

Miles E. Lopes

CONTACT
INFORMATION Department of Statistics
Mathematical Sciences Building
One Shields Avenue, UC Davis
Davis, CA 95616
melopes@ucdavis.edu
<http://anson.ucdavis.edu/~melopes>

ACADEMIC
EMPLOYMENT UC Davis Department of Statistics
Associate Professor, 2021 - present
Assistant Professor, 2015 - 2021

EDUCATION UC Berkeley, 2009 - 2015
Ph.D. in Statistics, M.S. in Computer Science
Thesis advisor: Peter J. Bickel

UCLA, 2003 - 2008
B.S. in Mathematics, B.S. in Physics
(summa cum laude, and highest departmental honors in Mathematics)

RESEARCH
VISITS AND
INTERNSHIPS Google, Mountain View, summer 2014
INRIA, Grenoble, summer 2013
Sandia National Laboratory, Livermore, summer 2012

INTERESTS High-dimensional Statistics and Machine Learning
(bootstrap methods for high-dimensional data, and error analysis of randomized algorithms)

GRANTS,
FELLOWSHIPS,
AND AWARDS

- DOE grant DE-SC0023490, co-PI, 2022 - present
Reliable, Scalable, and Data-efficient Randomized Graph Neural Networks for Neural Combinatorial Optimization with Scientific Applications
- NSF grant DMS-1915786, sole PI, 2019 - 2023
Bootstrap Methods in Modern Settings: Inference and Computation
- NSF grant DMS-1613218, sole PI, 2016 - 2020
Resampling Methods for High-Dimensional and Large-Scale Data
- Laha Award, Institute of Mathematical Statistics, 2012
- NSF Graduate Research Fellowship (GRFP), 2010 - 2015
- DOE Computational Science Graduate Fellowship (CSGF), 2010 - 2014

- National Defense Science & Engineering Graduate Fellowship (NDSEG), 2010
(declined in order to accept CSGF and GRFP)
- Sherwood Prize, UCLA Department of Mathematics, 2008
(UCLA's highest graduation award for undergraduate mathematics)

RESEARCH

- Liu, M., Wang, S., Lopes, M. E. (2026+). A goodness-of-fit test for independent component models in high dimensions. *Preprint*: <https://arxiv.org/abs/2605.20099>.
- Dörnemann, N., Lopes, M. E. (2026+). Tracy-Widom, Gaussian, and bootstrap: Approximations for leading eigenvalues in high-dimensional PCA. *Preprint*: <https://arxiv.org/abs/2503.23097>.
- Liu, M., Lopes, M. E. (2026+). Robust max statistics for high-dimensional inference. *to appear: Statistica Sinica*.
- with R. Murray, J. Demmel, M. W. Mahoney, et al. (2026+). Randomized numerical linear algebra: A perspective on the field with an eye to software. *Preprint*: <https://arxiv.org/abs/2302.11474>.
- Wang, S., Lopes, M. E. (2026). Testing elliptical models in high dimensions. *Journal of the American Statistical Association*.
- Wang, S., Lopes, M. E. (2025). Empirical error estimates for graph sparsification. *International Conference on Artificial Intelligence and Statistics (AISTATS)*.
- Lopes, M. E. (2025). Improved rates of bootstrap approximation for the operator norm: A coordinate-free approach. *Annales de l'Institut Henri Poincaré (B) Probabilités et Statistiques*.
- Lopes, M. E., Erichson, N. B., Mahoney, M. W. (2023). Bootstrapping the operator norm in high dimensions: Error estimation for covariance matrices and sketching. *Bernoulli*.
- Lin, Z., Lopes, M. E., Müller, H.-G. (2023). High-dimensional MANOVA via bootstrapping and its application to functional data and sparse count data. *Journal of the American Statistical Association*.
- Yao, J., Lopes, M. E. (2023). Rates of bootstrap approximation for eigenvalues in high-dimensional PCA. *Statistica Sinica*.
- Yao, J., Erichson, N. B., Lopes, M. E. (2023). Error estimation for random Fourier features. *International Conference on Artificial Intelligence and Statistics (AISTATS)* (included in oral presentations, among top 1.9% of submissions).
- Wang, S., Lopes, M. E. (2023). A bootstrap method for spectral statistics in high-dimensional elliptical models. *Electronic Journal of Statistics*.
- Lopes, M. E., (2022). Central limit theorem and bootstrap approximation in high dimensions: Near $1/\sqrt{n}$ rates via implicit smoothing. *The Annals of Statistics*.

