VIK SHIRVAIKAR

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Artificial intelligence professional with a proven background in solutions design. Technical expertise in predictive models, Bayesian methods, causal inference, and machine learning. Broad industry and research experience spanning finance, healthcare, energy, public policy, and sports analytics.

EDUCATION

University of Oxford, September 2025
Doctor of Philosophy in Statistics and Machine Learning
Dissertation title: Prediction-powered machine learning for model selection and uncertainty

- Created a novel framework for Bayesian uncertainty quantification via iterative prediction, with applications including hypothesis testing, density estimation, and variable selection
- Developed an R/C++ method for causal analysis of subgroups in clinical trials, with applications to personalized medicine for cardiovascular disease (in collaboration with Novo Nordisk)
- Authored research papers across a range of other fields, including deep learning, causal reasoning in large language models (LLMs), reinforcement learning, and public policy evaluation

The University of Texas at Austin, May 2019
Bachelor of Science and Arts (Honors) in Mathematics, Bachelor of Arts in Economics, 4.0/4.0 GPA

WORK EXPERIENCE

Gyre Energy – Foundational AI/ML Engineer, September 2025 to Present – *London, UK*
Early-stage startup building dynamic control systems to optimize energy efficiency for cooling infrastructure

- Architecting foundational AI strategy, translating business objectives into an actionable R&D roadmap
- Engineering core technical infrastructure on Azure, deploying physics-informed digital twins and time-series forecasting models to drive real-time optimization across complex environments
- Leading technical assessment for enterprise pilots, modelling commercial ROI to validate business case

Various Clients – Independent Sports AI/ML Consultant, December 2024 to June 2025 – *Oxford, UK*

- Developed a proprietary valuation algorithm to model athlete brand equity, bringing together on-field performance metrics and off-field digital presence to support data-driven contract negotiation
- Designed and implemented a geospatial forecasting engine for new football stadium development, integrating demographic, transportation, and economic data to project site-specific revenue streams

Integra FEC – Senior Forensic Data Analyst, March 2019 to July 2021 – *Austin, Texas, USA*
Leading data-driven litigation consulting firm for financial fraud prosecution and enforcement

- Conducted fraud investigations for U.S. government clients, specializing in consumer protection, structured products, and commercial banking, with largest case settling for over $1.5 billion
- Designed statistical sampling frameworks and data visualizations for use in legal proceedings
- Analyzed highly unstructured data using Python (pandas, numpy) and database tools (PostgreSQL)
- Built a Google Cloud Platform (GCP) pipeline from scratch for live currency tracking and auditing

Teradata Labs – Data Science Intern, June 2017 to March 2019
Enterprise software company providing cloud-based data management and analytics

- Analyzed ML implementations in R, Python, SQL, and Spark to optimize quality of enterprise AI platform
- Developed an original function for automated image processing, including Python TensorFlow neural networks for image recognition and Java MapReduce framework for parallel computing

Office of Texas State Senator Judith Zaffirini – Legislative Intern, January to May 2017

- Conducted legislative research and wrote policy briefs, with a focus on natural resources and agriculture

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STRENGTHS AND SPECIALITIES

Languages and libraries	Python, R, C++, Java, TensorFlow, PyTorch, SQL, Stata, SAS
Tools and infrastructure	Google Cloud Platform, Microsoft Azure, Github Copilot, PostgreSQL
Other AI and ML topics	Bayesian methods, reinforcement learning, large language models (LLMs), causal inference, model selection, agentic AI systems, econometrics

SELECTED PUBLICATIONS

Shirvaikar, Storås, Lin, and Holmes, "Targeting relative risk heterogeneity with causal forests," *Under journal review,* 2025. Available at <https://arxiv.org/abs/2309.15793>

Pituk, **Shirvaikar**, and Rainforth, "Do Bayesian Neural Networks Actually Behave Like Bayesian Models?" *42nd International Conference on Machine Learning (ICML)*, 2025. Available at <http://bit.ly/3Tonm3E>

Yang, **Shirvaikar**, Clivio, and Falck, "A critical review of causal reasoning benchmarks for Large Language Models," *38th AAAI Conference on Artificial Intelligence, Workshop on "Are Large Language Models Simply Causal Parrots?"*, 2024. Available at <https://arxiv.org/abs/2407.08029>

Shirvaikar and Lakshminarayan, "Reinforcement learning for dynamic HIV treatment with antiretroviral therapy," *8th International Workshop on Sequential Methodologies*, 2024.

AWARDS AND HONORS

- Outstanding Student Representative, Division of Mathematical, Physical, and Life Sciences, Oxford, 2024
- Outstanding Contributions to the Department, Department of Statistics, Oxford, 2023
- Salam Fayyad Excellence Award for Economics (top of graduating class), UT Austin, 2019
- Bob Williams Excellence Award for Mathematics (top of graduating class), UT Austin, 2019

SERVICE AND LEADERSHIP

Department of Statistics, Oxford – Graduate Student Representative (2023 to 2025)
- Represented student body at Departmental Committee and external steering group meetings
- Co-organizer of Machine Learning for Everyone workshop and hackathon, with over 80 attendees
- Co-organizer of Causal Inference Reading Group, with weekly presentations from faculty and students

St. Peter's College, Oxford – Vice President of Graduate Student Body (2022 to 2023)
- Represented student body at college Governing Body and academic committee meetings
- Developed and implemented new student-led consent training course
- Organized and directed welfare events and initiatives

Natural Sciences Council, UT Austin – Financial Director (2018 to 2019), Member (2015 to 2018)
- Managed budget of over $50,000 for student events and academic services
- Planned and taught lessons on science and technology at local elementary and middle schools
- Served as college representative to administration and university-wide student Senate

The Daily Texan Newspaper, UT Austin – Forum Editor (2017 to 2018)
- Solicited content and designed layout for weekly page featuring public figures and guest writers