

DANIEL FLAVIN

Senior Data Scientist · Price Optimization, Elasticity & Demand Forecasting

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SUMMARY

Data scientist with 7 years building production ML for retail pricing: price optimization, elasticity modeling, and demand forecasting, end to end from problem formulation to deployed service. Took over an underperforming price-optimization system and re-formulated it around elasticity; the redesign drove **\$6M+ in customer gross profit** over 2.5 years, measured by counterfactual against projected old-price performance, and lifted pricing-directive compliance from ~55% to nearly 100%. Hands-on in Python (Pandas, Polars, scikit-learn) and SQL against hundreds of millions of records per day, with the MLOps discipline (CI/CD, testing, monitoring) to keep models reliable in production.

EXPERIENCE

ClearDemand · Scottsdale, AZ (Remote)

Lead Data Scientist (interim VP of Science)

June 2022 – Present

- Redesigned a demographic-based store-clustering system around elasticity similarity, the actual driver of price response: framed cluster assignment as a combinatorial optimization and built a greedy local-search solver (iterative store reassignment) to evaluate thousands of configurations.
- The redesign delivered **\$6M+ incremental gross profit** for a 600-store retail chain and moved pricing-directive compliance from ~55% to nearly 100%, reclaiming ~8 hours/week for the customer's pricing team.
- Built cold-start / sparse-history forecasting: blended like-item analogs that decay toward a product's own history as data accumulates, and shrank low-confidence per-product estimates toward hierarchically-similar products (empirical-Bayes-style partial pooling), with confidence intervals used for internal risk analysis.
- Architected and shipped production pricing, forecasting, and markdown services (50+ API endpoints) processing hundreds of millions of records/day across BigQuery, PostgreSQL, MongoDB, and columnar formats (Parquet/Arrow), enabling expansion into new retail markets.
- Designed and deployed a clearance/markdown recommendation system built for multi-customer reuse, supporting new-market expansion.
- Established the team's MLOps standards for production-ready Python: CI/CD pipelines, automated testing, and model monitoring.
- Mentored 5+ data scientists on production Python, modeling practices, and debugging.
- Advised 10+ enterprise retail customers (12–600 stores each) on pricing, merchandising, and promotional strategy.

Associate Data Scientist

November 2019 – June 2022

- Migrated the core recommendation algorithm to Kubernetes, enabling a 10x increase in data-processing capacity.
- Built parsing and loading pipelines for non-standardized point-of-sale transaction-log feeds.
- Wrote automated testing and deployment for three Python-based services.
- Created interactive visualizations for competitor pricing, promotions, and basket metrics; advised customers on key-value-item selection and location-based price clustering.

Assistant Data Analyst

February 2019 – November 2019

- Researched, architected, and deployed a cloud-native service to preprocess inputs and run the core recommendation software on scalable infrastructure.
- Validated models, forecasts, and recommendations with automated Python test scripts.

Vanguard · Scottsdale, AZ

Options & Margin Subject Matter Expert

October 2016 – February 2019

- Led options and margin process-improvement and training initiatives in a regulated financial-operations environment before moving into data science full-time.

BASIS Charter Schools · Scottsdale, AZ

Subject Expert Teacher

July 2015 – July 2016

- Taught Physics I/II and AP Statistics at a top-ranked U.S. high school.

SELECTED LEADERSHIP

Founder & Director, Brevity Troupe · Gilbert, AZ

2015 – 2020

- Founded and scaled a volunteer community-theater company from zero to 40 members; produced 14 productions over five years.
- Developed emerging talent through hands-on mentorship; three alumni now work professionally in production arts.

PUBLICATION

Hunt, B.E., Flavin, D.C., Bauschatz, E., Whitney, H.M. (2016). "Accuracy and robustness of a simple algorithm to measure vessel diameter from B-mode ultrasound images." *Journal of Applied Physiology*, 120(12), 1374–1379.

EDUCATION

B.S., Physics & Secondary Education · Wheaton College, Wheaton, IL · 2014

TECHNICAL SKILLS

Specialties	Demand forecasting (hierarchical; new-product / sparse-history via like-item blending & empirical-Bayes-style shrinkage), uncertainty quantification, price optimization & price-elasticity modeling, combinatorial optimization (greedy local-search solvers), MLOps (CI/CD, testing, monitoring)
Languages / Data	Python (Pandas, Polars, NumPy, scikit-learn, PyTorch, SQLAlchemy), SQL (PostgreSQL, MS SQL Server, Cloud SQL), MongoDB
Cloud & Infra	Google Cloud Platform (BigQuery, GKE, Compute Engine, Artifact Registry), Docker, Kubernetes, Git, CI/CD
Visualization	Tableau, matplotlib, Plotly
Testing / Tooling	pytest, Ruff