Aditya Dhanraj

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Education

University of Texas at Austin — Austin, TX

Bachelor of Science in Computer Science — *May 2028*

- SAT: 1580 | Walnut Grove High School's Inaugural Salutatorian (4.0 GPA)
- UFA (Investment Associate), UTexas Energy (Commodities Prep Member), ML & Data Science, UTPC, ACM, ABSA
- Multivariable & Vector Calculus, Prob. & Stats., LinAlg, Microeconomics, Data Structures, Software Engineering

2025 Invite-Only Early Talent & Insight Programs

- **Citadel** – The Fixed Income & Macro Challenge (NY)
- **Walmart** – Spring Sophomore Summit: SWE II Intern (AR)
- **Point72** – Academy Spring Sessions
- **UBS** – Tomorrow's Talent Equity Research Insights Day (NY)
- **ServiceNow** – Discover Program – Engineering (CA)
- **Susquehanna Intl. Group** – First-Year Discovery Day

Experience

Founding Engineer — July 2025 – Present

Xsauce Inc. — Node.js, TypeScript, Python, AWS, Docker, Redis, DynamoDB, Express, Prometheus — *Remote*

- Designing and implementing scalable backend infra for Wage, a pre-launch gaming platform, including event-driven microservices and APIs, Redis-based caching, and real-time financial data ingestion and analytics pipelines

Undergraduate Research Assistant — Jan. 2025 – July 2025

UT Austin — Python, Statistical Modeling, NumPy, Pandas, Time-Series, Bloomberg Terminal — *Austin, TX*

- Analyzed daily time-series data for over 80 indices, developed a VIX Term Structure, and built a commodities forecasting model in Python to forecast price movements and model market volatility alongside Dr. Travis Johnson

Executive Board Member — July 2023 – Aug. 2024

Computer Science Youth of America — Python, Event Coordination, Public Relations — *Remote*

- Supplied free Computer Science education to over 950 students, helped build a research program, coordinated hackathons with hundreds of participants, and raised over $285,000 in sponsorships

Projects

MacroDynamiX — *Python, Machine Learning, Statistical Modeling, Time-Series, Macro* — Apr. 2025 – Sept. 2025

- Engineered a modular data pipeline to process 120+ monthly macro indicators (1959 - Present) from FRED
- Constructed a stacked ensemble regression model to predict S&P 500 monthly returns via features like a custom Market Health Index (MHI) and achieve up to 78% R^2, 87.7% directional accuracy, 1.63 MAE, and 2.13 RMSE
- Developed a regime classification framework to model the macro environment and segment market conditions into interpretable clusters with distinct return, volatility, and drawdown profiles (max drawdowns ranging from 11%-50%)

EchoAlpha — *Python, NumPy, Pandas, NLP, BeautifulSoup, Equities* — July 2025 – Aug. 2025

- Constructed a systematic trading pipeline to parse inconsistent SEC 10-Q filings using BeautifulSoup, extract NLP-based sentiment from MD&A sections with VADER, and refine classification via polarity ratios and risk proxies
- Backtested contrarian long/short equity signals with configurable entry lags, holding periods, and transaction cost assumptions (current configurations yield Sharpe ratios up to 0.51 and 67% win rate)

Computational Stock Model — *Stochastic Modeling, Mathematica, Equities* — Jan. 2025 – June 2025

- Joined Dr. Thaleia Zariphopoulou in utilizing Mathematica and stochastic processes to compute an expression involving the Moment Generating Function (MGF) for modeling the drift and volatility of stock prices

Dynamic Memory Allocator — *C, Memory Management, Systems Programming, Bitwise Ops, GDB* — Feb. 2025

- Implemented a malloc/free-style allocator from scratch with 16-byte alignment, explicit free lists, binning, bitwise metadata, block coalescing/splitting, and heap design for efficient low-level memory management
- Achieved 100% correctness across 24 traces and averaged 70% memory utilization and 1900 ops/sec throughput

Skills & Interests

Finance: Market Research, Macro, Trading, Equities, Valuation, Fixed Income, Commodities, Options, Bloomberg

Computer Science: Python, Machine Learning, NLP, Java, R, C, HTML/CSS/JS, TypeScript, Node.js, AWS, DynamoDB, NumPy, Pandas, SKLearn, PySpark, TensorFlow, Hadoop, Linux, Mathematica, GDB, Docker, BeautifulSoup

Mathematics: Time-Series Analysis, Statistical Modeling, Probability & Statistics, Linear Algebra, Stochastic Processes

Other: Spanish, Hindi, Piano (15 Years, 5× National Winner), Football (15 Years), Poker, Chess, ANSYS, AutoCAD