Nabarun Deb

Curriculum Vitae/Resume

Chicago Booth School of Business
5807 S Woodlawn Avenue, IL 60637
✆ *+1 9143430962*
✉ *nabarun.deb@chicagobooth.edu*
🖥 *nabarund.github.io/*

Education

2023- **Assistant Professor of Econometrics and Statistics**,*University of Chicago Booth School of Business*

2022-23 **Postdoctoral fellow**, University of British Columbia, Vancouver, Canada
- Department of Mathematics (under the Kantorovich Initiative)
- Supervised by Dr. Young-Heon Kim, Dr. Soumik Pal, and Dr. Geoffrey Schiebinger

2017-22 **Doctor of Philosophy**, *Columbia University*, New York, USA
- *Department of Statistics*
- Supervised by *Dr. Bodhisattva Sen* and *Dr. Sumit Mukherjee*

2015-17 **Master of Statistics (M. Stat)**, *Indian Statistical Institute*, Kolkata, India
- Specialization: Theoretical Statistics
- Dissertation under *Dr. Moulinath Banerjee*
- First Division with Distinction

2012-15 **Bachelor of Statistics (B. Stat)(Hons)**, *Indian Statistical Institute*, Kolkata, India
- First Division with Distinction

Research Interests

— Nonparametric inference and testing

— Theory of optimal transport and its applications in statistics

— Kernel methods and k-nearest neighbor graphs

— Multiple hypotheses testing

— Network models and theory of dependent observations (Ising model, exponential random graph models, etc.)

Papers

— **Deb, N.**, Kim, Y.H., Pal, S., Schiebinger, G. (2023+). Wasserstein Mirror Gradient Flow as the Limit of the Sinkhorn Algorithm. See `https://arxiv.org/pdf/2307.16421.pdf`

— Bhattacharya, S.,**Deb, N.**, Mukherjee, S. (2023+). Gibbs Measures with Multilinear Forms. See `https://arxiv.org/pdf/2307.14600.pdf`

— Bhattacharya, S.,**Deb, N.**, Mukherjee, S. (2022+). LDP for Inhomogeneous U-Statistics (Status: Submitted). See `https://arxiv.org/pdf/2212.03944.pdf`

— Ghosh, A., **Deb, N.**, Karmakar, B., Sen, B. (2021+). Efficiency of Regression (Un)-Adjusted Rosenbaum's Rank-based Estimator in Randomized Experiments (Preprint). See `https://arxiv.org/pdf/2111.15524.pdf`

— **Deb, N.**, Ghosal, P., Sen, B. (2021+). Rates of Estimation of Optimal Transport Maps using Plug-in Estimators via Barycentric Projections (Status: **"Accepted"** at *Neural Information Processing Systems (NeurIPS) 2021*). See `https://arxiv.org/abs/2107.01718`

— Auddy, A., **Deb. N.**, Nandy, S. (2021+). Exact Detection Thresholds for Chatterjee's Correlation (Status: **"Accepted"** at *Bernoulli*). See `https://arxiv.org/pdf/2104.15140.pdf`

— **Deb, N.**, Bhattacharya, B., Sen, B. (2021+). Efficiency Lower Bounds for Distribution-Free Hotelling-Type Two-Sample Tests Based on Optimal Transport (Status: "Reject with resubmission" at *Annals of Statistics*; Submitted). See `https://arxiv.org/pdf/2104.01986.pdf`

— Huang, Z., **Deb, N.**, Sen, B. (2020+). Kernel Partial Correlation Coefficient – a Measure of Conditional Dependence. (Status: **"Accepted"** at *Journal of Machine Learning Research (JMLR)*). See `https://arxiv.org/pdf/2012.14804.pdf`

— **Deb, N.**, Mukherjee, R., Mukherjee, S., and Yuan, M. (2020+). Detecting Structured Signals in Ising Models. (Status: **"Accepted"** at *Annals of Applied Probability*). See `https://arxiv.org/pdf/2012.05784.pdf`

— **Deb, N.**, Ghosal, P., and Sen, B. (2020+). Measuring Association on Topological Spaces Using Kernels and Geometric Graphs. (Status: "Reject with resubmission" at *Annals of Statistics*; to be resubmitted). See `https://arxiv.org/pdf/2010.01768.pdf`

— **Deb, N.**, and Mukherjee, S. (2020+). Fluctuations in Mean-Field Ising Models. (Status: **"Accepted"** at *Annals of Applied Probability*). See `https://arxiv.org/pdf/2005.00710.pdf`

