Aditya Dhanraj

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EDUCATION

University of Texas at Austin — Austin, TX
Bachelor of Science in Computer Science — *May 2027*

- SAT: 1580 | Walnut Grove High School's Inaugural Salutatorian (4.0 GPA)
- Student Organizations: UFA (Investment Associate), ML & Data Science, UT Programming Contest, ACM, ABSA
- Coursework: Data Structures, Vector Calculus, Multivariable Calculus, Linear Algebra, Probability & Statistics

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
- **Bank of America** – Global Tech Early Insights Forum
- **Goldman Sachs** – Virtual Insight Series
- **UBS** – Tomorrow's Talent Equity Research Insights Day (NY)
- **ServiceNow** – Discover Program – Engineering (CA)
- **SIG** – First-Year Discovery Day
- **Bain & Co.** – Consulting Kickstart
- **J.P. Morgan** – Virtual Freshman Focus

EXPERIENCE

Founding Team Member (Product & Engineering) — Jul. 2025 – Present
X,sauce Inc. [Startup] — Node.js, TypeScript, Python, AWS, Docker, Redis, DynamoDB, Express — *Remote*

- Leading cross-functional backend development and core infrastructure for Wage, a pre-launch gaming platform, encompassing API (REST) design, data and system architecture management, and product features

Undergraduate Research Assistant — Jan. 2025 – Jul. 2025
University of Texas at Austin — Python, Statistical Modeling, Time-Series, Commodities — *Austin, TX*

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

PROJECTS

EchoAlpha — *Python, NumPy, Pandas, Jupyter Notebook, NLTK, BeautifulSoup, Equities* — Jul. 2025 – Present

- Building 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 short-term risk proxies
- Backtesting contrarian long/short equity signals with configurable entry lags, holding periods, and transaction cost assumptions (current configurations yield Sharpe ratios up to 0.51 with a 67% win rate)

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

- Engineering a modular data pipeline to process 120+ monthly macro indicators (1959 - Present) from FRED
- Constructing 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
- Developing 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%)

Financial Market Monitor — *Market Research, Macro, Equities, Fixed Income, Forex* — Sept. 2024 – Present

- Composing periodic market reports on global economic conditions, earnings reports, significant mergers/acquisitions, etc. for over 400 readers, including college students and finance professionals, worldwide

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

- Joining 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, C, R, Java, ML, Scikit-Learn, Jupyter Notebook, Mathematica, NLTK, NLP, BeautifulSoup
Mathematics: Time-Series Analysis, Statistical Modeling, Probability & Statistics, Linear Algebra, Stochastic Processes
Other: Spanish, Hindi, Piano (14 Years, 5× National Winner), Football (14 Years), Poker, Chess, ANSYS, AutoCAD