

# Sameer K. Deshpande

May 2024

University of Wisconsin–Madison

Department of Statistics

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## Academic Positions

University of Wisconsin–Madison, Dept. of Statistics

August 2021–present

Assistant Professor (August 2021–present)

Massachusetts Institute of Technology, CSAIL

September 2018–August 2021

Postdoctoral Associate (Supervisor: Tamara Broderick)

## Education

Ph.D. Statistics, University of Pennsylvania, The Wharton School

May 2018

Dissertation Title: “Bayesian model selection and estimation without MCMC”

Dissertation Supervisors: Ed George and Veronika Ročková

S.B. Mathematics, Massachusetts Institute of Technology

June 2013

## Research interests

Bayesian hierarchical modeling. Bayesian treed regression. Model selection. Causal inference. Applications in public health and sports.

## Preprints & Working Papers

- [5] Fisher, J. D., Puelz, D. W., & **Deshpande, S.K.** (2024). “A Bayesian classification tree approach to treatment effect variation with noncompliance”. arXiv: [2408.07765](#).
- [4] Kokandakar, A. H., Lin, Y., Jin, S., Weiss, J., Rabinowitz, A. R., Buford May, R. A., Small, D., & **Deshpande, S.K.** (2024). “Adolescent sports participation and health in early adulthood: An observational study”. arXiv: [2405.035838](#).
- [3] Shen, Y., & **Deshpande, S.K.** (2024). “Posterior contraction and uncertainty quantification for the multivariate spike-and-slab lasso”. arXiv: [2209.04389](#).
- [2] **Deshpande, S.K.**, Bai, R., Balocchi, C., Starling, J. E., & Weiss, J. (2024). “VCBART: Bayesian trees for varying coefficients”. arXiv: [2003.06416](#).
- [1] **Deshpande, S.K.** (2023). “flexBART: Flexible Bayesian regression trees with categorical predictors”. arXiv: [2211.04459](#).