— **Deb, N.**, and Sen, B. (2019+). Multivariate Rank-based Distribution-free Nonparametric Testing using Measure Transportation. (Status: **"Accepted"** at *J. Amer. Statist. Assoc. (JASA)*). See `https://arxiv.org/pdf/1909.08733.pdf`

— **Deb, N.**, Saha, S., Guntuboyina, A., and Sen, B. (2018+). Two-component Mixture Model in the Presence of Covariates. (Status: **"Accepted"** at *J. Amer. Statist. Assoc. (JASA)*). See `https://arxiv.org/pdf/1810.07897.pdf`). Also see `https://cran.r-project.org/web/packages/NPMLEmix/index.html` for the **associated R package**

Awards and Achievements

2019 *Minghui Yu Teaching Assistant Award* in the Statistics Department, Columbia University

2019 *Student Paper Competition winner* in the Theory & Methods section, *International Indian Statistical Association (IISA), Mumbai, India*

2017 Nominated for the Prasanta Chandra Mahalanobis Gold medal for outstanding performance in the Master of Statistics Programme, Indian Statistical Institute, Kolkata, India
-Awarded to the top 4 students in class

2012 An INMO *Indian National Mathematical Olympiad* merit certificate holder
-Awarded to the top 75 students in the country

2012 A recipient of the award of Scholarship for Higher Education (SHE) under Innovation in Science Pursuit for Inspired Research *INSPIRE*
-It is awarded to the top 1% students in the Indian School Certificate Examinations, 2012

Talks, Conferences and Workshops

2023 (Invited Talk) Pacific Institute for the Mathematical Sciences (PIMS) Postdoctoral Fellow Seminar, February (2023)
Title: *Optimal Transport in Statistics and Pitman efficient multivariate distribution-free testing*

2022 (Invited Talk) Computational and Methodological Statistics, December (2022)
Title: *Optimal Transport in Statistics and Pitman efficient multivariate distribution-free testing*

2022 (Invited Talk) Kantorovich Initiative Seminar Series, September 2022
Title: *Effect of Dependence on the Convergence of Empirical Wasserstein Distance*

2022 (Invited Talk) Joint Statistical Meeting Session "On Recent Progress in Measuring Dependence and Conditional Dependence", August 2022
Title: *Measuring Association on Topological Spaces Using Kernels and Geometric Graphs*

2022 (Invited Talk) Institute for Mathematical and Statistical Innovation (IMSI) Workshop on Applied Optimal Transport, May 2022
Title: *Effect of Dependence on the Convergence of Empirical Wasserstein Distance*

2022 (Invited Talk) Kantorovich Initiative retreat, March 2022
Title: *Optimal Transport in Statistics and Pitman efficient multivariate distribution-free testing*

2022 (Invited (Job) Talk) University of Wisconsin, February 2022
Title: *Optimal Transport in Statistics and Pitman efficient multivariate distribution-free testing*

2022 (Invited (Job) Talk) University of California, San Diego, February 2022
Title: *Optimal Transport in Statistics and Pitman efficient multivariate distribution-free testing*

2022 (Invited (Job) Talk) Cornell University, Operations Research and Information Engineering Department, February 2022
Title: *Optimal Transport in Statistics and Pitman efficient multivariate distribution-free testing*

2022 (Invited (Job) Talk) University of Chicago, Booth School of Business, Econometrics and Statistics group, February 2022
Title: *Optimal Transport in Statistics and Pitman efficient multivariate distribution-free testing*

2022 (Invited (Job) Talk) Purdue University, February 2022
Title: *Optimal Transport in Statistics and Pitman efficient multivariate distribution-free testing*

2022 (Invited (Job) Talk) University of Illinois, Urbana Champaign, February 2022
Title: *Optimal Transport in Statistics and Pitman efficient multivariate distribution-free testing*

2022 (Invited (Job) Talk) Stanford University for Stein's Fellow position, February 2022
Title: *Optimal Transport in Statistics and Pitman efficient multivariate distribution-free testing*

2022 (Invited (Job) Talk) Rutgers University, February 2022
Title: *Optimal Transport in Statistics and Pitman efficient multivariate distribution-free testing*

2022 (Invited (Job) Talk) University of California, Davis, January 2022
Title: *Optimal Transport in Statistics and Pitman efficient multivariate distribution-free testing*

2022 (Invited (Job) Talk) University of Minnesota, January 2022
Title: *Optimal Transport in Statistics and Pitman efficient multivariate distribution-free testing*

