Pranjal Rawat

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EDUCATION

Ph.D. Economics Georgetown University, Washington DC, USA — Expected 2026
MS Economics Madras School of Economics, Chennai, India — 2016-2018

SKILLS

Languages: Python, R, Stata, Julia, Matlab, SAS, SQL, PySpark
Frameworks: PyTorch, JAX, Tensorflow, EconML, Prophet, Sklearn, Statsmodels
Certifications: Machine Learning and Deep Learning Specializations (Coursera).

EXPERIENCE

Assistant Manager (Data Science), American Express — 2020-2021

- Implementing Facebook's PyTorch Big Graph to match interests, merchants, and customers. Graph embeddings from this facility produced affinity scores for over 100 million merchants, 350+ interests, and 60 million card members.
- Used Natural Language Processing techniques to build a name and address matching algorithm. This algorithm was used to match and correct over 100k mismatches.

Business Analyst (Data Science), American Express — 2018-2020

- Developed large-scale machine learning models (CatBoost, XGBoost) to predict the probability of conversion and engagement of customers on marketing communications. This capability produced an uplift of about 15-20% on Email and Digital channels for over 60 million US Card members.
- Built a real-time outlier detection algorithm to detect incorrect flight streaming data from upstream providers.

ONGOING RESEARCH

Designing Auctions for Learning Algorithms
I conduct experiments with single and multi-agent reinforcement learning in dynamic auctions to improve auction designs and ensure efficiency, stability, competitiveness, and rapid convergence. ArXiv

Deep Learning Approach to Consumer Fashion Choices
I investigate consumer transactions from a major fashion retailer, focusing on aesthetics using pre-trained multimodal models to analyze images and text. I use a discrete choice model to decompose consumer choice into price and aesthetic components. The model is validated by predicting future purchase patterns.

OTHER

Teaching: Financial Markets (Fall 2022), Advanced Data Analysis (Spring 2023, Fall 2024), Econometrics (Fall 2023), GU Econ Cluster Compute Coordinator
Research Assistantships: "FinTech and Environment" for Dr. Rossi (2022), "What drives Indian Gold Import?" for Dr. Rangarajan (2017)
Pre-PhD Working Papers: "Inflation Targeting in the United Kingdom: Is there a Deflationary Bias?" (2020), "Volatility, Persistence, and Synchronization in Indian State Business Cycles" (2017)

AWARDS

Winner, Machine Learning Hackathon, American Express — 2018
Gold Medallist, MS Economics, Madras School of Economics — 2018