## Papers

- [23] Alexandr, Y., Bakenhus, M., Curiel, M., **Deshpande, S.K.**, Gross, E., Gu, Y., Hill, M., Johnson, J., Kagy, B., Karwa, V., Li, J., Lyu, H., Petrović, S., & Rodriguez, J.I. (2024). New directions in algebraic statistics: Three challenges from 2023. *Algebraic Statistics*.
- [22] Kokandakar, A.H., Lin, Y., Jin, S., Weiss, J., Rabinowitz, A.R., Buford May, R.A., Small, D., & **Deshpande, S.K.** (2024). Pre-analysis protocol for an observational study on the effects of adolescent sports participation on health in early adulthood. *Observational Studies*, 10(1), 11–35. <https://doi.org/10.1353/obs.2024.a929115>
- [21] Shen, Y., Solis-Lemus, C., & **Deshpande, S.K.** (2024). Estimating sparse direct effects in multivariate regression with the spike-and-slab LASSO. *Bayesian Analysis*. <https://doi.org/10.1214/24-BA1430>
- [20] **Deshpande, S.K.**, Ghosh, S., Nguyen, T.D., & Broderick, T. (2024). Are you using test log-likelihood correctly? *Transactions of Machine Learning Research*. <https://openreview.net/forum?id=n2YifD4Dxo>
- [19] Trippe, B.L., **Deshpande, S.K.**, & Broderick, T. (2024). Confidently comparing estimators with the c-value. *Journal of the American Statistical Association*, 119(546), 983–994. <https://doi.org/10.1080/01621459.2022.2153688>
- [18] Yee, R., & **Deshpande, S.K.** (2024). Evaluating plate discipline in Major League Baseball with Bayesian Additive Regression Trees. *Journal of Quantitative Analysis in Sports*, 20(1), 5–20. <https://doi.org/10.1515/jqas-2023-0048>
- [17] Brill, R.S., **Deshpande, S.K.**, & Wyner, A.J. (2023). A Bayesian analysis of the time through the order penalty in baseball. *Journal of Quantitative Analysis in Sports*, 19(4), 245–262. <https://doi.org/10.1515/jqas-2022-0116>
- [16] Kokandakar, A.H., **Deshpande, S.K.**, & Kang, H. (2023). Bayesian causal forests and the 2022 ACIC Data Challenge: Scalability and sensitivity. *Observational Studies*, 9(3), 29–41. <https://muse.jhu.edu/pub/56/article/895651>
- [15] Smoliga, J.M., **Deshpande, S.K.**, & Binney, Z.O. (2023). Interaction of surface type, temperature, and week of season on diagnosed concussion risk in American football: Bayesian analysis of 8 seasons of National Football League data. *Epidemiology*, 34(6), 807–816. <https://doi.org/10.1097/EDE.0000000000001657>
- [14] Balocchi, C., **Deshpande, S.K.**, George, E.I., & Jensen, S.T. (2022). Crime in Philadelphia: Bayesian clustering with particle optimization. *Journal of the American Statistical Association*, 118(542), 818–829. <https://doi.org/10.1080/01621459.2022.2156348>
- [13] Lin, Y., Heng, S., Anand, S., **Deshpande, S.K.**, & Small, D.S. (2022). Hemoglobin levels among male agricultural workers: Analyses from the demographic and health surveys to investigate a marker for chronic kidney disease of uncertain etiology. *Journal of Occupational and Environmental Medicine*, 64(12), e805–e810. <https://doi.org/10.1097/JOM.0000000000002703>
- [12] Stephenson, W.T., Ghosh, S., Nguyen, T.D., Yurochkin, M., **Deshpande, S.K.**, & Broderick, T. (2022). Measuring the robustness of Gaussian processes to kernel choice. *Proceedings of The 25th International Conference on Artificial Intelligence and Statistics*. <https://proceedings.mlr.press/v151/stephenson22a.html>
- [11] Jin, S., Rabinowitz, A.R., Weiss, J., **Deshpande, S.K.**, Gupta, N., Buford May, R.A., & Small, D.S. (2021). Retrospective survey of youth sports participation: Development and assessment of reliability using school records. *PLOS ONE*, 16(9), e0257487. <https://doi.org/10.1371/journal.pone.0257487>
- [10] Weiss, J., Rabinowitz, A.R., **Deshpande, S.K.**, Hasegawa, R.B., & Small, D.S. (2021). Participation in collision sports and cognitive aging among Swedish twins. *American Journal of Epidemiology*, 190(12), 2604–2611. <https://doi.org/10.1371/journal.pone.0229978>

- [9] Ghosh, S., Stephenson, W. T., Nguyen, T. D., **Deshpande, S.K.**, & Broderick, T. (2020). Approximate cross-validation for structured models. *Advances in Neural Information Processing Systems*. <https://proceedings.neurips.cc/paper/2020/hash/636efd4f9aeb5781e9ea815cdd633e52-Abstract.html>
- [8] Hasegawa, R. B., **Deshpande, S.K.**, Small, D. S., & Rosenbaum, P. R. (2020). Causal inference with two versions of treatment. *Journal of Educational and Behavioral Statistics*, 45(4), 426–445. <https://doi.org/10.3102/1076998620914003>
- [7] **Deshpande, S.K.**, Hasegawa, R. B., Weiss, J., & Small, D. S. (2020). The association between adolescent football participation and early adulthood depression. *PLOS ONE*, 15(3), 1–14. <https://doi.org/10.1371/journal.pone.0229978>
- [6] Gaulton, T. G., **Deshpande, S.K.**, Small, D. S., & Neuman, M. D. (2019). Observational study of the association between participation in high school football and self-rated health, obesity, and pain in adulthood. *American Journal of Epidemiology*, 186(6), 592–601. <https://doi.org/10.1093/aje/kwz260>
- [5] **Deshpande, S.K.**, & Evans, K. E. (2019). Expected hypothetical completion probability. *Journal of Quantitative Analysis in Sports*, 16(2), 85–94. <https://doi.org/10.1515/jqas-2019-0050>
- [4] **Deshpande, S.K.**, Ročková, V., & George, E. I. (2019). Simultaneous variable and covariance selection with the multivariate spike-and-slab LASSO. *Journal of Computational and Graphical Statistics*, 28(4), 921–931. <https://doi.org/10.1080/10618600.2019.1593179>
- [3] **Deshpande, S.K.**, Hasegawa, R. B., Rabinowitz, A. R., Whyte, J., Roan, C. L., Tabatabaei, A., Baiocchi, M., Karlawish, J. H., Master, C. L., & Small, D. S. (2017). Association of playing high school football with cognition and mental health later in life. *JAMA Neurology*, 74(8), 909–918. <https://doi.org/10.1001/jamaneurol.2017.1317>
- [2] **Deshpande, S.K.**, & Wyner, A. J. (2017). A hierarchical Bayesian model of pitch framing. *Journal of Quantitative Analysis in Sports*, 13(3), 95–112. <https://doi.org/10.1515/jqas-2017-0027>
- [1] **Deshpande, S.K.**, & Jensen, S. T. (2016). Estimating an NBA players impact on his team’s chances of winning. *Journal of Quantitative Analysis in Sports*, 12(2), 51–72. <https://doi.org/10.1515/jqas-2015-0027>

