Michael Tesfaye

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EDUCATION

University of Pennsylvania - Jerome Fisher Program in Management and Technology (M&T) **Philadelphia, PA**

- B.S.E in Computer Science; B.S. in Economics (conc. Finance and Statistics) May 2026
- Relevant coursework: Discrete Math*, Theoretical ML†, OS†, Distributed Systems†, Computer Architecture†, Stochastic Processes, Mathematical Statistics, Convex Optimization, Financial Derivatives * *TA*; † *Graduate/PhD*

EXPERIENCE

Jane Street Capital **May 2025–August 2025**

Quantitative Trading Intern New York, NY

- Fixed Income: modeled adversity in bond RFQ auctions, identifying systematic risk in quote-response dynamics.
- Commodities: developed natural gas basis future hedging models and shipped a production notebook generating daily historical hedged-return datasets used by traders in live research.
- Developed algorithmic trading systems across multiple exchange scenarios.

Amazon Web Services **Jun 2023–Aug 2023**

Software Development Engineering Intern Seattle, WA

- Architected a Java data-pipeline (SNS → SQS → Fargate → S3) that exports Procore construction-management data for 10k projects on a 12 hour cadence; designed for fault tolerance and idempotency, pipeline runs unattended in prod.

RESEARCH

Diffusion Factor Models for Portfolio Construction **April 2026**

ICLR Workshop (Time Series in the Age of Large Models) - Accepted Rio de Janeiro, Brazil

- Trained conditional diffusion models on large-scale equity datasets to estimate the full return distributions conditioned on firm-characteristic factors.
- Constructed portfolios from predicted conditional moments; identified a bias-variance tradeoff in factor dimensionality with intermediate factor sets achieving the best out-of-sample portfolio performance.

TECHNICAL PROJECTS

Kalshi Market Making **Aug 2025–present**

University of Pennsylvania (Team of 5) Philadelphia, PA

- Building semi-systematic market-making strategies for prediction markets (Kalshi and Polymarket); developed real-time order-book ingestion pricing engine, and automated execution infrastructure.
- Implemented statistical models for event-probability estimation and inventory risk management.

CIS 5050: Software Systems **Aug 2025–Dec 2025**

University of Pennsylvania (Team of 4) Philadelphia, PA

- Built a distributed KV-store–backed cloud system in C++ with stateless frontends, replication-based fault tolerance, checkpointing, and coordinator-driven failover.
- Developed multithreaded HTTP/1.1 server with persistent connections, cookies, and load balancing supporting webmail and cloud storage services.

CIS 5480: Operating Systems **Jan 2025–May 2025**

University of Pennsylvania (Team of 4) Philadelphia, PA

- Implemented a UNIX-like OS in C: FCFS priority scheduler, FAT-based virtual filesystem, system calls, shell with piping and job control, and pthreads-based process emulation.

SKILLS

Languages: Python, C, C++, Rust, Java, SQL, SystemVerilog

Framework and Dev Tools: NumPy, pandas, scikit-learn, PyTorch, Git, AWS, Docker

Quant finance: Fixed income, derivatives, factor models, portfolio construction, market microstructure, risk management

Concepts: diffusion models, machine learning, distributed systems