, and utility of AI model outputs at scale.
- ▶ Assess scientific writing quality (research abstracts and technical introductions) using rigorous rubrics — ensuring correctness, clarity, and scientific impact for model training data.

**AI Trainer (RLHF) — Handshake AI Fellow** *Nov 2025 – Present*

**Handshake AI / University of Houston-Downtown | San Francisco, CA (Remote)**

- ▶ Design and execute end-to-end RLHF pipelines, applying software engineering depth to optimize LLM reasoning, debugging capabilities, and architectural decision-making across Python, JavaScript, and SQL.
- ▶ Develop high-quality Supervised Fine-Tuning (SFT) datasets and preference pairs to align model outputs with industry-standard software engineering best practices and safety guardrails.

- ▶ Selected as a Software Engineering Expert within the UHD Fellowship program to specialize in RLHF methodology and model alignment — bridging academic AI research with production-grade reliability.
- ▶ Synthesize code quality evaluations across multiple programming paradigms, driving measurable improvements in LLM code generation, refactoring, and debugging performance.

### **Senior GenAI / AI Developer & Prompt Engineer***May 2024 – Dec 2025*

#### **Outlier | Oakland, CA (Remote)**

- ▶ Led a team of advanced AI developers in designing and deploying scalable GenAI solutions on AWS (SageMaker, Lambda, S3) using Python, TensorFlow, LangChain, FastAPI, and React.
- ▶ Engineered high-performance RAG pipelines with Pandas and vector databases, significantly improving retrieval accuracy and LLM-driven application throughput for enterprise clients.
- ▶ Built responsive full-stack interfaces (React + TypeScript + FastAPI) delivering seamless, high-performance AI-powered enterprise applications.
- ▶ Orchestrated fine-tuned LLM integrations into production systems via FastAPI, boosting operational efficiency and enabling novel AI-driven business workflows.
- ▶ Directed cross-functional Agile teams (Developers, Data Analysts, BI Specialists) to deliver LLM-powered solutions tailored to complex business use cases with measurable ROI.

### **Senior AI/ML Engineer & Solutions Architect***Oct 2022 – Apr 2024*

#### **AI Consultant — Fishbowl Software | Orem, UT (Remote)**

- ▶ Designed and deployed a production rule-based chatbot using decision trees integrated with LLM APIs, reducing customer service response times by ~30% for routine inventory queries.
- ▶ Integrated a predictive LLM API into an inventory management platform, enabling data-driven reorder recommendations that minimized stock-out events significantly.
- ▶ Architected the end-to-end ML solution from requirements to deployment, delivering a maintainable, observable system aligned to business KPIs.

### **AI Solutions Architect***May 2021 – Dec 2021*

#### **AI Consultant — Reserv | New York, NY (Remote)**

- ▶ Implemented a predictive maintenance scheduling system via LLM API integration into a property maintenance application, reducing unexpected equipment failures by ~15%.
- ▶ Built CI/CD pipeline for continuous ingestion and analysis of historical maintenance data, enabling real-time equipment failure prediction with automated alerting.

### **Mechanical Designer III (Python Automation)***Apr 2013 – Mar 2018*

#### **TechnipFMC | Houston, TX**

- ▶ Integrated NXOpen and TeamCenter using Python and PySpark, streamlining engineering project management workflows and reducing manual overhead for cross-functional teams.
- ▶ Created high-fidelity 3D models and performed finite element analysis (FEA), collaborating across disciplines to deliver precise, compliant engineering solutions.
- ▶ Managed and optimized the enterprise CAD software license portfolio (SaaS/CAE tools), ensuring compliance and maximizing cost efficiency.

## **EDUCATION & CREDENTIALS**

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### **University of Houston-Downtown**

BAAS – Applied Administration | Handshake AI/UHD Fellowship (RLHF & Model Alignment)

### **Lone Star College, Houston, TX**

AAS – Computer Programming | AAS – Mobile App/Web Development | Computer Programming Specialist II Certification | Computer Programmer Certification