Nabarun Deb

Curriculum Vitae/Resume

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Education

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

2015-2017 **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.**, 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+), (* all authors are Ph.D. students and they contributed equally). Exact Detection Thresholds for Chatterjee's Correlation (Status: Submitted). 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*; to be resubmitted). See `https://arxiv.org/pdf/2104.01986.pdf`

— Barman, P., **Deb, N.**, Mukherjee, S. (2020+). Mathematical framework to model Covid-19 daily deaths (Technical report). See `https://www.medrxiv.org/content/medrxiv/early/2020/05/22/2020.05.18.20106104.full.pdf`

— Huang, Z., **Deb, N.**, Sen, B. (2020+). Kernel Partial Correlation Coefficient – a Measure of Conditional Dependence. (Status: **"Minor revision requested"** 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: Submitted). 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: **"Minor revision requested"** 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.*). 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.*). 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

2022 (Upcoming Invited Talk) Joint Statistical Meetings 2022
Title: *Efficiency Lower Bounds for Distribution-Free Hotelling-Type Two-Sample Tests Based on Optimal Transport*

2021 (Upcoming Invited Talk) Indian Statistical Institute Stat-Math seminar, December 2021
Title: *Fluctuations for Conditionally Centered Sums in Markov Random Fields*

2021 (Invited talk) 34^{th} 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

2019 Qualifying Exams workshop (Theoretical Statistics) for Ph.D. students, Summer 2019

2017- Teaching assistant in the following courses:

1. Theoretical Statistics for first year Ph.D. students (2019 & 2020 & 2021)
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: (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 Planning and Inference, (7) Bernoulli, (8) IEEE Transactions on Information Theory, and (9) Journal of the Royal Statistical Society: Series B

Miscellaneous information

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

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

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

I hereby do certify that all the above information is true to the best of my knowledge.
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