

PRITHWISH GHOSH

University Address

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(all entries are in reverse chronological order)

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RESEARCH INTERESTS

Spatio-temporal analysis, Bayesian Classification and modeling, Directional Statistics, Astrostatistics, MCMC Sampling, Functional Data analysis, Gamma Ray Astronomy

EDUCATION

PhD in Statistics, North Carolina State University, USA

2024 - Present

Supervised by Dr. Sujit K Ghosh (NC State University)

Course Highlights: Advance Statistical Inference, Bayesian Inference, Advanced Probability for Statistics, Computation for Statistical Research, Nonparametric Regression, Nonparametric Bayes

M.Sc. in Statistics, Visva Bharati University, India

2021 - 2023

Supervised by Dr. Debashis Chatterjee (Visva Bharati)

Course Highlights: Real Analysis, Measure Theory, Stochastic Process, Operation Research and Optimization Techniques, Machine Learning, Reliability analysis, Bayesian Inference

B.Sc.(Hons) in Statistics, Sister Nivedita University, India

2018 - 2021

Supervised by Dr. Satyabrata Pal (Indian Statistical Institute)

SKILLS

- Languages :** English, Bengali(Native), Hindi
- Coding :** R, Python, Latex, SAS, Octave, MATLAB
- Web Dev:** R Markdown, R Shiny, Github, HTML

EXPERIENCE

1) Teaching Assistant, , Department of Statistics, North Carolina State University

August 2024 - Present

Duties As an TA, I facilitate learning through doubt-clearing sessions and by evaluating exams and homework, also proctoring exams.

Courses #	Course title	Semester(s) taught
ST 421-001	Introduction to Mathematical Statistics I	Fall 2024, 2025
ST 350-601	Economics and Business Statistics	Summer I & Summer II 2025
ST 422-001	Introduction to Mathematical Statistics II	Spring 2025
ST 422-002	Introduction to Mathematical Statistics II	Spring 2025
ST 518-601	Applied Statistical Methods II	Fall 2025
ST 502-001	Fundamentals of Statistical Inference II	Spring 2026

2) Graduate Student mentor: Directed Research for Undergraduates in Mathematics and Statistics

May 2026 - August 2026

- Supported By – > National Security Agency and the National Science Foundation (DMS#2349611)

3) **Research Assistant, Department of Statistics North Carolina State University**

- Supported by – > National Institute of Health (NIH)

May 2025 - August 2025

4) **Visiting Professor of Department of Statistics, Sister Nivedita University**

Jan 2024 - June 2024

Duties Courses Taught by me

Courses #	Course title	Semester(s) taught
BSC-SEM-6 CC-14	Statistical Computing with R Language	Spring 2024
MSC-SEM-2 CC-9	Regression Analysis	Spring 2024

5) **Summer Internship Program, Ministry of Statistics, Government of India**

1 June 2023 - 31 July 2023

- Under the supervision of Ms. Sutapa Ghosh (Deputy Director), Mr. Nilanjan Chatterjee (Deputy Director), Mr. Supriyo Sarkar (Joint Director) and Mr. Sridip Dey (Assistant Director)

- Data Processing Division HQ, Mahalanobis Bhavan, 164 G.L.T. Road, Kolkata-700108

