



Brenton Mallen

Full-Stack Machine Learning Engineer

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◦ Education ◦

Florida Atlantic University

Ocean Engineering

Bachelor and Master of Science

Fall 2005 - Spring 2012

Focus on underwater acoustic digital image and signal processing

◦ Skills ◦

Generative AI

LLM integration, multi-agent systems, retrieval-augmented generation (RAG), tool use, conversational agents, vector databases

langchain, langgraph, ollama, qdrant

Machine Learning

Supervised & unsupervised learning, model evaluation & selection, model tuning, pipeline design, forecasting, modelOps

scikit-learn, xgboost, lightgbm, sktime, prophet, pytorch, tensorflow, keras, sentence-transformers, spacy, random forest, linear regression, svm, knn, k-means, neural networks, nlp

Data Science

Exploratory data analysis, feature engineering, data visualization, time series analysis, geospatial analysis

numpy, scikit-learn, pandas, polars, scipy, matplotlib, seaborn, statsmodels

Cloud

AWS, EC2, ECS, Lambda, DynamoDB, API Gateway, S3

Database Tools

Presto, PostgreSQL, Redis, Snowflake, DynamoDB, NoSQL, MariaDB, Minio, MongoDB

Languages

SQL, Python

Summary

Full-stack ML engineer with a foundation in ocean engineering, delivering end-to-end intelligent systems—from infrastructure architecture, data pipelines, and rigorous modeling, through research and system development, to robust, scalable deployment.

Experience

Capital One

Senior Machine Learning Engineer

Oct 2022 - Present

Driving ML and AI innovation to deliver insights and optimize Snowflake warehouse performance, workload management, and cost efficiency. Led research into query classification, similarity analysis, and workload profiling using techniques from signal processing, traditional ML, and generative AI. Built forecasting models for warehouse usage to support cost projection and anomaly detection. Prototyped native ML workflows with Snowpark to evaluate in-warehouse model deployment. Delivered a scalable, serverless microservice that predicts query cost and performance under varying warehouse configurations. Collaborated closely with cross-functional teams, leadership, and product to ensure alignment, transparency, and delivery of sustainable, high-impact solutions.

Ethica

Senior Machine Learning Engineer

Sep 2021 - Oct 2022

Sole ML hire responsible for architecting, designing, and building a privacy-focused PII detection and classification system from the ground up. Developed a database-centric framework—deployable via API, CLI, or Python module—that leveraged both table content and contextual metadata for multi-perspective entity classification. Collaborated closely with stakeholders to define requirements, prioritize features, and deliver incremental progress on a core product in a highly regulated domain.

DTN

Senior Machine Learning Engineer

Nov 2020 - Sep 2021

Technical lead and product owner for a team of three engineers; developed data science dashboards with Streamlit, managed automated data pipelines using Apache Airflow integrated with AWS and Slack, and built internal tools for data exploration and cataloging. Explored innovative applications—including weather impact forecasting, satellite imagery for crop yield prediction, and enhancing weather models via Super Resolution neural networks—through multiple internal hackathons.

SharpestMinds

Data Science Mentor

Nov 2020 - Aug 2022

Created and delivered a structured mentorship program guiding mentees through the full ML lifecycle—from ideation, data engineering, modeling, and deployment, to API-driven product development. Facilitated mock interviews, professional presentations, and provided continued support during mentees' job search and early career stages.

▫ Publications & Presentations ▫

Exploring Model Development and Deployment in Snowflake

Snowflake Summit 25

Global Botnet Detector

PyData NYC 2015

Proud Elastic Target Discrimination Using Low- Frequency Sonar Signatures

U.S. Navy Journal of Underwater Acoustics

Experience

● Syngenta

Senior Data Scientist

Feb 2019 - Nov 2020

Architected and developed a serverless, event-driven pipeline leveraging AWS Lambda to retrieve raw satellite imagery, extract areas of interest, and rapidly process images into Cloud-Optimized GeoTIFFs (COGs) within 30 seconds, including custom GDAL recompilation for optimal performance. Conducted foundational research in crop-type detection utilizing convolutional and recurrent neural networks. Regularly collaborated with key external customers to align product interfaces, prioritize feature development, and communicate strategic direction.

● Distil Networks

Data Scientist

May 2015 - Nov 2018

Pioneered real-time and batch ML systems for detecting malicious web traffic. Conducted R&D on large datasets, advancing state-of-the-art bot detection and mitigation. Built robust microservices, internal tooling, and CI/CD pipelines. Communicated complex research insights to technical and non-technical business stakeholders. Championed agile culture initiatives to foster trust and collaboration across engineering teams and leadership.