Chen Cheng

✉: chencheng@uchicago.edu
Homepage: moriartycc.github.io

Employment

University of Illinois Urbana-Champaign, IL, USA

- **Assistant Professor in Statistics**, Department of Statistics. 8/2026 *(To start)*

University of Chicago, IL, USA

- **Postdoctoral Scholar in Statistics**, Department of Statistics. 8/2025 – 8/2026
  Advised by: Rina Foygel Barber.

Education

Stanford University, CA, USA

- **Ph.D. in Statistics**, Department of Statistics.
  Jointly advised by: John Duchi and Andrea Montanari 9/2019 – 6/2025
- GPA: $4.20/4.30$.

Peking University, Beijing, China

- **B.S. in Computational Mathematics**, School of Mathematical Sciences. 9/2015 – 7/2019
- GPA: $3.90/4.00$, Rank: $1/18$. (with distinction)

Visiting and Working Experiences

LinkedIn Corporation, WA, USA

- **Research Intern**.
  Supervised by: Ryan Rogers and Saikrishna Badrinarayanan 6/2023 – 9/2023

New York University, Courant Institute of Mathematical Sciences, NY, USA

- **Research Assistant**.
  Supervised by: Miranda Holmes-Cerfon 9/2018 – 12/2018

Princeton University, NJ, USA

- **Research Assistant**.
  Supervised by: Yuxin Chen 7/2018 – 9/2018

Research Interests

Machine learning theory, Random matrix theory, High dimensional statistics, Reinforcement learning.

Publications

P13 **C. Cheng**, R. F. Barber. "Concentration Inequalities for Exchangeable Tensors and Matrix-valued Data", 2026. arXiv.

P12 **C. Cheng**, J. Duchi. "Some Robustness Properties of Label Cleaning", 2025. arXiv.

P11 M. Celentano, **C. Cheng**, A. Pananjady, KA. Verchand. "State evolution beyond first-order methods I: Rigorous predictions and finite-sample guarantees", 2025. arXiv.

P10 **C. Cheng**, J. Duchi, D. Levy. "Geometry, Computation, and Optimality in Stochastic Optimization", 2024. arXiv.

P9 F. Areces, **C. Cheng**, J. Duchi, R. Kuditipudi. "Two Fundamental Limits for Uncertainty Quantification in Predictive Inference", 2024. Conference on Learning Theory (COLT), 2024.

P8 **C. Cheng**, G. Cheng, J. Duchi. "Collaboratively Learning Linear Models with Structured Missing Data", 2023. Conference on Neural Information Processing Systems (NeurIPS), 2023. arXiv. Presented in [T7].

P7 **C. Cheng**, A. Montanari. "Dimension Free Ridge Regression", 2023. Annals of Statistics, vol. 52, no. 6, pp. 2879-2912, 2024. arXiv. Presented in [T6, T9, T10, T11, T12, T12, T13, T14, T15, T16].

P6 **C. Cheng**, H. Asi, J. Duchi. "How Many Labelers Do You Have? A Closer Look at Gold-Standard Labels", 2022. arXiv. Presented in [T4, T6, T9, T10, T11, T12, T13, T14, T15, T16].

P5 **C. Cheng**, J. Duchi, R. Kuditipudi. "Memorize to Generalize: on the Necessity of Interpolation in High Dimensional Linear Regression", 2022. Conference on Learning Theory (COLT), 2022. arXiv. Presented in [T3].

P4 M. Celentano, **C. Cheng**, A. Montanari. "The High-dimensional Asymptotics of First Order Methods with Random Data", 2021. arXiv. Presented in [T8].

P3 S. Cen, **C. Cheng**, Y. Chen, Y. Wei, Y. Chi, "Fast Global Convergence of Natural Policy Gradient Methods with Entropy Regularization", 2020. Operations Research, 2021. arXiv.

P2 **C. Cheng**, Y. Wei, Y. Chen, "Tackling Small Eigen-gaps: Fine-Grained Eigenvector Estimation and Inference under Heteroscedastic Noise", 2020. IEEE Transactions on Information Theory, 2021. arXiv.

P1 Y. Chen, **C. Cheng**, J. Fan, "Asymmetry Helps: Eigenvalue and Eigenvector Analyses of Asymmetrically Perturbed Low-Rank Matrices", 2019. Annals of Statistics, vol. 49, no. 1, pp. 435-458, 2021. arXiv. Presented in [T2].