- Lopes, M. E., Yao, J. (2022). A sharp lower-tail bound for Gaussian maxima with application to bootstrap methods in high dimensions. *Electronic Journal of Statistics*.
- Lopes, M. E., Wu, S., Lee, T. C. M. (2020). Measuring the algorithmic convergence of randomized ensembles: The regression setting. *SIAM Journal on Mathematics of Data Science*.
- Lopes, M. E., Erichson, N. B., Mahoney, M. W. (2020). Error estimation for sketched SVD via the bootstrap. In *International Conference on Machine Learning (ICML)*.
- Lopes, M. E., Lin, Z., Müller, H. G. (2020). Bootstrapping max statistics in high dimensions: Near-parametric rates under weak variance decay and application to functional and multinomial data. *The Annals of Statistics*.
- Lopes, M. E. (2020). Estimating a sharp convergence bound for randomized ensembles. *Journal of Statistical Planning and Inference*.
- Lopes, M. E., Blandino, A., Aue, A. (2019). Bootstrapping spectral statistics in high dimensions. *Biometrika*.
- Lopes, M. E., Wang, S., Mahoney, M. W. (2019). A bootstrap method for error estimation in randomized matrix multiplication. *Journal of Machine Learning Research*.
- Lopes, M. E. (2019). Estimating the algorithmic variance of randomized ensembles via the bootstrap. *The Annals of Statistics*.
- Lopes, M. E., Wang, S., Mahoney, M. W. (2018). Error estimation for randomized least-squares algorithms via the bootstrap. In *International Conference on Machine Learning (ICML)* (included as a long talk, among top 8.6% of submissions).
- Lopes, M. E. (2016). Unknown sparsity in compressed sensing: Denoising and inference. *IEEE Transactions on Information Theory*.
- Lopes, M. E. (2014). A residual bootstrap for high-dimensional regression with near low-rank designs. In *Advances in Neural Information Processing Systems (NeurIPS)* (included as a spotlight presentation, among top 4.8% of submissions).
- Lopes, M. E. (2013). Estimating unknown sparsity in compressed sensing. In *International Conference on Machine Learning (ICML)*.
- Lopes, M. E., Jacob, L., Wainwright, M. J. (2011). A more powerful two-sample test in high dimensions using random projection. In *Advances in Neural Information Processing Systems (NeurIPS)*.

PROFESSIONAL ACTIVITIES

- Associate Editor: Annals of Statistics, 2025 - present
- Associate Editor: Sankhya Series A, 2022 - present
- Associate Editor: Electronic Journal of Statistics, 2022 - 2024

- Writing committee member: DOE Office of Science report on “Randomized Algorithms for Scientific Computing (RASC): Foundational Research in Advanced AI for Science”, 2021
- NSF DMS review panelist: 2017, 2020, 2026
- Organizer: EcoSta, invited session (2024, 2025, 2026), CMStatistics, invited session (2022, 2024), Joint Statistical Meetings, topic contributed session (2019), Joint Statistical meetings, invited session (2016).
- Scientific Program Committee, EcoSta 2024.
- Referee: Annals of Applied Probability, Annals of Statistics, Applied and Computational Harmonic Analysis, Biometrika, Canadian Journal of Statistics, IEEE Transactions on Information Theory, IEEE Transactions on Signal Processing, Journal of Computational and Graphical Statistics, Journal of Machine Learning Research, Journal of Multivariate Analysis, Journal of the American Statistical Association, Journal of the Royal Statistical Society, Series B, Journal of Statistical Planning and Inference, Metrika, SIAM Journal on Mathematics of Data Science

PHD
STUDENT
ADVISING

Andrew Blandino | Statistician, UC Davis Statistical Laboratory

Byungwoo Lee

Mingshuo Liu

Siyao Wang

Junwen Yao | Google DeepMind

UNDERGRADUATE
RESEARCH
ADVISING

Nianlin Chen

Edie Espejo

Carmen Lai

Wenxuan (Allan) Zhao

TEACHING

- STA 130A, undergraduate mathematical statistics
- STA 130B, undergraduate mathematical statistics
- STA 131A, undergraduate mathematical statistics
- STA 200A, MS probability
- STA 231C, PhD mathematical statistics
- STA 251, PhD topics course in high-dimensional statistics
- STA 290, department seminar