## Teaching

University of Wisconsin–Madison

STAT 775: Bayesian statistics (Spring 2022, Fall 2022, Spring 2024)

STAT 628: Data science practicum (Spring 2024)

STAT 992: Bayesian nonparametrics (Fall 2023)

STAT 333: Applied linear regression (Spring 2023)

STAT 479: Introduction to Bayesian Data Analysis (Fall 2022)

## Honors & Awards

JASA Reproducibility Award	2023
Awarded for our article “Crime in Philadelphia: Bayesian clustering with particle optimization.”	
Significant Contributor Award, ASA Section on Statistics in Sports	2021
Third Prize, Ruth and William Silen, M.D. Poster Award, New England Science Symposium	2019
Finalist, National Football League Big Data Bowl	2019

Deming Student Scholar Award, Deming Conference on Applied Statistics	2017
J. Parker Bursk Memorial Award for excellence in research, Statistics Department, Wharton	2017
Donald S. Murray Prize for excellence in teaching, Statistics Department, Wharton	2016
Wharton Doctoral Program Fellowship	2013

## Department Seminars

2024: National Autonomous University of Mexico
2023: Purdue University; Arizona State University; University of South Carolina; University of Wisconsin–Madison (Plant Pathology)
2022: Iowa State University; University of Chicago (Booth School of Business); University of Pennsylvania (Biostatistics)
2021: University of Virginia; Loyola University
2020: Louisiana State University; University of St. Thomas

## Recent Conference Presentations

2024: ISBA, JSM
2023: BayesComp, IISA, WNAR, ISI World Congress, EcoSta, JSM, AMMCS VI, CMStatistics, ICSDS
2022: ISBA, EURO 2022, BNP, CMStatistics
2021: JSM, SBIES, ESOBE, JSM

## Service

**Student supervision:** Yunyi Shen, Paul Nguyen, Ryan Yee, Soham Ghosh, Saloni Bhogale, Ajinkya Kokandakar.

**Ph.D. dissertation committee:** Chan Park, Peng Yu, Tun Lee Ng, Yanbo Shen, Kehui Yao, Alex Hayes, Bowen Zhang, Liam Johnston; Ryan Brill (UPenn).

### Professional organizations

Member, ISBA Program Council	January 2024–present.
Area Chair, NeuRIPS	May 2024.
Associate Editor, <i>Journal of Quantitative Analysis in Sports</i>	January 2024–present
Secretary, Wisconsin Chapter of the ASA	September 2023–present.

## Workshop organizer

Your model is wrong: robustness & misspecification in probabilistic modeling NeurIPS 2021 Workshop	December 2021
Perspectives in statistical modeling and inference A workshop in honor of Ed George’s 70th birthday	December 2021

**Journal Reviewer:** Journal of the American Statistical Association, Journal of the Royal Statistical Society Series B, Annals of Applied Statistics, Journal of Machine Learning Research, Journal of Computational and Graphical Statistics, Bayesian Analysis, Spatial Statistics, Journal of Multivariate Analysis, Statistics and Computation, Journal of Quantitative Analysis in Sport, Australian & New Zealand Journal of Statistics, PLOS ONE, Harvard Data Science Review, STAT.

**Conference Reviewer:** BNP@NeurIPS 2018, UAI 2019, AAAI 2020, NeurIPS (2019–2022), AISTATS (2019–2024), ICML (2019, 2022, 2023).