Samhita Pal, Ph.D.

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Education

Jan 2021 – May 2025 — **Ph.D. Statistics, North Carolina State University**, Raleigh, North Carolina, USA.
Thesis title: *Bayesian Inference in High-dimensional Regression Models using Sparse Projection Posterior.*
Advisor: Subhashis Ghoshal. GPA: 4.00.

Aug 2018 – Oct 2020 — **M.Sc. Statistics, University of Calcutta**, Kolkata, India.
Course rank: 2.

Jul 2015 – May 2018 — **B.Sc. Statistics (Honours), St. Xavier's College (Autonomous)**, Kolkata, India.
Course rank: 1.

Employment History

June 2025 – Present — **Postdoctoral Research Associate in Biostatistics,** Vanderbilt University Medical Center.
Advisors: *Dr. Amir Asiaee* (VUMC) and *Dr. Jared Huling* (University of Minnesota)

Aug 2024 – May 2025 — **Graduate Teaching Assistant,** Department of Statistics, North Carolina State University.

June 2024 – August 2024 — **Summer Biometric Intern.** Oncology Department, AstraZeneca Pharmaceuticals.

Jan 2022 – May 2024 — **Graduate Research Assistant,** Department of Statistics, North Carolina State University.

Jan 2021 – Dec 2021 — **Graduate Teaching Assistant,** Department of Statistics, North Carolina State University.

August 2019 — **Graduate Program,** Workshop on Statistical Data Integration, Institute of Mathematical Sciences, National University of Singapore.

May – July 2019 — **Summer Research Internship,** Department of Mathematics and Statistics, Indian Institute of Science Education and Research, India.

Research Interests

- Bayesian Methods | High-dimensional Statistics | Causal Inference | Transfer Learning |

Research Publications

Published Journal Articles

1. Dhrubajyoti Ghosh and **Samhita Pal**, Efficacy analysis in clinical trials: A comprehensive review of statistical and machine learning approaches, ***New England Journal of Statistics in Data Science***, 2026, in press.
2. **Samhita Pal**, Dhrubajyoti Ghosh, and Shu Yang, Penalized FCI for causal structure learning in a sparse dag for biomarker discovery in parkinson's disease, ***Accepted at Annals of Applied Statistics***, 2026.
3. **Samhita Pal** and Subhashis Ghoshal, Bayesian high-dimensional grouped-regression using sparse projection-posterior, ***Statistica Sinica***, 2026, in press.

4. **Samhita Pal** and Subhashis Ghoshal, Bayesian high-dimensional linear regression with sparse projection-posterior, ***Accepted at Bayesian Analysis***, 2026.
5. Dhrubajyoti Ghosh, **Samhita Pal**, Michael Lutz, and Sheng Luo, Ensemble survival analysis for preclinical cognitive decline prediction in alzheimer's disease using longitudinal biomarkers, ***Journal of Alzheimer's Disease***, vol. 107, no. 3, pp. 1256–1266, 2025.
6. **Samhita Pal** and Subhashis Ghosal, Projection-posterior for variable selection: Weak limit and coverage, ***Electronic Journal of Statistics***, vol. 19, no. 2, pp. 3743–3770, 2025.
7. **Samhita Pal** and Xinge Jessie Jeng, Discovering candidate genes regulated by gwas signals in cis and trans, ***Statistics in Biosciences***, 2024.

Published Conference Proceedings

1. **Samhita Pal** and Amir Asiaee, Improving RCT-based treatment effect estimation under covariate mismatch via calibrated alignment, in ***Conference on Uncertainty in Artificial Intelligence (UAI) 2026***.
2. Amir Asiaee, **Samhita Pal**, Cole Beck, and Jared D. Huling, Sharp bounds for treatment effect generalization under outcome distribution shift, in ***5th Conference on Causal Learning and Reasoning (CLeaR)***, 2026.

Revision Submitted

1. Amir Asiaee, Chiara Di Gravio, Cole Beck, Yuting Mei, **Samhita Pal**, and Jared D. Huling, Improving precision of RCT-based CATE estimation using data borrowing with double calibration, ***Revision submitted to Journal of Machine Learning Research***, 2026.
2. Amir Asiaee and **Samhita Pal**, B-CALM: Bias-limited bayesian borrowing for RCT-anchored treatment effects under covariate mismatch, ***Revision submitted to NeurIPS***, 2026.
3. Amir Asiaee and **Samhita Pal**, Bayes without tears: Stratified posterior inference for continuous DAG learning, ***Revision submitted to NeurIPS***, 2026.
4. Amir Asiaee, **Samhita Pal**, and Jared D. Huling, Omitted-variable sensitivity analysis for generalizing randomized trials, ***Revision submitted to NeurIPS***, 2026.
5. **Samhita Pal** and Xiaoling Wu, Alpha-allocation based on utility and likelihood in multi-arm trials, ***Revision submitted to Biometrical Journal***, 2026.

