Tristan Darnell

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EDUCATION

Duke University Expected May 2029

B.S in Computer Science and Math GPA 4.0/4.0

- **Relevant Coursework**: Data Structures and Algorithms (CS 201), Introduction to Computer Systems (CS 210), MATH 221 Linear Algebra, MATH 219 Multivariable Calculus
- **Involvement**: Catalyst, HackDuke, Duke Quant Finance Club

WORK EXPERIENCE

Software Engineer (Co-Founder), Maedo Aug 2025 – Present

- Building a unified platform that enables small business owners to cross-list and manage products across eBay, Etsy, and other marketplaces from a single dashboard.
- Developed the full-stack web app using Next.js, TypeScript, TailwindCSS, and shadcn/ui, integrating secure authentication via Clerk.
- Architected backend infrastructure with NestJS, Prisma, and PostgreSQL (Neon/Supabase), featuring job orchestration with Redis + BullMQ for automated listing syncs and updates.

Software Engineering Intern, HackDuke Aug 2025 – Present

- Developing and deploying the official HackDuke website using React, PostgreSQL, and Python, supporting registration and logistics for 1,000+ participants.

Co-Founder, Cottage Industries of CFL 2020 – Aug 2025

- Scaled e-commerce business to $1M+ annual sales and 25% ROI by automating product sourcing, checkout, and inventory intake (70% faster processing).
- Maintained Top Rated Seller status and 100% positive feedback on eBay/Amazon.

PROJECTS

Crypto Futures Framework — Python, Pandas, Numpy, Asyncio May 2025 – Present

- Developed an asynchronous Python framework for high-frequency crypto futures strategy research and execution.
- Designed modular OHLCV data loader, reducing latency by 30% and backtest runtime by 25%.
- Built Bollinger Band mean-reversion and multi-timeframe SMA/EMA crossover models, improving Sharpe ratio from 0.8 to 1.2.
- Implemented risk-parity weight optimizer and transaction-cost modeling, lowering max drawdown by 15%.
- Created analytics suite (Sharpe, Calmar, Drawdown) for risk-adjusted evaluation.

Prediction Market Arbitrage Bot — Python, WebSockets, REST APIs, OpenAI API Aug 2025 - Present

- Built a containerized automated news arbitrage system for Polymarket using Python, ingesting real-time market data via WebSockets and REST API calls.
- Implemented event handler logic, order sizing, and execution modules; optimized for latency and reliability using asynchronous pipelines.

Multi-Factor Equity Backtester — Python, Pandas, Numpy, yfinance May 2025 – Present

- Built a unified, vectorized engine for testing equity alpha factors on U.S. markets.
- Integrated four modular strategies (Volume-Price Momentum, Gap Fade, Multi-Timeframe Trend, Composite EMA).
- Optimized runtime by 80% using vectorized pipelines; generated P&L, Sharpe, and drawdown reports.

TECHNICAL SKILLS

Languages | Python, C++, Java, JavaScript, MySQL, HTML, CSS

Frameworks/Libraries | React, Next.js, Node.js, Pandas, Numpy, Asyncio

Developer Tools | Git, Docker

LEADERSHIP & AWARDS

Coding Club President — Led weekly competitive programming sessions, improving member problem-solving speed and contest performance.

Code Quest Top-10 Finalist (2024)

Executive Treasurer, Student Government — Managed $10K+ budget

Vice President, National Honor Society — Organized and led 300+ service hours