ABHINANDAN DALAL

CONTACT INFORMATION

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ACADEMIC AFFILIATION

- **PhD in Statistics & Data Science**, The Wharton School, University of Pennsylvania
  Advisor: Dylan Small   Fall 2021 - Spring 2026 (Expected)

- **Master of Statistics**, Indian Statistical Institute   Fall 2019 - Spring 2021

- **Bachelor of Statistics**, Indian Statistical Institute   Fall 2016 - Spring 2019

PUBLICATIONS AND PREPRINTS

Published

1. Abhinav Chakraborty*, Anirban Chatterjee* and **Abhinandan Dalal*** (2024). PrIsing: Privacy-Preserving Peer Effect Estimation via Ising Model. *Proceedings of The 27th International Conference on Artificial Intelligence and Statistics* (AISTATS), *PMLR 238:2692-2700*.

Manuscripts under review/revision

2. **Abhinandan Dalal** and Eric J. Tchetgen Tchetgen (2025). Partial Identification of Causal Effects for Endogenous Continuous Treatments. *arXiv:2508.13946*. Submitted to *Journal of the Royal Statistical Society: Series B*.

3. **Abhinandan Dalal**, Patrick Blöbaum, Shiva Kasiviswanathan and Aaditya Ramdas (2024). Anytime-Valid Inference for Double/Debiased Machine Learning of Causal Parameters. *arXiv:2408.09598*. Submitted to *Journal of Machine Learning Research*.

4. William Bekerman*, **Abhinandan Dalal***, Carlo del Ninno, Dylan S. Small (2024). Planning for Gold: Sample Splitting for Valid Powerful Design of Observational Studies. *arXiv:2406.00866*. Major Revision at *Biometrika*.

In preparation

5. **Abhinandan Dalal*** and Anirban Chatterjee*. Double Robust Kernel Tests for Equality and Effect - Heterogeneity of Conditional Counterfactual Distributions.

6. **Abhinandan Dalal**, Diganta Mukherjee and Subhrajyoty Roy. Detecting Reserve Price Signaling via Controlled Direct Effects: Evidence from Tea Auctions in India. (Earlier version: *arXiv:2005.02814*.)

7. **Abhinandan Dalal**, Sayak Chatterjee and Anirban Chatterjee. Doubly Double Robust Treatment Effect Estimation under Unknown Network Interference in Observational Studies.

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* denotes equal contribution

8. **Abhinandan Dalal**, Jeffrey Zhang and Dylan S. Small. Partial identification in Sensitivity Analysis with Negative Control Outcomes.

9. **Abhinandan Dalal**. Three distinct kinds of robustness in network interference.

10. Manit Paul and **Abhinandan Dalal**. Estimation of causal effects using interaction effects and negative control outcomes.

11. **Abhinandan Dalal** and Sagnik Nandy. Preference Alignment of Large Language Models using Proximal Causal Inference.

Technical Reports

1. **Abhinandan Dalal**, Diganta Mukherjee and Soumendu Sundar Mukherjee (2021). An endogenous (game-theoretic) approach to explore epidemic dynamics on a network (Masters Dissertation). **Link to report**

2. Navonil Deb*, **Abhinandan Dalal*** and Gopal K Basak (2020). Finding Optimal Cancer Treatment using Markov Decision Process to Improve Overall Health and Quality of Life.

   arXiv:2011.13960

3. Arindam Roy Chowdhury*, **Abhinandan Dalal*** and Shubhajit Sen* (2020). Accelerography: Feasibility of Gesture Typing using Accelerometer. *arXiv:2003.14310*

4. Diganta Mukherjee, **Abhinandan Dalal** and Subhrajyoty Roy (2019). Feasibility of Transparent Price Discovery in Tea through Auction in India. *Commodity Insights Yearbook 2019, Multi Commodity Exchange of India Ltd.* **Link to article**

Awards and Accolades

June 2025	**Best Student Paper in Application of Statistics and Data Science**, International Indian Statistical Association
May 2025	**George James Term Fund for American Causal Inference Conference**, University of Pennsylvania
Dec 2024	**Nominated for Best Student Paper in Application of Statistics and Data Science**, International Indian Statistical Association
May 2024	**George James Term Fund for International Conference on Artificial Intelligence and Statistics (AISTATS)**, University of Pennsylvania
June 2022	**George James Term Fund for The 2022 IMS Annual Meeting**, University of Pennsylvania
May 2021	**Nominated for Prasanta Chandra Mahalanobis Gold Medal**, Indian Statistical Institute
Dec 2019	**Nominated for best paper at International Conference of Operations Research and Decision Sciences (ICORDS)**, Indian Institute of Management, Vishakhapatnam
Mar 2019	**All India Rank 1** in Mathematical Statistics (MS) in the Joint Admission Test for M.Sc. 2019 (JAM) conducted by the Indian Institute of Technology(s)
Dec 2018	**top 25 percentile in the world** "Individuals category" and **best individual entry** from ISI Kolkata at **Simon Marais Mathematics Competition** undergraduate **Asia-Pacific Mathematics** competition inspired by William Lowell Putnam Mathematical Competition
2016 - 21	**Dean's List for Toppers**, Indian Statistical Institute

