



# 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**

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

## ◦ 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, NoSQL, MariaDB, Minio, MongoDB

### Languages

SQL, Python

## ◦ 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

## 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 forecasting models for warehouse usage to enable cost projection and anomaly detection.
- Prototyped native ML workflows using Snowpark to evaluate in-warehouse model deployment.
- 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 through internal hackathons, exploring applications such as 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 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.