Submitted

1. Amir Asiaee, **Samhita Pal**, James O'quinn, and James P. Long, Causal discovery with mixed latent confounding via precision decomposition, ***Submitted***, 2026+.
2. Amir Asiaee and Samhita Pal, Noise-calibrated inference from differentially private sufficient statistics in exponential families, ***Submitted***, 2026+.
3. Amir Asiaee, Jared Strauch, Leila Azinfar, Samhita Pal, Heather H Pua, James P Long, and Kevin R Coombes, Widespread data leakage inflates accuracy and corrupts biomarker discovery in cancer drug response prediction, ***Submitted***, 2026+.
4. Dhrubajyoti Ghosh and **Samhita Pal**, Representation learning for causal inference in multimodal repeated cross-sectional surveys with block-missingness, ***Submitted to Statistics in Medicine***, 2026+.
5. **Samhita Pal**, Amir Asiaee, and Jared Huling, Improving RCT-based CATE estimation under covariate mismatch via double calibration, ***Submitted to Journal of the American Statistical Association***, 2026+.
6. **Samhita Pal**, Dilshad Imon, and Dhrubajyoti Ghosh, Air pollution and public health: A lagged spatio-temporal analysis of copd and stroke across u.s. cities, ***Submitted to Journal of Data Science***, 2026+.

7. **Samhita Pal** and Jared Huling, Heterogeneous effects of continuous treatments via conditional incremental effects, ***Submitted to Journal of the American Statistical Association***, 2026+.
8. **Samhita Pal**, James O'quinn, Kaveh Aryan, Heather Pua, James P. Long, and Amir Asiaee, DAG DECORation: Continuous optimization for structure learning under hidden confounding, ***Submitted***, 2026+.
9. **Samhita Pal** and Tian Gu, Hierarchical projection for adaptive knowledge transfer, ***Submitted to Journal of the American Statistical Association***, 2026+.
10. Parvez Rashid, **Samhita Pal**, Vinay Kumar Samudrala, Rahul Yedida, and Edward Gehringer, A bayesian model for peer assessors' reputation system, ***Submitted to EDM 2026***,

Working Papers

1. **Samhita Pal**, Amir Asiaee, and Jared D. Huling, CATE transport sensitivity analysis with doubly valid doubly sharp estimation, ***Working paper***, 2026+.
2. **Samhita Pal** and Chang Su, Transfer learning for causal structure discovery across related DAGs, ***Working paper***, 2026+.
3. **Samhita Pal** and Shu Yang, Sparse projection posterior methods for mendelian randomization with invalid instruments, ***Working paper***, 2026+.
4. **Samhita Pal** and Subhashis Ghosal, Bayesian sparse projection-posterior approach for high-dimensional generalized linear models, ***Working paper***, 2026+.
5. Shubhajit Sen, **Samhita Pal**, and Srijan Sengupta, Social sensors in epidemiological networks via graph eigenvectors, ***Working paper***, 2026+.

Selected Collaborators

- Subhashis Ghoshal (NC State University) | Amir Asiaee (VUMC) | Jared Huling (University of Minnesota) | Shu Yang (NC State University) | Dhrubajyoti Ghosh (Duke / Kennesaw State University) | Tian Gu (Columbia University) | Chang Su (Emory University) |

Skills

Research	High-dimensional Models, Bayesian Modeling and Inference, Causal Inference, Instrumental Variable Regression, Transfer Learning.
Computing	R (Proficient), SAS (Intermediate), Python (Elementary), LaTeX.
R Packages	`sparseProj` [github], `credInt` [github], `PFCI` [cran], `eGene` [github], `ivgls` [cran], `ROSCAR` [github]
Languages	English, Bengali, Hindi, Spanish (elementary).

Miscellaneous

Honors & Awards

2026	**Honorable Mention (2nd place), ISBA Savage Award** for dissertation, Theory and Methods category.
	Travel Award, IMSI New Horizons on Model Transportability and Data Integration.
2024	**Student Conference Award**, NC State Graduate Student Association Award for Travel and Conferences.
	Student Paper Competition Travel Award, IMS ICSDS.