June 2016   Secured WBJEE (**West Bengal Joint Entrance Examination**) **rank 53** in engineering entrance

INTERNSHIP EXPERIENCE

May 2024   **Applied Scientist Intern**, SCOT Regional Forecasting, **Amazon**
Feasibility and utility analysis of Earth Mover distance optimization for regional demand forecasting using proximal causal analysis. Analysis predicts an estimated annual savings of 78million USD.   Supervisors: Rahul Gopalsamy & Kenny Shirley

May 2023   **Applied Scientist Intern**, **Amazon Web Services**
Developed anytime valid inference for causal effect estimation under double/debiased machine learning framework   Supervisors: Patrick Blöbaum & Shiva Kasiviswanathan

May 2020   **Summer@Duke Statistical Science internship** (virtual due to Covid 19)
On *Designing powerful randomization for exact p-values of causal effects under network interference*   Supervisor: Alexander Volfovsky

May 2020   **Research Intern** at **Bio-inspired Communication (BCS) Lab**, **Technische Universität (TU) Darmstadt**, Germany (virtual due to Covid 19)
On *Moments of Causal Estimator of binary Markovian input given output in a Poisson channel*   Supervisor: Heinz Köppl

May 2019   **Summer Intern** at **DST- Center for Policy Research** at **Indian Institute of Science**
Analysing usefulness of public R & D grants in India- BIRAC and SBIRI: Exploring Causal Aspects using Regression Discontinuity Design   Supervisor: Venkat Nadella

TEACHING AND MENTORING

Teaching Assistantships at Penn

Fall 2025	STAT 9210: **Observational Studies** (for Graduate Students)
Spring 2025	STAT 5330: **Stochastic processes** (for Undergraduate Students)
Spring 2025	STAT 1110: **Introductory Statistics** (for Undergraduate Students)
Fall 2024	STAT 4320: **Mathematical Statistics** (for Undergraduate Students)
Fall 2023	STAT 4300 & STAT 5100: **Probability** (for Undergraduate/Graduate Students)
Spring 2023	STAT 9700: **Mathematical Statistics** (for Graduate Students)
Spring 2022	STAT 521: **Applied Econometrics II** (for Graduate Students)

Mentoring Experience

Spring 2025   **Wharton Directed Reading Program (WDRP)** mentor for *Sheyan Lalmohammed*

Fall 2024   **PhD Peer program** mentor for incoming PhD student *Soham Mallick* to navigate the program and transition to Penn

Spring 2024	**Undergraduate Research in Probability and Statistics (URPS)** mentor for *Roberto Ligeralde*, with Da Wu
Spring 2022	**Undergraduate Research in Probability and Statistics (URPS)** mentor for *Ryan Jeong* and *Alexandru Lopotenco*, with Prof. Robin Pemantle

CONFERENCES & WORKSHOPS

- Observational Causal Inference with Unknown/Mismeasured Network Interference

  - PhD Student Seminar, Dept. of Statistics & Data Science, University of Pennsylvania, Philadelphia, PA (2025).

- Planning for Gold: Sample Splitting for Valid Powerful Design of Observational Studies.

  - Annual Conference of International Indian Statistical Association, Lincoln, NE (2025).
  - PhD Student Seminar, Dept. of Statistics & Data Science, University of Pennsylvania, Philadelphia, PA (2024).

- Role of Earth-Movers Distance as a metric for Regional Forecasting

  - Intern Presentations, Amazon Supply Chain Optimization Technologies, New York City, NY (2024).

- Anytime Valid Inference for Double/Debiased Machine Learning of Causal Parameters

  - American Causal Inference Conference, Detroit, MI (2025).
  - Annual Conference of International Indian Statistical Association, Kochi, India (2024).
  - Penn Center for Causal Inference Seminar, Philadelphia, PA (2024).
  - Young Researcher Presentations, Amazon Supply Chain Optimization Technologies, New York City, NY (2024).
  - Intern Presentations, Amazon Web Services, Santa Clara, CA (2023).

- Modeling county level firearms related fatal assaults in the United States

  - Joint Statistical Meeting, Toronto, Canada (2023).

- An endogenous approach to explore epidemic dynamics on a network

  - IMS Annual Meeting, London, UK (2022).

- Modern Statistical Challenges under a Causal Lens

  - P.C.M. Gold Medal Presentation, Indian Statistical Institute, Kolkata, India (2021).

- Feasibility of Automation in Price Setting for Tea Auction

  - International Conference of Operations Research and Decision Sciences (ICORDS), Indian Institute of Management Vishakhapatnam, India (2019).
  - XXIXth Annual General Conference on Contemporary Issues in Development Economics, Jadavpur University, Kolkata, India (2019).
  - Third International Conference on Issues in Economic Theory and Policy, Presidency University, Kolkata, India (2019).

Professional Service

- **Reviewer** for Journal of the Royal Statistical Society: Series B, Biometrics, Journal of the American Statistical Association
- **Student Member** Wharton Causal Data Science Lab (WCDSL)
- **Co-organizer** for Statistics Dept. Student Seminar 2021-22 at Penn

Skills

Computer Skills

- R, MS Office
- LaTeX
- C, SPSS, SQL, Git (basic)

Language Skills

- Bengali (native)
- English, Hindi (fluent)
- Spanish (rudimentary)