Vineel Pentrala

New York, NY | vineelpentrala@gmail.com | (201)442-1689 | vineelp.com | LinkedIn

Education

Stevens Institute of Technology, M.S. in Financial Engineering *(GPA: 3.58)* Dec 2025
Mahindra University, B.Tech. in Computer Science and Engineering Jul 2024

Skills

Languages & Tools: Python (pandas, NumPy, SciPy, CVXPY), C++17, R, SQL (Postgres, PL/SQL), TypeScript, Bash, Git
Markets & Quant: microstructure, order books, regime detection, Monte Carlo, options pricing, portfolio optimization

Experience

Software Engineer Intern, Fund Flow OS Jun 2026 – Present

- Automated scheduled report generation and document extraction for an investor-management platform by integrating LLMs (Gemini, Claude) into production workflows.

Financial Engineer, RENNOD LLC (Consultant) Mar 2026 – Apr 2026

- Built a Python application on the Interactive Brokers (IBKR) API that tracked portfolio positions and computed real-time portfolio metrics and PnL, with order submission.
- Engineered pre-market data pipelines transforming raw options data into research-ready datasets with derived metrics: rate-of-change, gross notional exposure, and signal-to-noise indicators.

Research Fellow, Stevens Institute of Technology Apr 2025 – Aug 2025

- Funded fellowship researching automated market makers under Profs. Florescu and Feinstein; debugged and upgraded FIX/QuickFIX connectivity for the SHIFT academic HFT simulator and authored its official technical documentation for future developers.

Software Engineer Intern, Cantor Fitzgerald — Hyderabad, India Jan 2024 – Jul 2024

- Developed and maintained relational database components in Oracle — PL/SQL packages, stored procedures, functions, and tables — supporting regulatory and management reporting; automated recurring jobs in Bash.
- Migrated 25+ PL/SQL reports to XML Publisher and upgraded and regression-tested 110+ reports, streamlining regulatory and management reporting workflows.

Projects

Quantitative Wealth and Investment Management — Bank of America

- Implemented a Persistent Homology Turbulence Index (Baitinger & Flegel, 2021): Vietoris–Rips persistence diagrams on 60-day rolling windows of Fama-French 10-industry daily returns, with Wasserstein distances between consecutive diagrams as the daily turbulence signal.
- Mapped month-end quintile regimes to three SPY/T-bill exposure policies; out of sample (1998–2020) the flexible-exposure overlay cut max drawdown from -50.8% to -21.3% and halved volatility (7.7% vs. 15.5%), beating a covariance-based turbulence index (-33.4%).

Limit Order Book Engine — C++17

- Built a single-symbol limit order book in C++17 with price-time (FIFO) priority that replays add/cancel/execute market-data messages, processing 4M messages/sec at 180ns median and 490ns p99 latency.
- Wrote a test harness: a synthetic feed generator stressing partial cancels, over-cancels, and invalid IDs, plus a consistency checker that independently recomputes every price level against the order index.

Prediction Market Pricing Model (Kalshi) — Python

- Built a pricing engine for a live 19-contract prediction market; used leave-one-out model selection and 200K Monte Carlo simulations to estimate outcome probabilities.
- Integrated live order books, fees, spreads, volume, and open interest to identify 12 trading opportunities with up to 29.6¢ net edge; 10 of 12 predictions moved toward the model's fair values over the following 14 days.

Activities

- 1st among Stevens graduate students in the CME Trading Challenge 2024.
- Standardized test scores: GRE Quant 170/170; JEE-Main 95th percentile.
- Founder, Hurricane Programming Club, Mahindra University — led a team of 6 serving 200+ students; partnered with CodeChef and USACO.
- **Interests:** WRC Generations (Top 100 worldwide), Grade 8 Plectrum Guitar (Trinity), Pool