SELECTED
PRESENTA-
TIONS AND
PROGRAMS

- EcoSta, Kyoto, August 2026, invited talk
- JSM, Boston, August 2026, invited talk
- Recent Advances on Time Series, Larnaca, June 2026, invited talk
- Mathematics of Data and Decisions Seminar, UC Davis, April 2026, invited talk
- Statistics Department Seminar, National University of Singapore, February 2026, invited talk
- International Computer Science Institute seminar, Berkeley, September 2025, invited talk
- EcoSta, Tokyo, August 2025
- International Indian Statistical Association, Lincoln, June 2025, invited talk
- University of Toronto, Statistics Department Colloquium, 2024, invited talk
- World Congress of Probability and Statistics, Bochum, 2024, invited talk
- EcoSta, Beijing, 2024
- Washington University Department of Statistics Seminar, St. Louis, 2024, invited talk
- CMStatistics, Berlin, 2023, invited talk
- EcoSta, Tokyo, 2023, invited talk
- UCSB, Statistics Department Seminar, 2023, invited talk
- Auburn University, Department of Mathematics and Statistics Seminar, 2023, invited talk
- Oak Ridge National Laboratory, Computational Mathematics Seminar, 2022, invited talk
- EcoSta Conference, Kyoto, 2022, invited talk
- International Symposium on Nonparametric Statistics (ISNPS), Paphos, 2022
- CMStatistics Conference, London, 2021, invited talk
- USC, Statistics Group Seminar, 2021, invited talk
- UIUC, Statistics Department Seminar, 2021, invited talk
- Rutgers, Statistics Department Seminar, 2021, invited talk
- DOE RASC Workshop on Randomized Algorithms, 2020, invited tutorial
- CMStatistics, London, 2020, invited talk
- ASA Conference on Statistical Learning and Data Science (SLDS), Irvine, 2020, invited talk (canceled due to COVID 19)
- UC Berkeley Biostatistics Seminar, 2020, invited talk
- Conference on Information Systems and Sciences, Princeton, 2020, invited talk (canceled due to COVID 19)
- Random Matrices and Data Analysis Workshop, Shanghai, 2019, invited talk

- CMStatistics Conference, London, 2019, invited talk
- Center for Discrete Mathematics and Theoretical Computer Science (DIMACS), Rutgers, 2019, invited talk
- Workshop on Higher-Order Asymptotics and Post-Selection Inference (WHOA-PSI), St. Louis, 2019, invited talk
- JSM, Denver, 2019, invited talk in topic-contributed session
- Banff International Research Station (BIRS) Workshop, 2019, invited talk
- Caltech, Applied Mathematics Seminar, 2019, invited talk
- CMStatistics Conference, Pisa, 2018, invited talk
- NC State, Statistics Department Colloquium, 2018, invited talk
- Western Section Meeting of the American Mathematical Society (AMS), San Francisco, 2018, invited talk
- Simons Institute, Program on Randomized Numerical Linear Algebra, Berkeley, 2018, invited talk
- SIAM Annual Meeting, Portland, 2018, invited talk
- International Conference on Econometrics and Statistics (ECOSTA), Hong Kong, 2018, invited talk
- International Indian Statistical Association (IISA) Conference, Gainesville, 2018, invited talk
- UC Davis, Economics Department Seminar, 2018, invited talk
- IMS Pacific Rim Meeting, Singapore, 2018, invited talk
- Banff International Research Station (BIRS), 2018, invited participant
- University of Florida, Statistics Department Seminar, 2017, invited talk
- Duke Fuqua School of Business, Decision Sciences Seminar, 2017, invited talk
- IMS-China International Conference, Nanning, 2017, invited talk
- UC Riverside, Statistics Department Seminar, 2017, invited talk
- University of Georgia, Statistics Department Seminar, 2017, invited talk
- Neural Information Processing Systems (NeurIPS) Conference, Barcelona, 2016, workshop paper talk
- UC Davis, Computer Science Department Colloquium, 2016, invited talk
- International Indian Statistical Association (IISA) Conference, Corvallis, 2016, invited talk
- JSM, Chicago, 2016, invited session talk

- University of Michigan, Statistics Department Seminar, 2014, invited talk
- UC Davis, Statistics Department Seminar, 2014, invited talk
- UC San Diego, Mathematics Department Seminar, 2014, invited talk
- Neural Information Processing Systems (NeurIPS) Conference, Montreal, 2014, accepted paper spotlight talk