PUBLICATIONS

Papers in refereed journals <https://ci.lib.ncsu.edu/profiles/pghosh4>

† corresponding author

- 1) Chatterjee, D., & **Ghosh, P.**† (2026). Oriented Odyssey of the lunar scars: Directional distribution of lunar craters. *Journal of Space Safety Engineering*.
- 2) Chatterjee, D. and **Ghosh, P.**†, 2025. Whisperers of whales wander: A directional statistical investigation of whales' migration influenced by geomagnetic, ocean current, and celestial cues. *Journal for Nature Conservation*, p.127011.
- 3) Chatterjee, D. and **Ghosh, P.**†, 2025. On the directional nature of the fall of celestial objects on the surface of Venus. *Planetary and Space Science*, p.106167.
- 4) Chatterjee D, Saha S, **Ghosh, P.**†. (2025) Circular insights for rhythmic health: A Bayesian approach with stochastic diffusion for characterizing human physiological rhythms with applications to arrhythmia detection. *PLOS ONE* 20(6): e0324741.
- 5) Chatterjee D, **Ghosh, P.**†. (2025) Bayesian hierarchical modeling of mucosal immune responses and growth efficiency in young animals: Demonstrating the superiority of data-dependent empirical priors. *PLOS ONE* 20(6): e0326273.
- 6) **Ghosh, P.**†, A Comparative Study of Euclidean and Spherical Clustering Techniques for BATSE Gamma-Ray Burst Data, *Monthly Notices of the Royal Astronomical Society*, 2025;, staf970
- 7) Chatterjee D, Banerjee A, Das SS, **Ghosh P.**† (2025) "Novel empirical models & comparative probabilistic analysis of interconnectedness of volcano eruption & nearby earthquakes", *PLOS ONE* 20(4): e0320210.)
- 8) **Ghosh, P.**†, Ghosh S, Chatterjee D. A Flexible Spherical Mixture Model for Gamma-Ray Burst Patterns Obtained from BATSE and FERMI Mission. *Publications of the Astronomical Society of the Pacific*. 2025;137(2):024503.
- 9) Chatterjee, D. and **Ghosh, P.**† (2025), Redshift-Agnostic Machine Learning Classification: Unveiling Peak Performance in Galaxy, Star, and Quasar Classification (Using SDSS DR17). *Astron. Nachr.* e20240057.
- 10) Chatterjee. D., **Ghosh.P.**† "Mercury's Meteorite Mysteries: A Directional Statistical Guide to Mercury's North Pole, Hidden Hazards & Roadmap to Safe Landing Havens based on Solar Elevation, Ice Stability, Temperature"
- 11) Dutta, S., **Ghosh, P.**, & Chakraborty, A.† (2024). Modeling informative dropout in longitudinal data: A joint model approach. *Journal of Statistical Research*, 58(1), 97–110.
- 12) Chatterjee D, **Ghosh P.**†, Banerjee A, Das SS (2024) Optimizing machine learning for water safety: A comparative analysis with dimensionality reduction and classifier performance in potability prediction. *PLOS Water* 3(8): e0000259.
- 13) **Ghosh P.**†, Chatterjee D, Banerjee A, Das SS (2024) Do Magnetic murmurs guide birds? A directional statistical investigation for influence of Earth's Magnetic field on bird navigation. *PLoS ONE* 19(6): e0304279.
- 14) **Ghosh.P.**, Chatterjee. D.†, Banerjee. A., On the directional nature of celestial object's fall on the earth (Part 1: Distribution of fireball shower, meteor fall & crater on earth's surface), *Monthly Notices of the Royal Astronomical Society*, 2024;, stae1066,
- 15) **Ghosh.P.**†, "Breast Cancer Wisconsin (Diagnostic) Prediction", *International Journal of Science and Research(IJSR)*, Volume 11, Issue 5, May 2022, pp 175-185

PAPERS UNDER REVISION OR UNDER REVIEW FOR PUBLICATIONS

- 1) Ghosh.P., Ghosh. S."Automated Sliced Gibbs sampling for Arbitrary Kernels" (Submitted: **Journal of Machine Learning Research (JMLR)**) available at <https://doi.org/10.48550/arXiv.2603.29096>
- 2) Ghosh.P., Chatterjee. D. "From Complex Algorithms to Precise Detection: Optimizing Deep Learning & Neural Networks for Breast Cancer Classification" (Under Revision: **Current Sciences**)
- 3) Chatterjee.D, **Ghosh.P.**[†] "Cosmic Compasses and Turtle Treks: A Directional Statistical Remarks on Dependencies of Turtle Migration with Sun, Moon, & Earth's Magnetic Field"(Under revision: **Journal for Nature Conservation**)

ONGOING WORKS

- 1) "PROGO ASG: A sampling based optimizing technique (With Dr. Sujit K Ghosh)
- 2) "MOCA: A Modal Classification Algorithm" (With Dr. Sujit K Ghosh & Rishav Chakravarty)
- 3) "Composite Likelihood-Based Change Point Detection for Angular and Linear Spatio-Temporal Processes "(With Dr. Ana Maria Staicu)
- 4) "FDA Models for Astronomy" (With Dr. Sujit K Ghosh, Dr. Salil Koner, Dr. Rahul Ghoshal)
- 5) "Mutations in non-structural proteins increase the spread of SARS-CoV-2 even under different non-pharmaceutical interventions in India" (With Dr. Arindom Chakraborty and Meghna Banerjee)
- 6) "Robustness of High-Dimensional Bayesian Variable Selection Methods to Violations of Linear Model Assumptions" (With Dr. Ryan Martin)

HONORS AND AWARDS

- 1) 2025-2026 Glaxo-Smith-Kline Fellowship – This fellowship is to support outstanding graduate students in the Department of Statistics with their research (\$ 7500)
- 2) Received SRC 2026 travel award (\$ 600), Spring Research Conference, 2026, which will be held in Clemson, SC during May 26–28, 2026.
- 3) Featured in a news article by Zee News, for one of my publication [Novel empirical models & comparative probabilistic analysis of interconnectedness of volcano eruption & nearby earthquakes](#)
- 4) Featured in a news article by Bartaman (A state news paper), for one of my publication [Novel empirical models & comparative probabilistic analysis of interconnectedness of volcano eruption & nearby earthquakes](#)
- 5) 2025 Symposium on Data Science & Statistics - Student & Early Career Scholarship (\$ 375)
- 6) Featured in a news article by The Telegraph India, for one of my publication [Scientists shed new light on magnetic murmurs guiding birds along migratory pathways](#)
- 7) Qualified for the Assistant Professorship, CSIR-NET EXAM June 2023 with 118 All India Rank.
- 8) Third Prize or Bronze Medalist in Spring Semester of Bachelor's Degree
- 9) 292 Rank South East Asian Maths Olympiad

