Isaac Vergara

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Education

Duke University — **Durham, NC**
M.S. Data Science, Quantitative Finance Concentration — *August 2025 – May 2027*
- Awards: Merit Scholarship & Mexican National Science and Technology Scholarship

Universidad Panamericana — **Mexico City, Mexico**
B.S. Economics — *August 2017 – December 2021*
- Awards: Merit Scholarship | Study Abroad: London School of Economics, Summer 2018

Technical Skills

Programming: Python, R, SQL
ML & Statistics: XGBoost, neural networks, ensemble methods, time series, survival analysis, Monte Carlo, Bayesian inference, ANOVA, hypothesis testing, clustering, PCA, mixed effects models, NLP
Libraries & Frameworks: scikit-learn, TensorFlow, PyTorch, pandas, NumPy, statsmodels, scipy, SpaCy, ChromaDB, FastAPI, Docker, Apache Airflow, Prefect, Git
Cloud & Databases: AWS (SageMaker, EC2, RDS, S3, ElasticBeanstalk), Azure ML Studio, GCP Vertex AI, PostgreSQL, MongoDB
Visualization: Plotly, Dash, Streamlit, Matplotlib, Seaborn, PowerBI, Tableau

Experience

Enable Global — **July 2023 – August 2025**
Semi Sr. OT Data Scientist
- Led statistical analysis using ANOVA, anomaly detection, and non-parametric tests to identify root causes of manufacturing defects, enabling data-driven decisions for $2M+ system optimization
- Engineered automated data quality web application using clustering and cosine similarity, processing 1M+ records; built Dash dashboards delivering insights to C-suite stakeholders

Entropia AI — **August 2021 – July 2023**
Data Scientist & Product Manager
- Architected production Almost Ideal Demand System (AIDS) model with automated price elasticity estimation pipeline, recalibrated upon new economic indicator availability
- Built hierarchical SARIMAX forecasting system improving prediction accuracy from 88% to 94% across SKU, store, and regional dimensions; deployed via Prefect and AWS ElasticBeanstalk
- Led cross-functional teams of 5+ data scientists delivering ML projects across pharmaceuticals, manufacturing, and retail

Fiscal Mind — **January 2025 – Present**
Technical Co-Founder
- Architected end-to-end ML pipeline using multi-agent workflows with knowledge graphs; built FastAPI/PostgreSQL backend with intelligent caching reducing API costs by 60%

Projects

SkillMiner – Data Engineering Platform | *Python, AWS, Airflow, RAG* — **Duke University**
- Engineered ETL pipelines processing 30,000+ job postings; deployed on AWS with containerized Airflow DAGs, RDS PostgreSQL, and S3; built RAG-based skill gap analyzer using ChromaDB and OpenAI embeddings across 10,000+ learning resources

Mortgage Credit Risk Modeling | *R, Survival Analysis, XGBoost* — **Duke University – Fall 2025**
- Analyzed 1.1M Fannie Mae loans using hybrid Cox PH + XGBoost model achieving C-index of 0.998 and 3.25x high/low default rate separation; engineered 25 features from 117 variables via PCA and correlation analysis

Regime-Adaptive Multi-Strategy Portfolio System | *QuantConnect, Python* — **Duke University**
- Backtested regime-aware portfolio combining copula-based statistical arbitrage, HMM-gated options overlay, and filtered momentum; 20.6% CAGR, 0.89 Sharpe, 15.4% max drawdown over 2019–2026

NCAA March Madness Kaggle Competition | *12th Place, Top 1% – Silver Medal* — **April 2024**
- Ranked 12th of 1,200 teams using XGBoost and Generalized Linear Mixed Effects ensemble with Bayesian hyperparameter optimization and rigorous cross-validation

Leadership

Research Director, Quantitative Finance Club | Cloud Club Co-Captain — **August 2025 – Present**
Duke University
- Direct research initiatives; publish biweekly market analysis for 200+ members
- Co-lead AWS Cloud Club: organize workshops on cloud architecture, MLOps, and serverless computing