Arijit Dey | Curriculum Vitae

Second Year Graduate Student in Statistics – Duke University

✉ arijit.dey@duke.edu • 🌐 arijitdey22.github.io • **in** arijit-dey-556a1922a

Education

Duke University   Durham, USA
Ph.D. in Statistics, GPA: 3.837/4   *2024–Present*

Indian Institute of Technology Kanpur (IITK)   Kanpur, India
M.Sc. in Statistics, *CPI: 9.55/10*   *2022–2024*

Ramakrishna Mission Residential College (Autonomous), Narendrapur   Kolkata, India
B.Sc. in Statistics, *CGPA: 9.58/10*   *2019–2022*

Current Research Projects

Q-Learning for SMART Designs with Censored Survival Outcomes

Collaborator: Dr. Bibhas Chakraborty and Dr. Xiaoxi Yan, Duke-NUS Medical School   **Jan'26–Present**

- Developing a semiparametric Q-learning framework for multi-stage clinical decision making under right-censored survival data, including custom R implementations with inverse-probability censoring weights and large-scale simulation studies to evaluate optimal treatment regimes.

Sensitivity and Regularity of Optimizer Maps in Bayesian Optimization

Mentor: Dr. Simon Mak, Dept. of Statistical Sciences, Duke University   **Jan'26-Present**

- Developing theoretical guarantees for stability of optimal decisions in parametric black-box optimization problems of the form $f(x, \theta)$. The work characterizes continuity and smooth dependence of the optimizer on noise parameters and motivates curvature-aware robust acquisition strategies.

Machine Learning–Driven Policy Optimization for Environmental Agent-Based Models

Mentor: Dr. Simon Mak, Dept. of Statistical Sciences, Duke University   **Sep'25-Present**

- Developed a Gaussian process–based statistical framework to test the sensitivity of optimal policies with respect to system state variables in computationally expensive agent-based models.
- Implemented computational experiments in Python (GPyTorch, BoTorch), including surrogate modeling, acquisition optimization, and large-scale simulation experiments.

Publications

Peer-reviewed

- Dey, A. and Hazra, A. (2025). A Semiparametric Generalized Exponential Regression Model with a Principled Distance-based Prior. *Statistical Papers*. Link

Submitted

- Dey, A., Yan, X., and Chakraborty, B. (2025+). Sample size calculation of SMART design with a skewed outcome: Application to the SMART+ study. Submitted in Statistical Methods in Medical Research.

Experiences

- **Teaching Assistant, Duke University**

  - STA199: Grading, Holding Office Hours, Lab Leader   Spring 25
  - STA199: Grading, Holding Office Hours, Lab Leader   Fall 25
  - STA199: Grading, Holding Office Hours, Lab Leader   Spring 26

- **Research Assistant, IIT Kanpur**   Spring 24

- **Teaching Assistant, Online Degree Program, IIT Madras**   Summer 23

Acedemic Achievements

- *N. Balakrishnan Award in Statistics* for the best final-year M.Sc. (2-year) statistics student, IIT Kanpur.
- *Academic Excellence Award* in Statistics for 2022 and 2023, IIT Kanpur.
- All India Rank 15 in Joint Admission Test for Masters (JAM) 2022 among 2912 candidates.
- *Swami Lokeswarananda award* for best all-around performances in U.G. courses 2021-22.
- *DST-inspire scholarship* for being in the top 1 percentile of higher secondary board exams.

Relevant Coursework

- **PhD Level Course (Duke University)**

  Bayesian Statistical Modelling, Probability and Measure Theory, Linear Models, Statistical Inference, Probability and Statistical Models, High-dimensional Statistics.

- **Masters Level Course (IIT Kanpur)**

  Linear Algebra, Real Analysis, Complex Analysis, Probability and Measure Theory, Statistical Inference, Regression Analysis, Time Series Analysis, Multivariate Analysis, Stochastic Process, Statistical Computing, Non-parametric Inference, Game Theory, Data Science Lab I, II & III, Intro to Machine Learning.

Skills

Programming Expertise: *R* (Proficient), *Python*

System software: LaTeX, GitHub, Microsoft Office

Languages: English (Professional), Bengali (Native), Hindi (Limited), Spanish (Beginner)

Extra Curricular

Positions of Responsibility:

- Secretary of *Raktarpan*, a club under *IITK* with the responsibility of organizing blood donation camps.
- General Secretary of the *Student's Council*, RKMRC Narendrapur, 2021-22.
- Convenor of the *Sports Subcommittee*, RKMRC Narendrapur, 2021-22.
- Junior Under Officer (JUO), *NCC wing* of RKMRC Narendrapur, 2021-22.

Sports: Active participation in games including Cricket, Football, and Volleyball.