Patrick Vossler

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Employment

2024- **University of California, San Francisco**
Statistician

2022-2024 **Stanford University - Stanford Law School**
Postdoctoral Researcher, hosted by Profs. Daniel Ho and Jacob Goldin

Education

2017-2022 **University of Southern California - Marshall School of Business**
Ph.D. Statistics

Thesis: "Nonparametric Ensemble Learning and Inference"
Advisors: Prof. Yingying Fan and Prof. Jinchi Lv

2013-2017 **University of Southern California**
B.S. Economics and Mathematics

Graduated with Honors, Magna Cum Laude

Publications and Preprints

Elzayn, H., Black, E., Vossler, P., Jo, N., Goldin, J., and Ho, D. E. (2024). **Estimating and Implementing Conventional Fairness Metrics With Probabilistic Protected Features**. *2024 IEEE Conference on Secure and Trustworthy Machine Learning (SaTML).*

Johnston, C. M., Vossler, P., Blessenohl, S., and Vayanos, P. (2023). **Deploying a Robust Active Preference Elicitation Algorithm on MTurk: Experiment Design, Interface, and Evaluation for COVID-19 Patient Prioritization**. *Proceedings of the 3rd ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization.*

Chi, C.-M., Vossler, P., Fan, Y. and Lv, J. (2022). **Asymptotic Properties of High-Dimensional Random Forests**. *The Annals of Statistics.*

Demirkaya, E., Fan, Y., Gao, L., Lv, J., Vossler, P. and Wang, J. (2022). **Optimal Non-parametric Inference with Two-Scale Distributional Nearest Neighbors**. *Journal of the American Statistical Association.*

Phillips, C., Shah, P. and Vossler, P. (2021) **Immigrants, Intersectionality and the Politics of Substantive Representation**. *Journal of Women, Politics & Policy.*

Talks

SaTML 2024 (Publication Talk)

Paper Presented: "Estimating and Implementing Conventional Fairness Metrics with Probabilistic Protected Features"

EcoSta 2023 (Invited Talk)

Session: "Advances in nonparametric inference, fairness, and IV regression"
Paper Presented: "Estimating and Implementing Conventional Fairness Metrics with Probabilistic Protected Features"

International Chinese Statistical Association 2023 (Invited Talk)

Session: "Game-Theoretic Perspectives on Statistical Machine Learning"
Paper Presented: "Estimating and Implementing Conventional Fairness Metrics with Probabilistic Protected Features"

INFORMS 2022 (Invited Talk)

Session: "Robust, Interpretable, and Fair Machine Learning"
Paper Presented: "ODTlearn: A Package for Learning Optimal Decision Trees for Prediction and Prescription"

Quality and Productivity Research Conference 2022 (Poster)

NSF Travel Grant Award
Paper Presented: "Optimal Nonparametric Inference with Two-Scale Distributional Nearest Neighbors"

Cornell ORIE Young Researcher Workshop 2021 (Poster)

Paper Presented: "Asymptotic Properties of High-Dimensional Random Forests"

Awards

Travel Grant, National Science Foundation (2022)

Amount: $1,000
Transportation and lodging costs awarded to attend and present at the 2022 Quality and Productivity Research Conference.

Hannan Graduate Student Travel Award, Institute of Mathematical Statistics (2020)

Amount: $800
Funds the travel expenses of students who are graduate students statistics or probability to present their research at an IMS sponsored or co-sponsored meeting. One of 16 students worldwide to receive this award.

James S. Ford Award, USC Marshall School of Business (2020)

Amount: $5,000
Awarded to third year Ph.D. students based upon their scholastic performance and the quality of their dissertation abstract. One recipient per year.

Student Opportunities for Academic Research (SOAR), USC Dornsife (2014-2016)

Funding for undergraduates for participation as a research assistant in a faculty member's project during the spring or fall semester. Received the award for five different semesters.

Industry Experience

2015-2017   **Omaze**, Los Angeles, CA
Data Science Intern

- Liased with senior members of the marketing and product teams to create automated reports of social media ad conversion.

- Built connected data science pipeline with user analytics data.

- Deployed Javascript user interface A/B tests and analyzed subsequent data from the Apache Spark cluster with Scala and Python to optimize website layout for increasing user conversion rate.

Teaching Experience

2019, 2020   **Instructor and Teaching Assistant**, BUAD 312: Statistics and Data Science for Business

- Core class for business undergraduate students that is an advanced alternative to the regular business statistics core class.

- Instructor rating of 4.2 out of 5 (averaged over two sections).

- Developed a `buad312data` R package to make it easier to share data sets with students.

- Built a tool for grading RMarkdown problem set submissions. Used by teaching assistants in spring 2020.

Software

`litr`: Writing R packages via literate programming (project website)

An R package that generates an entire R package in a single R markdown file. The R package is created when you knit the Rmd file. For larger packages, you can write a bookdown that defines the package.

`odtlearn`: A Python package for using optimal decision trees (project website)

An open-source Python package that provides methods for learning optimal decision trees for high-stakes classification and prescriptive problems using an mixed-integer optimization (MIO) framework.

Skills

- **Programming Languages**: R, Python, Javascript, SQL, C++, Scala, Stata, Apache Spark