Connor **Reed**

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Professional Experience

Aquabyte — *New York, NY*

Senior Machine Learning Engineer — *December 2024 – present*

Machine Learning Engineer — *June 2022 – December 2024*

- Developed PyTorch model ensemble (combining YOLOv9, DinoV2, and a bespoke neural field with transformers) to detect sea lice on salmon from underwater imagery with expert-level accuracy; optimized with TensorRT
- Developed multivariate time series forecasting model with graph features using LightGBM to predict future lice levels and enable customers to simulate the impacts of future interventions
- Design Python libraries to package models; deploy models as web services in AWS using FastAPI, Docker, and Terraform
- Built network of microservices using FastAPI, PostgreSQL, Docker, and Terraform in AWS to integrate diverse model servers into production data pipeline and optimize throughput, scaling inferences from tens to hundreds of thousands of images per day
- Developed and automated ETL processes using Python, Pydantic, and Airflow, e.g., to aggregate model inferences into customer-facing data, evaluate model accuracy over time, and move data between databases
- Conduct A/B tests and statistical simulations to estimate effects of new models and research proposals on company objectives
- Serve on company's ESG committee; wrote report for investor on the company's impact, responsibilities, and plans to advance sustainable aquaculture in the wider industry, establishing internal ESG objectives

Indigo — *Boston, MA*

Soil Data Research Intern, Carbon Experimentation — *June – August 2021*

- Crafted quantitative framework, analysis, and data visualizations used by the CEO to evaluate risk-reward tradeoffs of key agricultural carbon market opportunities
- Developed generative Bayesian models to create synthetic soil data combining information from published and proprietary data
- Created pipeline to automatically clean, map, and interpret soil sample data for customers

Research Experience

New York University, Department of Environmental Studies — *New York, NY*

Graduate Research Assistant, McDermid Lab — *July 2020 – September 2022*

- Developed end-to-end deep learning pipeline to detect floods and smallholder croplands in Sentinel-1 and Sentinel-2 satellite image time series over sub-Saharan Africa
- Conducted geospatial time series analysis using econometric modeling techniques to assess the impact of floods on food security in sub-Saharan Africa from 2009-2020 [1]

Yale School of the Environment — *New Haven, CT*

Research Assistant, The Bradford Lab — *January 2016 – August 2020*

- Assisted with field and laboratory data collection for experiments studying the ecological function, formation, and rapid measurement of soil organic carbon
- Conducted meta-analysis (data collection, statistical analysis) of long-term experiments to quantify the mediating effect of soil organic carbon on the relationship between conservation agriculture practices and crop yield stability

Publications

[1] **C. Reed** *et al.*, "The impact of flooding on food security across Africa," *Proceedings of the National Academy of Sciences*, vol. 119, no. 43, p. e2119399119, 2022, doi: 10.1073/pnas.2119399119.

Education

New York University — *New York, NY*

Master of Science, Data Science — *2020 – 2022*

Yale University — *New Haven, CT*

Bachelor of Science, Environmental Studies *with distinction, cum laude* — *2015 – 2019*

Skills

Programming	Python, R, SQL, Bash
ML Tools	PyTorch(Lightning), scikit-learn, NumPy, pandas, experiment tracking (Hydra, Guild AI, W&B), ONNX, TensorRT
Databases	PostgreSQL, Snowflake
DevOps	Git, Docker, Terraform, dbt, Airflow, AWS
Statistics	Machine learning, deep learning, computer vision, time series, geospatial, probabilistic models, Bayesian inference, hypothesis testing, A/B testing, structural causal models, generative models
Other	Research, writing, public speaking, food systems, ecology, food security, climate change, music (bass)