

# Vineel Pentrala

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## Education

<b>Stevens Institute of Technology</b> , M.S. in Financial Engineering	Expected Dec 2025
• <b>Coursework:</b> Pricing & Hedging, Market Microstructure & Trading Strategies, Stochastic Calculus, Computational Methods in Finance, Portfolio Theory, Optimization Models in Quant Finance	
<b>Mahindra University</b> , B.Tech. in Computer Science and Engineering	2020 – 2024
• <b>Coursework:</b> High Performance Computing, Algorithms, Machine Learning, Databases, Optimization	

## Skills & Certificates

**Technical:** C++, Python, R, Oracle SQL, Bash, Git, Bloomberg Terminal  
**Certificates:** Bloomberg Market Concepts, CME: Intro to Futures, CME: Intro to SOFR, CFA AmplifyMe Challenge  
**Languages:** English, Telugu, Hindi, French (conversational)

# Experience

**Research Fellow**, Stevens Institute of Technology Apr 2025 - Aug 2025

- Received a funded fellowship to pursue research on automated market makers (AMMs) under Professors Ionut Florescu and Zachary Feinstein.
- AMMs / Tokenization: Designed a feasibility and risk framework for tokenizing illiquid TradFi assets, mapping custody flows, market design constraints, oracle/latency failure modes, and regulatory touchpoints.
- SHIFT HFT Simulation: Debugged and upgraded FIX/QuickFIX connectivity for an in-house HFT simulator, unblocking version upgrades and improving stability; authored official technical documentation for future devs.

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

- Built PL/SQL packages, functions, and database tables and automated recurring back-office tasks with Bash, reducing manual report handling and operational errors.
- Migrated 25+ PL/SQL reports to XML Publisher and upgraded/tested 110+ reports, streamlining regulatory and management reporting workflows.
- Optimized reporting scripts and backup routines to handle growing data volumes, improving reliability and reducing run-time for key reports.

## Projects

Quantitative Wealth and Investment Management - Bank of America

- Researching market-regime detection using LLMs and Topological Data Analysis; implementing Persistent Homology Turbulence Index (PHTI) in Python/R and benchmarking against the classic Turbulence Index.
  - Building an R Shiny dashboard and unified API that ingest market data, compute features, and run multiple regime-switching and forecasting models for live monitoring and comparison.

## Empirical Analysis of TSLA Microstructure Data

- Modeled nanosecond tick-level data in Python to estimate liquidity, volatility, and PIN; profiled session effects (pre-market, auction, after-hours) via quoted/effective/realized spreads.
  - Ran event studies on block trades and price jumps, measuring impacts on spreads, depth, and order-imbalance dynamics.

## Activities

- Founder of Hurricane Programming Club at Mahindra University - Managed a group of 6 students to conduct activities for 200+ of students. Formed an official partnership with CodeChef and USACO.
  - 1st among Stevens graduate students in CME Trading Challenge 2024.
  - Standardized test scores: GRE Quant 170/170; JEE-Main 95th percentile.
  - **Interests:** 8th grade plectrum guitar (Trinity), WRC Generations (Top 100 worldwide), Pool