Isaac Vergara

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github.com/isaacvm98

Education

Duke University, Durham, NC **May 2027**

Master of Science in Data Science, Quantitative Finance Concentration
Coursework: Algorithmic Trading, Risk Management & Derivatives, Applied Stochastic Processes, Financial Time Series

Universidad Panamericana, Mexico City, Mexico **December 2021**

Bachelor of Economics
Coursework: Econometrics, Stochastic Calculus, Game Theory, Risk Management, Corporate Finance

Professional Experience

Semi Sr. OT Data Scientist, Enable Global **July 2023 - August 2025**

- Led root cause analysis for manufacturing defects using ANOVA and anomaly detection, enabling $2M+ optimization decisions
- Built automated data quality system processing 1M+ records; presented quantitative findings to C-suite stakeholders

Data Scientist & Product Manager, Entropia AI **August 2021 - July 2023**

- Built hierarchical SARIMAX forecasting system improving prediction accuracy from 88% to 94% across pharmaceutical distribution
- Developed production demand system model with automated price elasticity estimation; led cross-functional teams

Research & Projects

Regime-Adaptive Portfolio System **Duke University**

- Designed multi-strategy portfolio combining copula-based pairs trading with Hidden Markov Model regime detection, achieving 20.6% CAGR with 0.89 Sharpe ratio over 2019-2026
- Implemented VaR and CVaR monitoring framework with regime-conditional position sizing and cointegration stability checks
- Engineered options overlay strategy with zero-cost collars activated in high-variance states, reducing tail risk during 2020/2022 stress periods

Kalshi Prediction Markets Research **Conference Submission (Jan 2026)**

- Analyzed 2,129 prediction markets with 4.2M observations, executing 1,000 Monte Carlo simulations testing strategy robustness

Advanced Mortgage Credit Risk Modeling **Duke University**

- Analyzed 1.1M Fannie Mae loans using survival analysis; built hybrid Cox Proportional Hazards and XGBoost model achieving 0.998 C-index

Leadership & Teaching

Research Director, Quantitative Finance Club, Duke University **August 2025 - Present**

- Direct research initiatives and publish weekly market analysis for 200+ members

Teaching Assistant, Algorithmic Trading & Investment (MATH 585), Duke University **Fall 2025**

- Support graduate course on quantitative trading strategies and portfolio optimization

Skills

Programming & Tools: Python, R, SQL, pandas, scikit-learn, CVXPY, statsmodels, QuantConnect, AWS, Docker, Git

Quantitative Methods: Time series (ARIMA, SARIMAX), VaR/CVaR, portfolio optimization, regime detection, options pricing, Monte Carlo methods, survival analysis, hypothesis testing, copula methods, backtesting