ARYAN SINHA

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EDUCATION

Northeastern University, Boston, MA Expected May 2027

BSCmpe Computer Engineering & Computer Science; Minors: Business Administration, Computational Data Analytics

Major GPA - 3.4

Relevant Coursework: Data Structures, Differential Equations, Probability & Statistics, Embedded Systems, Robotics, Financial Accounting, Machine Learning (Level 5/Graduate Level), Finance, Discrete Structures

Leadership & Activities: NU Systematic Alpha (Quant Researcher), NU Disrupt (Quant Team), Poker Club, Putnam Club, Actuary Club, Pacer – Charles River Marathon, Run Club, Triathlon Aspirant

Experience: Teaching Assistant – Differential Equations (Fall 2025), and Calculus I (Fall 2024, Spring 2025)

Certifications: CME Trading Challenge(Final 100), SIE Exam Candidate (October 2025), CFA Level I Candidate (Feb 2026), Bloomberg Market Concepts, Bloomberg Finance Fundamentals, Bloomberg Spreadsheet Analysis, AKUNA Options 101, AmplifyMe Mergers and Acquisitons, AmplifyMe Finance Accelerator, Finance and Quantitative Modelling for Analysts, Pricing Options with Mathematical Models, Introduction to Trading, GCP, and Machine Learning

TECHNICAL SKILLS

Languages: Python, C++, JavaScript, SQL, R, Excel(Advanced), Bloomberg Query Language (BQL)

Libraries/Frameworks: NumPy, Pandas, Statsmodels, Scikit-learn, QuantLib, Matplotlib, PyTorch, TensorFlow

EXPERIENCE

Ogilvy, New York — AI/ML Analytics Intern (Remote) June 2025 – August 2025

- Built and deployed **machine learning pipelines** in Python (NLP, regression, classification) to analyze multi-platform **marketing campaign datasets** at scale.
- Optimized **predictive models** for client engagement and ad effectiveness, improving forecast accuracy and cutting manual reporting cycles.
- Engineered automated **analytics dashboards** with reproducible workflows, boosting reporting efficiency by **20%** and enabling faster cross-team insights for campaign strategy.

Project Lead — NU Disrupt Quant Team September 2025 – December 2025

- Leading a **15+ member quant research team** with faculty collaboration, driving development of optimization algorithms for large-scale financial networks.
- Investigating applications to **market microstructure, liquidity routing, and systemic risk**, with scalability to **10M+ data points**.
- Launching Northeastern's first **Quant Trading Competition (100+ participants)**, designing challenges in **options market making, stat-arb, and portfolio optimization**.

PROJECTS

EM Sovereign & FX Signal Library (Backtested Prototype) *Python (pandas/NumPy), scikit-learn, XGBoost, TensorFlow*

- Built a **portfolio of systematic signals** for EM **sovereign rates & FX** (carry, momentum, curve slope/roll, balance-of-payments & inflation features) with **feature stores** and reusable pipelines.
- Trained gradient boosting and shallow NN models with **walk-forward** CV, **PIT data**, liquidity/turnover gates, and transaction-cost/slippage modeling; added **PnL attribution** and **live-vs-model drift** monitors.
- *Outcome:* Backtests (2013–2024) show **Sharpe 1.1–1.3 pre-cost (0.8–1.0 post)**, **max DD 6–9%**, **turnover $\leq$ 30%/mo**; diversified across **local vs. hard-currency** exposures with low correlation to single-factor carry.

Unsupervised Momentum–Cluster Portfolio (End-to-End Prototype) *Python (pandas/NumPy), scikit-learn, yfinance*

- Built a monthly research pipeline on **S&P 500** (top 150 by liquidity): engineered features (**Garman–Klass** vol, RSI, Bollinger Bands, ATR, MACD, Dollar Volume) and computed **1/3/6/12m** forward returns with rolling **FF5** betas.
- Ran **K-Means** each month to form behavior clusters and selected a **momentum cluster**; translated to a **Max-Sharpe** portfolio with weight/sector neutrality, **transaction-cost** modeling, and **turnover** caps.
- Implemented **walk-forward** evaluation, **PnL attribution** (cluster & FF5), and **live–vs–model drift** monitors; *Outcome:* **Cumulative = 1.76× (+76.2%)** vs **SPY = 1.99× (+99.2%)**, **CAGR = 11.8%** vs **14.6%** over 2019-03-06 to 2024-03-28.

Liquidity Regimes & EM Risk Pricing (Independent Research) *Python, state-space models*

- Constructed a **Liquidity Index** (CB balance sheets, repo/FX basis, vol indices) to explain **time-varying betas** of EM sovereigns and EMFX to global risk factors.
- Used **Kalman/rolling** models for regime detection; stress-tested with out-of-sample windows and bootstrap resampling; validated **PnL explain** vs. carry/momentum sleeves.
- *Outcome:* Liquidity shocks **explain 20–32%** of excess-return variance in stress regimes; findings guide **leverage caps**, **stop-outs**, and **signal throttles** during outflows.