Matt McManus

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Citizenship: U.S Citizen | **Location:** New York, NY

Summary

ML Engineer with proven experience leading AI/ML initiatives at Bridgewater Associates. Deep expertise in large language models, reinforcement learning, and quantitative finance. Skilled at developing proprietary AI models for systematic investment strategies and building scalable infrastructure. Adept at deploying ML systems managing $150B+ AUM through innovative research and robust model development.

Education

Massachusetts Institute of Technology Cambridge, MA
Master of Engineering in Computer Science, GPA: 5.0/5.0 *Aug. 2023 - Jun. 2024*

- Thesis: Inertial Navigation System Drift Reduction Using Scientific Machine Learning
- Research: LLM-Driven Macro Forecasting, Reinforcement Learning for LLMs, Scientific ML

Bachelor of Science in Computer Science *Sep. 2019 - Feb. 2024*

- Activities: MIT Varsity Squash, Phi Kappa Theta, MIT Pokerbots President, MIT Bitcoin Club, HKN Tutor

Experience

Bridgewater Associates New York, NY
ML Engineer / Research Scientist - AIA Labs *Sept. 2024 - Present*

- Lead development of proprietary AI models for macro-investing, leveraging **LLMs** and **reinforcement learning**
- Built "no-peek" data-windowing pipeline keyed to news_end_date, speeding thematic analysis **4x**
- Developing transformer now-casting models blending alt-data with market signals; cut GDP-RMSE **15%**
- Collaborate with Daniel Kang to benchmark internal temporal search system for **$150B+ AUM**

Investment Engineer Intern *Jun. 2023 - Aug. 2023*

- Developed quantitative models for systematic investment strategies using **Python** and **Julia**, improving portfolio Sharpe ratio by **15%** and reducing maximum drawdown by **20%**
- Conducted research on alternative data sources including **NLP** sentiment analysis, generating **3** new alpha signals with information ratios exceeding **0.8**

Two Sigma New York, NY
Quantitative Research (Part-time) *Jan. 2023 - Jun. 2024*

- Conducted fast-cycle experiments on **factor discovery** and **regime detection** for systematic trading
- Developed ML models for alternative data analysis and signal generation, improving alpha decay by **30%**

MIT Julia Lab Cambridge, MA
Research Assistant *Sep. 2022 - May 2024*

- Developed physics-informed **neural-ODE** framework reducing navigation drift by **60%** in GPS-denied environments

Delphi Digital Cambridge, MA
Quantitative Analyst *May 2022 - Aug. 2022*

- Created risk framework for new DeFi protocol, analyzing statistical and **ML techniques** for quantitative risk assessment
- Researched methods to optimize decentralized finance risk parameters using **Python** and data analysis

Projects & Research

Scientific ML for INS - Developed neural-ODE methodology reducing navigation drift by **60%** using physics-informed ML
Multi-Agent RL - Built cyber security simulator for agents learning via **reinforcement learning** and implicit communication
Deep Network Interpolation - Created novel algorithm outperforming current models for low-complexity DNN solutions

Technical Skills

Programming: Python, Julia, C++, Scala, Java, Go, SQL/Spark, JavaScript, R
ML/AI: PyTorch, TensorFlow, JAX, Hugging Face, Transformers, Reinforcement Learning, Scientific ML, XGBoost
Infrastructure: AWS, Docker, Kubernetes, Git, CI/CD, MLflow, Spark, Redis, PostgreSQL
Finance: Quantitative Research, Factor Models, Backtesting, Risk Management, Market Microstructure

Leadership & Achievements

MIT Pokerbots President: Led 7-person team running AI poker competition for **250+** students, secured **$100k+** sponsorships
MIT Varsity Squash: Achieved National Team Ranking of **16th** in U.S. (2023-2024), 4-year starter
Publications: Evaluating GPT-3 Performance in Cybersecurity Scenarios - Computers & Security Journal
Honors: MIT Pokerbots 1st Place, HackMIT Award Winner, Summa Cum Laude