

NAVONIL DEB

Curriculum Vitae

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🎓 EDUCATION

- **PhD Candidate**, Department of Statistics and Data Science. *Fall 2021 - Spring 2026 (Expected)*
Bowers College of Computing and Information Science, Cornell University.
Doctoral Advisor: Sumanta Basu.
Minor field: Operations Research and Information Engineering.
- **Master of Statistics**, Indian Statistical Institute Kolkata. *Fall 2019 - Spring 2021*
Specialization: Financial Statistics.
- **Bachelor of Statistics**, Indian Statistical Institute Kolkata. *Fall 2016 - Spring 2019*

🔍 RESEARCH INTERESTS

My research focuses on developing statistically principled methodologies for analyzing large-scale and dependent data with complex structures arising across diverse domains. I aim to make such dependencies learnable through methodologies with theoretical guarantees and scalable computational algorithms. Broadly, my work lies at the intersection of **Time Series Analysis**, **High-Dimensional Statistics**, **Graphical Models** and **Causal Inference**.

📄 SCHOLARLY MANUSCRIPTS

(Title is hyperlinked to the online pdf, * denotes equal contribution)

Preprints under Review

1. **Navonil Deb**, Raaz Dwivedi, Sumanta Basu (2025). [Counterfactual Forecasting for Panel Data](#). arXiv:2511.06189. *Under review at AISTATS*.
2. **Navonil Deb**, Amy Kuceyeski, and Sumanta Basu (2024). [Regularized Estimation of Sparse Spectral Precision Matrices](#). arXiv:2401.11128. *Submitted to Journal of Machine Learning Research*.

Working Papers

1. **Navonil Deb***, Younghoon Kim*, Sumanta Basu. Inference for High-dimensional Sparse Spectral Precision Matrices. (In preparation)

Interdisciplinary Research

1. Robin Radcliffe, Robin Desmond Gleed, Ava Cable, **Navonil Deb**. Predicting the Body Weight of Endangered Rhinoceroses in Namibia (In preparation).
Role: Designed data-driven statistical model to predict the body weight of endangered rhinoceroses from morphological measurements and demographic data, aiding rhino air-transport planning and veterinary health management.
2. Sayan Paul, Dhruva Nandi, **Navonil Deb**, Amy Kuceyeski, Sumanta Basu and Sreyoshi Das. Predicting Cognitive Scores and Demographics Using Resting State Functional MRI Features (In preparation).

Role: Designed penalized logistic regression models with feature engineering to uncover sex-independent and sex-specific neurobiological univariate correlates of cognitive performance in healthy individuals, providing insights into sex-differentiated patterns of cognitive impairment in neurological diseases.

Other Research Experience and Reports

1. **Navonil Deb***, Abhinandan Dalal* and Gopal Krishna Basak (2020). [Finding Optimal Cancer Treatment using Markov Decision Process to Improve Overall Health and Quality of Life](#). arXiv:2011.13960.
2. **Navonil Deb** and Arijit Chakrabarti. [Some Contributions to Inference and Model Selection in High Dimensional Statistics](#) (2021). Master's dissertation.

Software

cxreg: An R Package for Complex-Valued Lasso and Graphical Lasso, includes optimized Fortran subroutines for efficient large-scale computation.

Authors: Younghoon Kim, **Navonil Deb**, and Sumanta Basu

 [link](#)

CONFERENCE PRESENTATIONS

Regularized Estimation of Sparse Spectral Precision Matrices

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|---|--------------------|
| 1. Spring Research Conference, Baruch College - CUNY, New York NY (Invited Talk). | <i>May 2025</i> |
| 2. CMStatistics, King's College, London (Invited virtual talk). | <i>Dec 2024</i> |
| 3. IMS Congress, Bochum, Germany. | <i>August 2024</i> |
| 4. JSM, Toronto, ON Canada. | <i>Aug 2023</i> |
| 5. NESS Symposium, Boston University, Boston MA (Invited Talk). | <i>June 2023</i> |
| 6. PhD students seminar, Department of Statistics and Data Science, Cornell University, Ithaca NY (Invited talk). | <i>May 2023</i> |
| 7. Conference on Advances in Time Series, UChicago Booth (Invited Poster). | <i>May 2023</i> |
| 8. IISA, Bangalore, India. | <i>De 2022</i> |
| 9. NBER-NSF Time Series Conference, Boston University, Boston MA (Selected poster). | <i>Fall 2022</i> |

Counterfactual Forecasting for Panel Data

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|---|-----------------|
| 1. JSM, Nashville, TN. | <i>Aug 2025</i> |
| 2. PhD students seminar, Department of Statistics and Data Science, Cornell University, Ithaca NY (Invited talk). | <i>Dec 2024</i> |

Teaching Experience

Teaching Assistant for Undergraduate Courses at Cornell

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|---|--|
| 1. Theory of Statistics (STSCI 4090). | <i>Fall 2025</i> |
| 2. Applied Time Series Analysis (STSCI 4550). | <i>Spring 2025, Spring 2024, Spring 2023</i> |
| 3. Probability Models and Inference (STSCI 3080). | <i>Fall 2024</i> |
| 4. Linear Models with Matrices (STSCI 4030). | <i>Fall 2023</i> |
| 5. Statistical Sampling (STSCI 3100). | <i>Fall 2022</i> |

Teaching Assistant for Graduate Courses at Cornell

1. Probability II for Statistics (STSCI 6750).
2. Statistical Computing I (STSCI 6520). *Fall 2024*
– Guest lecture on Complex-valued optimization in high dimension with real-complex ring isomorphism.

Research Internship Experience

1. Research Internat at **Self-Organizing Systems (SOS) Lab, Technische Universität (TU) Darmstadt, Germany** (virtual due to Covid 19). On [The Asymptotic Behavior of the Moments of the Causal Estimator for the Input in a Poisson Channel](#).
Supervisor: Heinz Köppl and Mark Sinzger. *May 2020 - Nov 2020*
2. Short-term summer intern at **National Institute of Biomedical Genomics, India**. A Coalescent Process Framework for Reconstructing Historical Population Genomic Structure.
Supervisor: Analabha Basu. *May 2019 - July 2019*

Awards

- 1.
2. Undergraduate and Masters studies supported by **Kishore Vaigyanik Protsahan Yojana (KVPY)** award by Department of Science & Technology (DST), Government of India.
3. Recipient of **Prize Money Award** for outstanding performance in four semesters during undergraduate and masters studies in Indian Statistical Institute.

Technical Skills

Programming	R, Python, Fortran, C, C++ (rudimentary).
Computing Platform	BioHPC.
Software	RStudio, Jupyter.
Applications	L ^A T _E X, Git, Excel.

Academic Services

1. Lab organizer of [Statistical Modeling of Complex Systems \(SMOCS\)](#) at Cornell. *Fall 2024*
2. Session Chair for “Recent Developments in Causal Inference”, JSM, Toronto, ON Canada. *Aug 2023*
3. Organizer of reading group on Causal ML Methods in Longitudinal Data at Cornell. *Spring 2023*
4. Journal reviewer for Computational Statistics, Sankhya A.