

SAM McDEVITT

Nashville, TN | 601-668-6782 | sam@mcdevitt.page | linkedin.com/in/sammcdevitt | github.com/sammcdsam

SUMMARY

Machine learning engineer with 4+ years building and shipping production ML systems — computer vision, multi-modal sensor fusion, and generative AI — on a foundation of safety-critical embedded software engineering. Own the full lifecycle: data pipelines, model development in PyTorch/TensorFlow, evaluation, and deployment to AWS and edge hardware. Recent focus on LLM systems, including an agentic, access-controlled RAG platform served over MCP. Repeated record of shipping high-accuracy models in regulated environments (healthcare, DHS, DoD).

Clearances: U.S. Secret (previously held — Boeing/Dynetics) | DHS (previously held — CBP contract); eligible for reinstatement

EXPERIENCE

AI Metrics — Lead AI/ML Engineer

June 2025 – Present

- Led modernization of the company's core AI codebase — selected the target framework, designed the migration strategy, and improved segmentation Dice scores and regression R^2 over the legacy baseline.
- Cut required radiologist corrections by 20% through improvements to a production classification model, directly reducing clinical review burden.
- Architected AWS infrastructure for distributed hyperparameter tuning of segmentation and localization models on CT/MRI imaging data in a regulated healthcare environment.
- Built production preprocessing pipelines — normalization, augmentation, ROI extraction — across multi-modal medical datasets.
- Translated clinical and regulatory requirements into model acceptance criteria with physician and business stakeholders.

Analytical AI — Senior AI/ML Engineer

May 2023 – May 2025

- Designed and deployed a production computer-vision system (detection + model ensembling) for U.S. Customs and Border Protection that scored 98.9% on the government's technical challenge — the direct basis for a \$25M, 5-year production contract award.
- Led prototype development for two U.S. Air Force SBIR contracts (\$2.5M combined); both demos secured follow-on production deployments.
- Built a cloud-native AWS pipeline fusing multi-modal inputs — X-ray imagery, structured text, vehicle records — deployed for live government field trials.
- Owned the full model lifecycle, proof-of-concept through production, for vehicle-region segmentation paired with anomaly classification.
- Optimized object-detection models for real-time edge inference and AWS cloud training/evaluation across camera, X-ray, and CT modalities.
- Engineered a real-time sensor-fusion system integrating Intel depth cameras with radiation detectors for source-carrier attribution and tracking.
- Built explainability into the deployment pipeline (Grad-CAM, RISE, hierarchical occlusion) to validate model behavior and drive adoption by non-technical field operators.
- Implemented model versioning, performance monitoring, and CI/CD for production ML; mentored junior engineers on MLOps practices.

Boeing — Software Engineer, Advanced Development & Prototype Systems

Aug 2022 – May 2023

- Developed and verified mission-critical embedded algorithms for PAC-3 (Patriot) missile seeker systems in Ada, VHDL, and MATLAB.
- Owned requirements engineering, verification testing, and documentation in a safety-critical, highly regulated defense environment.

Dynetics — Computer Engineer III

Aug 2021 – Aug 2022

- Developed and tested VHDL for satellite communications systems; contributed to a hypersonic missile software program.
- Built a Kalman-filter-based control system in Python for a seeker testbed.

Mississippi State University — Graduate Research Assistant, Sensor Lab

Aug 2020 – Aug 2021

- Built CNN segmentation models in TensorFlow/Keras for autonomous-driving perception.
- Developed multi-modal sensor fusion (camera, LiDAR, depth) for ROS-based autonomous vehicle demonstrations.

PROJECTS

Secure Medical RAG Pipeline

github.com/sammcdsam/medical-rag-pipeline

Agentic, access-controlled, federated RAG over live PubMed — air-gap-capable, exposed over MCP · Python

- Built an agentic RAG loop (Claude) over 27K live PubMed abstracts (34K chunks) that decomposes multi-hop questions and reformulates its own queries — with the caller's clearance bound so the agent cannot escalate its own access, making retrieval resistant to prompt injection from retrieved text.
- Enforced need-to-know access control as a vector-store pre-filter (unauthorized documents never reach the model) with an append-only audit log; federated retrieval across governed silos with two-level authorization and provenance-tagged, distance-merged results.
- Exposed the access-controlled retriever as an MCP server callable from any MCP client with caller clearance still enforced; pluggable generation layer (Claude API or fully local Ollama, zero code change) for air-gapped deployment.
- Hand-built chunking, retrieval, and citation with no LLM framework, over local-GPU bge-small embeddings and ChromaDB; label-free eval harness (Precision@k, nDCG@k, LLM-judge faithfulness) used to reject a reranker that failed to beat the bi-encoder baseline, plus a pytest suite verifying access controls hold on the real index.

College Baseball Predictor

baseball.mcdevitt.page · github.com/sammcdsam/college-baseball-predictor

NCAA Division I win-probability and analytics platform, live in production all season · Python

- Stacked 12 heterogeneous models (Elo, Pythagorean, Poisson, LightGBM, XGBoost, neural, situational) with an XGBoost meta-ensemble — improved accuracy from 64.8% to 77.8% and Brier score from 0.231 to 0.155 on a 634-game replay cohort.
- Engineered leak-safe ML: provenance-tagged predictions (live vs. backfill), as-of feature hygiene, and strict chronological walk-forward retraining, with a canonical benchmark harness reporting accuracy, Brier, log loss, and calibration (ECE 0.112 → 0.058).
- Automated live-data ingestion from StatBroadcast, SIDEARM, and ESPN (runners, counts, live win probability) on scheduled pipelines, feeding a self-hosted Flask dashboard served through a Cloudflare Tunnel; closing-line-value tracking benchmarks every prediction against the market.

EDUCATION

Mississippi State University — M.S., Electrical & Computer Engineering

2020 – 2022 | GPA 3.80

Mississippi State University — B.S., Computer Engineering

2016 – 2020 | GPA 3.83

PUBLICATIONS

McDevitt S, et al. "Wearables for Biomechanical Performance Optimization and Risk Assessment in Industrial and Sports Applications." *Bioengineering* (Basel), 2022.

TECHNICAL SKILLS

AI/ML: PyTorch, TensorFlow/Keras, computer vision (object detection, segmentation, ensembling), anomaly detection, sensor fusion, transformers, explainable AI (Grad-CAM, RISE)

GenAI & RAG: LLMs, retrieval-augmented generation, agentic systems, MCP, embeddings & vector search (ChromaDB), LLM evaluation (Precision@k, nDCG, LLM-as-judge), prompt-injection defense, Claude API, Ollama

Cloud & MLOps: AWS (EC2, S3, SageMaker), Docker, CI/CD, model versioning & monitoring, FastAPI, GPU inference, edge & air-gapped deployment

Languages & Data: Python, C++, SQL, C, MATLAB; NumPy, Pandas, scikit-learn, OpenCV, ETL & data-pipeline design