2022 (Invited (Job) Talk) University of North Carolina at Chapel Hill, January 2022
Title: *Optimal Transport in Statistics and Pitman efficient multivariate distribution-free testing*

2022 (Invited (Job) Talk) Penn State University, January 2022
Title: *Optimal Transport in Statistics and Pitman efficient multivariate distribution-free testing*

2022	(Invited (Job) Talk) University of Michigan, January 2022 Title: *Optimal Transport in Statistics and Pitman efficient multivariate distribution-free testing*
2021	(Invited (Job) Talk) Texas A&M University, December 2021 Title: *Optimal Transport in Statistics and Pitman efficient multivariate distribution-free testing*
2021	(Invited Talk) Indian Statistical Institute Stat-Math seminar, December 2021 Title: *Fluctuations for Conditionally Centered Sums in Markov Random Fields*
2021	(Invited talk) 34th New England Statistics Symposium, October 2021 Title: *Measuring Association/Conditional Association on Topological Spaces Using Kernels and Geometric Graphs*
2020	(Invited Talk) ETH Zurich, Young Data Science Researcher Seminar Title: *Measuring Association on Topological Spaces Using Kernels and Geometric Graphs*
2020	(Invited Talk) University of Berkeley, at the Berkeley-Columbia Meeting in Engineering and Statistics Title: *Multivariate Rank-based Distribution-free Nonparametric Testing using Measure Transportation*
2020	Participated in "Talking across fields", Stanford University — a conference in honor of Prof. Persi Diaconis
2019	(Invited Talk) International Indian Statistical Association (IISA) Conference, student paper award for Theory & Methods section Title: *Multivariate Rank-based Distribution-free Nonparametric Testing using Measure Transportation*
2019	(Talk) Joint Statistical Meeting, Denver, Colorado — contributed session Title: *Two-component Mixture Model in the Presence of Covariates*
2019	(Talk) Saint Flour Probability Summer School — student talk Title: *Fluctuations in Mean-Field Ising Models*
2019	(Talk) Minghui Conference, Columbia University. Title: *Fluctuations in Mean-Field Ising Models*
2018	Participated in the Banff International Research Station for Mathematical Innovation and Discovery (BIRS) Workshop on *Shape-Constrained Methods: Inference, Applications, and Practice*, Alberta, Canada
2017	(Invited Talk) Prasanta Chandra Mahalanobis memorial lecture, Indian Statistical Institute Title: *Change Point problems - detection and applications.*

Technical expertise

Software Packages	R, Python, Matlab, Gurobi, Mathematica, Geogebra, LaTeX, HTML, Macromedia Flash	Programming Languages	BASIC, JAVA, C, C++

Teaching experience

2023	Instructor for "Integral Calculus with Applications" at UBC, Vancouver
2019	Qualifying Exams workshop (Theoretical Statistics) for Ph.D. students, Summer 2019

2017-2022   Teaching assistant in the following courses:
1. Theoretical Statistics for first year Ph.D. students (2019 & 2020 & 2021 & 2022)
2. Nonparametric statistics, both Masters and Undergrad levels (2018)
3. Statistical Inference, Masters level (2017, 2018, 2019)
4. Probability, Masters level (2017, 2018, 2019)
5. Calculus-based Introduction to Statistics, Undergrad level (2020)
6. Statistical Methods in Finance (2021)

Professional Service

2019-   Reviewer for the following journals/conferences: (1) Annals of Statistics, (2) Electronic Journal of Statistics, (3) Biometrika, (4) International Conference on Machine Learning (2020), (5) Insurance: Mathematics and Economics, (6) Journal of Statistical Theory and Practice, (7) Bernoulli, (8) IEEE Transactions on Information Theory, (9) Journal of the Royal Statistical Society: Series B, (10) Markov Processes and Related Fields, (11) Artificial Intelligence and Statistics (AISTATS), (12) Journal of Computational and Graphical Statistics, (13) Journal of Machine Learning Research, (14) Annual Conference on Learning Theory, and (15) Statistica Sinica.

2022-23   Co-organizer of the Kantorovich Initiative Seminar series

2022-   Organized session on "Optimal transport — Recent theoretical advances" in Computational and Methodological Statistics (2022) conference

Miscellaneous information

Communication Skills   Fluent in speaking and writing English, Bengali, Hindi.

Hobbies   An avid sports lover, particularly interested in following cricket, lawn tennis and table tennis

A voracious reader, I also love watching movies, listening to music and playing the synthesizer at leisure