# Matt McManus

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## EXPERIENCE

**Bridgewater Associates** **New York, NY**

*ML Engineer / Research Scientist - AIA Labs (Sept. 2024 - Present)*

- Lead development of proprietary AI models for macro-investing using large language models and reinforcement learning
- Build and scale quantitative research infrastructure for factor discovery and regime detection in financial markets
- Research LLM-driven macro forecasting and scientific machine learning applications in finance
- Collaborate with senior researchers to deploy ML systems managing $150B+ AUM
- Promoted within 6 months due to exceptional quantitative research and AI expertise

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

- Developed quantitative models for systematic investment strategies using machine learning techniques
- Conducted research on alternative data sources and signal generation for portfolio optimization

**Quantitative Research (Part-time)** **2023 – 2024**

*Two Sigma* *New York, NY*

- Conducted fast-cycle experiments on factor discovery and regime detection for systematic trading strategies
- Developed machine learning models for alternative data analysis and signal generation
- Built automated backtesting framework for evaluating quantitative investment strategies

**Research Assistant** **2022 – 2024**

*MIT Julia Lab* *Cambridge, MA*

- Developed physics-informed neural-ODE framework reducing inertial-navigation drift by 60% in GPS-denied settings
- Published master's thesis on "Inertial Navigation System Drift Reduction Using Scientific Machine Learning"

**Quantitative Analyst** **May 2022 – Aug. 2022**

*Delphi Digital* *New York, NY*

- Conducted quantitative analysis of cryptocurrency markets and DeFi protocols using Python and SQL
- Built automated trading strategies and backtesting frameworks for digital asset portfolios

**President** **2023 – 2024**

*MIT Pokerbots* *Cambridge, MA*

- Led autonomous poker competition for 250+ students, organizing industry partnerships and mentorship programs
- Managed competition logistics, judge recruitment, and technical infrastructure for AI poker tournaments

## EDUCATION

**Massachusetts Institute of Technology** **Cambridge, MA**

*Master of Engineering, Computer Science; GPA: 5.0/5.0* *Aug. 2023 - Jun. 2024*

**Thesis:** "Inertial Navigation System Drift Reduction Using Scientific Machine Learning"

**Massachusetts Institute of Technology** **Cambridge, MA**

*Bachelor of Science, Mathematics & Computer Science* *Sep. 2019 - Feb. 2024*

**Activities:** Phi Kappa Theta, MIT Pokerbots President, MITHack, MIT Squash Team

## PROJECTS & RESEARCH

**Physics-Informed Navigation System** **2024**

Neural-ODE framework achieving 60% reduction in inertial navigation drift for GPS-denied settings

**LLM-Driven Macro Forecasting** **2024**

Research on applying large language models to economic forecasting, achieving 25% improvement in accuracy

**GPT-3 Cybersecurity Evaluation** **2023**

Single-authored research evaluating GPT-3 performance in simulated cybersecurity scenarios

## TECHNICAL SKILLS

**Programming:** Python, Julia, C++, SQL, JavaScript, R, Scala, Java, Go

**ML/AI:** PyTorch, TensorFlow, JAX, Transformers, Scientific ML, Reinforcement Learning, Hugging Face, XGBoost, MLflow

**Finance:** Quantitative Research, Factor Models, Backtesting, Regime Detection

**Infrastructure:** AWS, Git, Docker, Linux, Scientific Computing, High-Performance Computing

## LEADERSHIP & ACHIEVEMENTS

**Leadership:** MIT Pokerbots President (2023-2024), organized competition for 250+ students

**Athletics:** MIT Varsity Squash Team member, competed in NESCAC and national tournaments

**Publications:** Evaluating GPT-3 Performance in Cybersecurity Scenarios - Computers & Security Journal

**Honors:** MIT Pokerbots Competition 1st Place, HackMIT Award Winner, Phi Kappa Theta member