Dissertation

"High dimensionality in modern machine learning: a random matrix theory perspective". Stanford University ProQuest Dissertations & Theses. 2025.

Academic Honors & Awards

Fellowship & Scholarship

- William R. Hewlett Stanford Graduate Fellowship. 9/2019
- Yizheng Special Scholarship and Merit Student. 9/2018
- Leo-KoGuan Scholarship and Merit Student. 9/2017
- National Scholarship and Merit Student Pacesetter (Highest Honor) . 9/2016

Awards

- George E. Nicholson Student Paper Competition. Finalist. 10/2021
- Excellent Graduate of Beijing. 6/2019
- Excellent Graduate of Elite Training Program of Applied Mathematics. 6/2019
- S.T. Yau College Student Mathematics Contests – Group (Probability). Silver Medalist. 8/2017
- Elite Training Program of Applied Mathematics & Pure Mathematics. 2016-2019
- Chinese Mathematical Olympiad (CMO). Gold Medalist. 2014
- National Olympiad in Informatics (NOI), China. Silver Medalist. 2012

Talks and Presentations

T18 Workshop in Frontiers in Learning Under Data Heterogeneity, University of Florida. 1/2026

T17 NSF-Simons NITMB MathBio Convergence Conference, Chicago. 8/2025

T16 [P6, P7], Statistics Seminar, University of Illinois Urbana-Champaign. 1/2025

T15 [P6, P7], Statistics Seminar, Rutgers University New Brunswick. 1/2025

T14 [P6, P7], Statistics Seminar, New York University Stern. 1/2025

T13 [P6, P7], Statistics Seminar, University of Cambridge DPMMS. 1/2025

T12 [P6, P7], Symposium on Statistics and Biostatistics, Peking University. 12/2024

T11 [P6, P7], Statistics Seminar, Tsinghua University YMSC. 12/2024

T10 [P6, P7], Statistics Seminar, Chinese University of Hong Kong. 12/2024

T9 [P6, P7], Statistics Seminar, National University of Singapore. 12/2024

T8 [P4], Simons Seminar, University of California Berkeley. 11/2024

T7 [P8], Conference on Neural Information Processing Systems (NeurIPS), New Orleans. 12/2023

T6 Stanford Stats Department Industrial Affiliated Conference, Stanford University. 11/2023

T5 [P6], Stanford Stats Department Industrial Affiliated Conference, Stanford University. 11/2022

T4 [P5], Conference on Learning Theory (COLT), London. 07/2022

T3 [P6], Stanford Data Analytics for What's Next (DAWN) workshop, Aptos. 05/2022

T2 [P1], Seminar for Modeling & Simulation, New York University Courant. 10/2018

T1 Seminar for Elite Ph.D Training Program of Applied Mathematics, Peking University. 11/2017

Teaching Experiences

As Teaching Assistant

- STATS 141. Biostatistics. Autumn 2019
- STATS 214/CS 229M. Machine Learning Theory. (Head TA) Winter 2021
- STATS 205. Introduction to Nonparametric Statistics. Spring 2021
- STATS 369. Methods from Statistical Physics. Autumn 2021
- MATH 230A/STATS 310A. Theory of Probability. Autumn 2022
- STATS 208. Bootstrap, Cross-Validation, and Sample Re-use. Winter 2023
- STATS 311/EE 377. Information Theory and Statistics. Autumn 2023
- STATS 315A. Modern Statistical Learning. Winter 2024
- STATS 118. Theory of Probability II. Summer 2024

Professional Services

Reviewing

Journal

Annals of Statistics (AOS), Foundations of Computational Mathematics (FOCM), IEEE Transactions on Information Theory (TIT), Information and Inference: A Journal of the IMA, Journal of Machine Learning Research (JMLR), Journal of the American Statistical Association (JASA), Journal of the Royal Statistical Society: Series B (Statistical Methodology), Mathematical Statistics and Learning, SIAM Journal on Mathematics of Data Science (SIMODS)

Conference

Conference on Learning Theory (COLT), Conference on Neural Information Processing Systems (NeurIPS), International Conference on Learning Representations (ICLR), International Conference on Machine Learning (ICML), IEEE International Symposium on Information Theory (ISIT), Symposium on Theory of Computing (STOC)