PEER REVIEWING EXPERIENCE

Reviewer at American Journal of Astronomy and Astrophysics, , Reviewed articles for Statistics in Biosciences , [Reviewed articles for Nature Scientific Reports](#) , Reviewed articles for Ecological Informatics , [Reviewed articles for Discover Computing](#) , Reviewer for The 3rd International Conference on Artificial Intelligence, Computer, Data Sciences and Applications, Frontiers in Bird Science, Frontiers in Astronomy and Space Sciences, Frontiers in Oncology, Journal of Morphology

PUBLISHED PEER-REVIEWED CONFERENCE ARTICLES

- 1) Ghosh, P.; Chakraborty, S. A Heuristic evaluation of partitioning techniques considering Early Type Galaxy Databases, in Proceedings of the 4th International Electronic Conference on Applied Sciences, 27 October–10 November 2023, MDPI: Basel, Switzerland
- 2) Ghosh, P.; Chakraborty, S. Spectral Classification of Quasar Subject to redshift: A Statistical Study, in Proceedings of the 1st International Online Conference on Mathematics and Applications, 1–15 May 2023, MDPI: Basel, Switzerland,
- 3) Ghosh, P., Chakraborty, S. and Chatterjee, D., Revisit to a Prominent Example Of The Curse of Dimensionality: Re-Investigating Anomaly Behaviour of Monte Carlo Estimate of II In Higher Dimension. Available at SSRN 4496375.

5) Ghosh.P; Chakraborty.S. Classification and Distributional properties of Gamma Ray Bursts , December 21 - 23, 2022, Kolkata, India, ISBN 978-81-925832-8-0, Volume 11, pp 148-156

CONFERENCE PRESENTATION

- 1) Presented a talk at the **Symposium on Data Science and Statistics (SDSS) 2025**, held on April 30 - May 2, Salt Lake City, Utah, USA. The title of the talk is "On Spatio-temporal Dependence of Bird Migration on Earth's Magnetic Field, Solar and Lunar Positional Changes Across the American Region"
- 2) Presented a talk at the **17th International Conference MSTAST 2023** held on December 21 - 23 by the institute IMBIC, India having Branches in Japan and Sweden. The title of the talk is "Revisit to A Prominent Example of The Curse of Dimensionality: Re-investigating Anomaly Behaviour of Monte Carlo Estimate of π in Higher Dimension"
- 3) Presented a talk at the **16th Ministry of Statistics and Programm Implementation** held on 31 July by the National Sample Survey Office, Govt of India. The title of the conference is "Classification of Households by Non-Expenditure Approach: A Soft Check and Study Based of Household Data of 78th Round Report Dataset"
- 4) Presented a talk at the **16th International Conference MSTAST 2022** held on December 21 - 23 by the institute IMBIC, India having Branches in Japan and Sweden. The title of the talk is "Classification and Distributional Properties of Gamma Ray Burst"
- 5) Presented a talk at the "A Statistical Analysis on Astrophysics" Organized by **DQAC, Department of Statistics, Visva Bharati**, held on 22nd December 2022.

POSTER PRESENTATIONS

- 1) Presented one poster at **Excellence in STEM Symposium, NCSU** on ASGS Sampler 2026
- 2) Presented one poster at **NC State University, Department of Statistics**, Student Session on "Automated Sliced Gibbs sampling for Arbitrary Kernels" 2025
- 3) Ghosh, P.; Banerjee, D. 2024. "Optimizing Breast Cancer Classification: A Comparative Analysis of Supervised and Unsupervised Machine Learning Techniques" Proceedings 103, resented at **The 3rd International Electronic Conference on Biomolecules**, 23–25 April 2024, no. 1: 40.

TECHNICAL REPORTS

- 1) Ghosh. P., Dey.S, [Classification of Households by Non-Expenditure Approach: A Soft Check and Study Based of Household Data of 78th Round Report dataset](#) *July 2023*

BACHELOR'S AND MASTER'S DISSERTATION

- 1) [A detailed Production scenario on Rice and Wheat in major Crop Production Districts of West Bengal](#) *July 2021*
- 2) [A Novel Spherical Statistics-based Spatio-Temporal Analysis to Unveil Distributional Properties of Meteor Strike on Earth](#) *January 2023*

MEMBERSHIP

- 1) Member of Institute of Mathematical Statistics: USA Jan 2025 - Present
- 2) Member of Royal Statistical Society: London, GB June 2022 - Present
- 3) Member of American Mathematical Society: Providence, US June 2023 - Present
- 4) Member of the American Statistical Association, US Dec 2024 - Present
- 5) Member of the Astrostatistical Interest Group-ASA, US Dec 2024 - Present
- 6) Member of The International Society for Bayesian Analysis Jan 2025 - Present
- 7) Member of Sigma Xi Jan 2026- Present

EXTRA CURRICULAR

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| 1) Treasurer of Triangle Bengali Association, USA | March 2025 - Present |
| 2) Outreach Managers of Triangle Bengali Association, USA | March 2025 - March 2026 |
| 3) Group Member of Non-Parametric Reading Group, NCSU, USA | May 2025 - July 2025 |

REFREES

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