Brenton Mallen

Full-Stack Machine Learning Engineer

📞 (561) 376-6580   @ brentonmallen1@gmail.com   🔗 https://brentonmallen.com

○ Skills ○

Generative AI

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

FastMCP, LangChain, LangGraph, Ollama, OpenAI, qdrant

Machine Learning

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

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

Data Science

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

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

Cloud

Serverless compute and data pipelines, container orchestration, event-driven architectures, scalable API and microservice deployment

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

Database & Data Engineering

Scalable ETL/ELT pipelines, batch & real-time streaming, data modeling & governance, orchestration & scheduling, operational monitoring

Apache Airflow, MariaDB, Minio, MongoDB, NoSQL, PostgreSQL, Presto, Redis, Snowflake

Software Development

Dependency & environment management, CI/CD pipelines, code quality enforcement, automated testing, containerization & orchestration

conda, docker, docker compose, fastapi, flask, git, github actions, jenkins, pipenv, pixi, pre-commit, pyright, pytest, python, ruff, sql, terraform, virtualenv

○ 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

○ Education ○

Florida Atlantic University
Ocean Engineering
Bachelor and Master of Science
Fall 2005 - Spring 2012

Focused on underwater acoustic digital image and signal processing for object detection and classification

Summary

Full-stack ML engineer with an eclectic background that brings a broad, multi-domain perspective to machine learning and AI-driven products. I architect intelligent systems from research through deployment, translating complex analysis into actionable product and business impact, and delivering scalable solutions that drive real-world value.

Experience

Capital One
Senior Machine Learning Engineer
Oct 2022 - Present

- Driving ML and AI integration into established products to deliver actionable insights for optimizing Snowflake warehouse performance, workload management, and cost efficiency.
- Led research on query classification, similarity detection, and workload profiling using techniques from signal processing, traditional ML, and generative AI.
- Developed and deployed forecasting models for warehouse usage to enable cost projection and anomaly detection.
- Prototyped native ML workflows using Snowpark to evaluate in-warehouse model development, deployment, and management.
- Delivered a scalable, serverless microservice that predicts query cost and performance across configuration scenarios.
- Operating within a highly regulated, security-restricted environment—navigating architectural constraints, compliance boundaries, and access controls to deliver robust, production-ready solutions.
- Partnered with cross-functional teams, leadership, and product to ensure alignment, transparency, and delivery of high-impact, sustainable solutions.

Ethyca
Senior Machine Learning Engineer
Sep 2021 - Oct 2022

- First and only ML engineer at a fast-moving startup, responsible for 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 iterate on a core product.

DTN
Senior Machine Learning Engineer
Nov 2020 - Sep 2021

- Served as technical lead and product owner for a team of three engineers.
- Developed internal data science dashboards using Streamlit, managed automated data pipelines via Apache Airflow with AWS and Slack integrations, and built tooling to support data exploration and cataloging.
- Led R&D efforts exploring weather impact forecasting, satellite imagery for crop yield prediction, and the use of Super Resolution neural networks to enhance weather models.

SharpestMinds
Data Science Mentor
Nov 2020 - Aug 2022

- Created and led a structured mentorship program guiding mentees through the full ML lifecycle - from ideation and data engineering to modeling, deployment, and API-based product delivery.
- Facilitated mock interviews, technical presentations, and provided ongoing support through job searches and early career transitions.

Syngenta
Senior Data Scientist
Feb 2019 - Nov 2020

- Architected and developed a serverless, event-driven pipeline using AWS Lambda to retrieve raw satellite imagery, extract areas of interest, and convert outputs into Cloud-Optimized GeoTIFFs (COGs) within 30 seconds - including custom GDAL recompilation for performance tuning.
- Conducted applied research in crop-type detection using convolutional and recurrent neural networks.
- Regularly interfaced with key external customers to align on product integration, prioritize 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 at scale.
- Led R&D on large-scale datasets to advance state-of-the-art bot detection and mitigation techniques.
- Built and deployed production-grade microservices, internal tooling, and CI/CD pipelines to support model deployment and integration.
- Translated complex research findings into actionable insights for both technical and non-technical stakeholders.
- Championed agile culture initiatives to build trust and improve collaboration across engineering and leadership.