SHAMINDRA SHROTRIYA

Principal Data Scientist / AI Solution Architect / Researcher

Bentonville, Arkansas, United States of America

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EDUCATION

Carnegie Mellon University   **Pittsburgh, PA**
PhD and M.S. in Statistics   Aug 2017 – Dec 2022
- **Courses**: Adv. Statistical Inference, Adv. Probability Theory, Convex Optimization, Deep Learning, Statistical Machine Learning
- **Thesis**: *On Some Problems in Nonparametric and Location-Scale Estimation.*
- **Committee**: Matey Neykov (advisor), Arun Kumar Kuchibhotla, Yang Ning, Alex Reinhart, Alessandro Rinaldo, Larry Wasserman.
- **Research Interests**: Density estimation, Bradley-Terry ranking, Isotonic regression, Causal inference, Forecasting.
- **Nominee:** Umesh K. Gavaskar Best Thesis Award
- 3.92 / 4.0 GPA.

University of California, Berkeley   **Berkeley, CA**
M.A. in Statistics   Aug 2015 – Dec 2016
- Elizabeth Scott Memorial Award (Research).
- Outstanding GSI Award.
- 3.90 / 4.0 GPA.

University of New South Wales   **Sydney, NSW**
BCom in Actuarial Studies and Finance   Mar 2003 – Jan 2007
- UNSW Co-op scholar in Actuarial Studies.
- Graduated with Distinction.

SKILLS, LANGUAGES, INTERESTS

- **Programming (Proficient)**: Python, R, SQL, Unix, Version control, Make
- **Programming (Competent)**: HTML, CSS, Javascript, MATLAB, SAS
- **Toolkit**: Google BigQuery, AWS Redshift, Git, Docker, JAX, Numpy, Pandas, Plotly, Pytorch, DuckDB, VertexAI, JIRA
- **Soft Skills**: Stakeholder Management, Technical Writing, Sprint Planning, Scrum Master

WORK EXPERIENCE

Walmart, Inc (Centroid Retail Intelligence)   **Bentonville, AR**
Principal AI Solution Architect   Apr 2024 – Present
- Co-developed a novel trend calibration tool called Harmonization. Utilizing Harmonization across the Walmart supply chain sales forecasts led to a post-hoc reduction in MAPE of 4.7%, on average, across all 4700 Walmart stores (patent application in process).
- Productionized the Walmart Customer Experience Elasticity (`CXE 2.0`) model, spanning all 50+ retail product categories. The new end-to-end Python pipeline implementation reduced runtime down to ~2 hrs (from ~22 hrs).

Principal Data Scientist   Sep 2023 – Apr 2024
- Developed the causal modeling framework to measure the elasticity in our Customer Experience (`CX`) score metric, in response to varying the delivery speed promise.
- Led a collaboration with Prof. Giovanni Petris (Dept. Head of Statistics at University of Arkansas) to build hierarchical product forecasts at Walmart scale using Bayesian Dynamic Linear Models (`DLMs`).

Carnegie Mellon University   **Pittsburgh, PA**
Co-Director (Optum Summer Bridges) & Assistant Teaching Professor   Feb 2023 – Aug 2023
- Co-director of 8 week undergraduate summer research program with 30-35 students selected nationally.
- Taught daily data science lectures on advanced statistical methods using `R` and `Python`. Mentored four healthcare research projects.
- Designed and a new data engineering course focused on advanced `Unix`, `SQL`, and `MLOps` concepts.

freelancer.com   **Sydney, NSW**
Team Lead, Data Science Infrastructure   Jun 2014 – Jul 2015
- Designed and productionized the new `A/B` testing framework. Demonstrated the effectiveness of the framework by piloting a marketing campaign that led to 3.5% conversion rate uplift.
- Co-led the Extract-Transform-Load (`ETL`) implementation written in `Go` and `AWS Redshift`, serving ~15M daily active users (`DAUs`) distributed across 35+ countries.

