Aditya Dhanraj

(469) 988 - 8567 | adityadhanraj@utexas.edu | https://adhanraj06.github.io/ | Austin, TX

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
- Data Structures, Prob. & Stat., LinAlg, Multivariable & Vector Calculus, Cloud Computing, Operating Systems

2025 Invite-Only Early Talent & Insight Programs

- **Citadel** – The Fixed Income & Macro Challenge (NY)
- **Walmart** – Spring Sophomore Summit: SWE II Intern (AR)
- **UBS** – Tomorrow's Talent Equity Research Insights Day (NY)
- **ServiceNow** – Discover Program – Engineering (CA)

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

RaceNebula — *Python, Flask, Pandas, NumPy, SKLearn, FastF1, React* — Oct. 2025

- Architected a modular data pipeline and a Flask REST API powering real-time F1 telemetry (20+ drivers, 500+ data fields/sec) with endpoints for analytics, ML predictions, and Digital Twin simulations
- Constructed a Random Forest model (15 engineering features) for pit-stop prediction, achieving $\tilde{0}.8$ ROC AUC accuracy and developed a Digital Twin modeling tire wear, fuel load, and engine heat to test race strategies

MacroDynamiX — *Python, ML, Statistical Modeling, Time-Series, Market Research, Macro* — Apr. 2025 – Sept. 2025

- Built a stacked ensemble regression model to predict S&P 500 monthly returns using a custom Market Health Index (MHI) and 120+ macroeconomic features, achieving 78% R^2, 87.7% directional accuracy, and low MAE/RMSE
- Developed a regime classification framework leveraging KMeans, GMM, and HMM clustering to segment market environments into interpretable risk-return regimes with expanding/rolling window analysis and model tuning

NYC Taxi Data External Sort — *Java, Maven, Kryo, Google Compute Engine, Linux* — Sept. 2025

- Implemented an external sorting algorithm and robust data cleanup pipeline to process 16+ GB datasets on limited RAM, detecting malformed entries, converting numeric fields, and ensuring 99.9% data accuracy
- Deployed and executed the solution on a 2 vCPU, 2 GB GCE instance, achieving 1.2M rows/min throughput, completing the full dataset in under 45 minutes, and optimizing disk I/O to reduce runtime by 35%

EchoAlpha — *Python, NumPy, Pandas, NLP, BeautifulSoup, Market Research, 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)

Skills & Interests

Programming: Python, Java, C, HTML/CSS/JS, Node.js, AWS, DynamoDB, Linux, Docker, Git, GDB, Mathematica
Data Science: Machine Learning, NumPy, Pandas, SKLearn, TensorFlow, PySpark, Hadoop, NLP, NLTK, 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