

# Arijit Dey | Curriculum Vitae

Second Year Graduate Student in Statistics – Duke University

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## Education

### Duke University

Ph.D. in Statistics, GPA: 3.783/4

Durham, USA  
2024–Present

### Indian Institute of Technology Kanpur (IITK)

M.Sc. in Statistics, CPI: 9.55/10

Kanpur, India  
2022–2024

### Ramakrishna Mission Residential College (Autonomous), Narendrapur

B.Sc. in Statistics, CGPA: 9.58/10

Kolkata, India  
2019–2022

## Publications

### Peer-reviewed

- Dey, A. and Hazra, A. (2025). A Semiparametric Generalized Exponential Regression Model with a Principled Distance-based Prior. *Statistical Papers*. Link- <https://arxiv.org/abs/2309.03165>.

### 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.

## Research Projects

### A semiparametric generalized exponential (GE) regression model with a principled distance-based prior for analyzing trends in rainfall

**Mentor:** Dr. Arnab Hazra, Dept. of Mathematics and Statistics, IITK

**Summer 2023**

- Conducted a comprehensive analysis of precipitation data in the Western Ghats region from 1901 to 2022.
- Developed a semiparametric GE regression model that extends the GE distribution to a regression setting.
- Constructed a novel class of penalized complexity prior for the shape parameter of the GE distribution.

### Sample size calculation of SMART design with skewed outcome: Application to the SMART+ study

**Mentor:** Dr. Bibhas Chakraborty, Duke-NUS Medical School

**Mar'23–Apr'24**

- Explored the literature on SMART design for clinical trials and its optimal sample size calculation.
- Developed sample size calculation formulas based on precision and power for the SMART design with skewed outcomes, suitable for both full-scale SMART and pilot-SMART studies.

### Kernel Stein discrepancy (KSD) in Markov chain Monte Carlo (MCMC)

**Mentor:** Dr. Dootika Vats, Dept. of Mathematics and Statistics, IITK

**Fall 2023**

- Explored the literature on KSD and demonstrated its high computational cost.
- To reduce the computation burden, Stein-thinning was employed by discrepancy-based sub-sampling.
- Extended the notion of Stein-thinning to the realm of biased MCMC to remove the bias introduced.

## Experiences

### Teaching Assistant, Duke University

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

- **Research Assistant, IIT Kanpur** Spring 24
- **Teaching Assistant, Online Degree Program, IIT Madras** Summer 23

## Acedemic Achievements

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- *N. Balakrishnan Award in Statistics* for the best final-year M.Sc. (2-year) statistics student.
- *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

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- **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

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

**System software:**  $\text{\LaTeX}$ , GitHub, Microsoft Office

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