

Benjamin Draves, Ph.D.

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I am a Staff Applied Scientist at Uber building [CausalML targeting systems](#) and [large-scale recommendation systems](#) to grow Uber's core businesses. I hold a Ph.D. in Statistics from Boston University where I studied [graph embeddings](#), [representation learning](#), and [machine learning](#).

Experience

Staff Applied Scientist – Uber

2022 – Present

New York City, NY

- Lead design and implementation of 3 ML systems to (i) recommend restaurants and offers to users (3.41B notifications / month) (ii) orchestrate CRM communications (2.5B notifications / month) and (iii) target earners with incentives (\$5M spend / month).
- Set technical strategy across recommendation and targeting workstreams, aligning system design with business priorities and staffing projects with 10+ IC from across the organization.
- Organize CausalML and Learning and Development reading groups for a 150-person DS org.

Causal ML & Uplift Modeling

- Built uplift models to estimate:
 - an earner's [uplift response](#) to an incentive using [CausalML meta-learners](#) (T, X, Dragonnet)
 - a consumer's [incremental preference](#) to marketing content via [CausalML meta-learners](#) in an RL framework
 - a rider's preferred mobility product using [multi-label classification models](#) in [PyTorch](#)
- Built pacing systems to allocate incentive spend / communication volume across time/geos using [PID controllers](#) and [convex optimization](#)

Recommendation Systems

- Launched Uber Marketing's first [time-interval aware transformer](#), ranking and triggering customer communications in production
- Built recommendation models to:
 - recommend restaurants/offers utilizing [multi-objective DL](#) ranking models
 - recommend grocery/retail stores using [relational collaborative filtering](#) approaches
- Built models to determine user's cuisine preferences and context embeddings using [graph embedding](#) and [contrastive learning](#)

Data Scientist Intern – HP

2021

Boston, MA

- Designed and implemented a [synthetic control](#) experimentation platform to assess changes in pricing strategies.
- Deployed a gradient-boosted regression model to a production pricing tool.

Lead Statistical Consultant – Boston University

2019 – 2020

Boston, MA

- Oversaw a team of 14 Master's students, providing consulting services to 35 clients in industry and academia.

Education

Ph.D., Master of Arts: Statistics

2017 – 2022

Boston University – Boston, MA

- Dissertation: [Joint Spectral Embeddings of Random Dot Product Graphs](#)
- Research Areas: Machine Learning, Matrix Analysis, Multivariate Statistics

Bachelor of Science: Mathematics

2014 – 2017

Lafayette College – Easton, PA

- Graduated summa cum laude with honors and thesis.

Skills

Causal Inference / Uplift: A/B testing, meta-learners (S/T/X/R/Dragonnet), Synthetic Control Methods

ML & Modeling: LLMs, Transformers, XGBoost, Autoencoders, Graph Embeddings, Convex Optimization

Tools: PySpark, Python, R, SQL, Airflow, git, bash

Leadership & Awards

- Invited Talks: [UChicago Data Science Institute](#), [BU Stats@Work](#), Lafayette College
- Mentorship: Committee Chair [BU Data Science Mentoring Circles](#)
- Awards: BU Excellence in Student Teaching Award; Barge Oratorical Prize, most compelling thesis