Woolworths Ltd. (Quantium) — **Sydney, NSW**
Lead Data Scientist — Jun 2012 – Jun 2014
- Led the end-to-end development of the behavioural *lifestage* classifier for the entire 7 million Woolworths Supermarket customer base. This is the primary targeting feature used by Woolworths for major marketing campaigns across Australia.
- Co-designed and developed the National Australia Bank Online Retail Sales Index (NORSI), Australia's leading online sales indicator.

United Nations - International Labor Organization (ILO) — **Brisbane, QLD**
Microinsurance Fellow — Jun 2011 – May 2012
- Wrote a report on the best actuarial pricing practices to be undertaken by microinsurance organisations. Selected as an ILO Microinsurance Fellow based on industry experience and academic merit.

PwC (PricewaterhouseCoopers) — **Sydney, NSW**
Senior Actuarial Consultant — Jul 2007 – May 2011
- Conducted quarterly actuarial reserving for NSW WorkCover. At a total liability valuation of ~$16bn (AUD), this is Australias' largest public sector Workers Compensation Scheme.

RESEARCH AND PUBLICATIONS

Nonparametric Estimation in the Dynamic Bradley-Terry Model.
AISTATS (Heejong Bong*, Wanshan Li*, Shamindra Shrotriya*, Alessandro Rinaldo) — Jun 2020

Supremum-norm Bounds of the MLE in the BTL Model under General Comparison Graphs.
UAI (Wanshan Li*, Shamindra Shrotriya*, Alessandro Rinaldo) — Jun 2022

Predictive Inference of a Wildfire Risk Pipeline in the United States.
NeurIPS Workshop on Tackling Climate Change with AI (Niccolo Dalmasso*, Shamindra Shrotriya*, Alex Reinhart) — Dec 2019

WORKING PAPERS (UNDER REVIEW)

Revisiting Le Cam's Equation - Exact Minimax Rates over Convex Density Classes.
ArXiv:2210.11436 (Shamindra Shrotriya*, Matey Neykov) — Jun 2024

Adversarial Sign-Corrupted Isotonic Regression.
ArXiv:2210.11436 (Shamindra Shrotriya*, Matey Neykov) — Dec 2023

maars: Tidy Inference under the 'Models as Approximations' Framework in R.
ArXiv:2106.11188 (Riccardo Fogliato*, Shamindra Shrotriya*, Arun Kumar Kuchibhotla) — Jun 2023

OPEN-SOURCE SOFTWARE

maars (R implementation of 'Models as Approximations' Framework)
https://shamindras.github.io/maars (Riccardo Fogliato*, Shamindra Shrotriya*, Arun Kumar Kuchibhotla) — Jun 2023

iterative Random Forests (iRF)
https://github.com/Yu-Group/iterative-Random-Forest (joint work with the Yu Group at UC Berkeley) — Aug 2017

HONORS AND AWARDS

Nominee - Umesh K. Gavaskar Best Thesis Award — **Pittsburgh, PA**
Issued by *Carnegie Mellon University* — Jun 2023

Posit Scholar — **Pittsburgh, PA**
Issued by *Posit, Inc (formerly RStudio)* — Jun 2021

NGC Wildfire Research Scholar — **New York, NY**
Issued by *American Australian Association* — Jun 2020

TA of the Year — **Pittsburgh, PA**
Issued by *Carnegie Mellon University* — Jun 2020

CMSAC Best Paper Award — **Pittsburgh, PA**
Issued by *Carnegie Mellon Sports Analytics Conference (CMSAC)* — Oct 2019

Outstanding Graduate Student Instructor (GSI) — **Berkeley, CA**
Issued by *University of California, Berkeley* — Mar 2017

Elizabeth Scott Memorial Award (Research) — **Berkeley, CA**
Issued by *University of California, Berkeley* — Oct 2016