Miscellaneous (continued)

2023
- **Travel Award**, WSDS.
- **National Science Foundation Travel Award**, New Frontiers in Reliability and Risk Analysis Symposium.
- **Student Paper Competition Travel Award**, IISA.
- **B.B. Bhattacharyya Graduate Fund for Excellence Award** (nominated 2022; won 2023).

2022
- **Harshbarger Student Travel Award**, SRCOS Conference.
- **Gertrude M. Cox Achievement Award** for Outstanding Ph.D. Qualifier Exam.

2015–2020
- **Scholarship for Higher Education (SHE): INSPIRE**, Department of Science and Technology, Government of India.

2019
- **Third Prize for Poster**, National Seminar for Sample Surveys, India.

2020
- **Second Rank**, M.Sc. Statistics, University of Calcutta.

2018
- **Arts and Science Award for First Rank**, B.Sc. Statistics, St. Xavier's College (Autonomous), Kolkata.

2015
- **First Rank in school**, under-25 rank in state, Higher Secondary Examination, West Bengal, India.

2013
- **First Rank in school**, under-25 rank in state, Secondary Examination, West Bengal, India.
- **Honorary Student Membership**, Mu Sigma Rho.

Conference & Presentations

2026
- **ISBA Savage Award Session** : Best Dissertation in the Theory and Methods category.
- **Invited Poster Session** : IMSI: New Horizons on Model Transportability and Data Integration.
- **Contributed Talk** : ENAR: Spring Meeting of the Eastern North American Region.

2025
- **Invited Talk** : BIRS workshop on Bayesian Uncertainty Quantification in Large Models, Chennai Mathematical Institute.

2024
- **Student Paper Award Session** : ICSDS: International Conference on Statistics and Data Science.
- **Invited Talk** : CFE-CMStatistics: 18th International Joint Conference on Computational and Financial Econometrics and Computational and Methodological Statistics.
- **Invited Talk** : Calcutta Statistical Association Triennial Symposium.
- **Poster Presentation** : Graduate Student Research Symposium, NCSU.

2023
- **Speed Talk and Hybrid Poster Session** : WSDS: Women in Statistics and Data Science.
- **Invited Poster Session** : New Frontiers in Reliability and Risk Analysis Symposium: A Tribute to Nozer D. Singpurwalla.
- **Poster Presentation** : JSM: Joint Statistical Meetings.
- **Student Paper Award Session** (Theory and Probability division) : IISA: International Indian Statistical Association.

2022
- **Poster Presentation** : SRCOS: Southern Regional Council on Statistics.

2019
- **Poster Presentation** : National Seminar for Sample Survey, University of Calcutta.

Teaching Experience

Fall 2024
- **Grader**, ST 558 — Data Science for Statisticians, NC State University.
- **Grader**, ST 563 — Introduction to Statistical Learning, NC State University.

Summer 2023
- **Grader**, ST 503 — Fundamentals of Linear Models and Regression, NC State University.

Miscellaneous (continued)

Fall 2021 — **Grader**, ST 312 — Introduction to Statistics II, NC State University.

Summer 2021 — **Grader**, ST 311 — Introduction to Statistics, NC State University.

Spring 2021 — **Lab Instructor**, ST 312 — Introduction to Statistics II, NC State University.

Positions of Responsibility

2025 — Organized Invited Session, "Advances in statistical modeling and machine learning for complex data," 2025 CFE-CMStatistics.

2022–2024 — Founder President, Triangle Bengali Association, an NC State University organization for the Bengali-speaking community.

- International Students Representative, Statistical Graduate Students Association, NC State University — organized 4 events.
- Volunteer, Office of International Services, NC State University.

Paper Reviews

- Calcutta Statistical Association Bulletin; Annals of Statistics; Asian Research Journal of Mathematics; CLeaR Conference 2026; Bayesian Analysis; AISTATS CauScale 2026; BMC Medical Informatics and Decision Making; Frontiers in Applied Mathematics and Statistics; Asian Journal of Probability and Statistics; NeurIPS 2026.

Other Activities

- Completed up to the 4th year in Indian classical dance forms — Bharatnatyam and Manipuri — from Pracheen Kala Kendra, Chandigarh, India.
- Completed up to the 4th year in Fine Arts from Sarbabharatiya Sangeet-O-Sanskriti Parishad, recognised by the West Bengal State Akademy of Dance, Drama, Music, Fine Arts and Raja Mansingh Tomar Music Arts University, Gwalior, MP.
- Ukulele, cake icing, Indian folk art.

References

Available on Request