

Sibsankar Singha

PERSONAL DETAILS

Birth October 20, 1995
Address MPF, 55 Bd Jourdan, 75014 Paris, France
Nationality Indian
Phone +91-9733576215
Email sibsankar.singha@telecom-paris.fr

QUALIFICATION

Post Doctorate 2024–present
Télécom Paris, France
Advisor: [Pavlo Mozharovskyi](#)

Ph.D. 2020–2024
Tata Institute of Fundamental Research Center for Applicable Mathematics (TIFR CAM) & ESSEC CREAR
Thesis: *Characterising distributions and their tails using multivariate quantiles and depths*
Advisor: [Sreekar Vadlamani](#) (TIFR CAM), [Marie Kratz](#) (ESSEC)

Master of Philosophy 2019–2020
Tata Institute of Fundamental Research Center for Applicable Mathematics
Report: *On convergence diagnostics of certain adaptive MCMC algorithms in general state space*
Advisor: [Sreekar Vadlamani](#)

Master of Sciences 2017–2019
Tata Institute of Fundamental Research Center for Applicable Mathematics
Mathematics

Bachelor of Sciences 2013–2016
Vidyasagar University
Mathematics Honours

RESEARCH INTERESTS

- Data depth and multivariate analysis
- Extremes and multivariate risk
- Optimization for large scale depth computations
- Application of optimal transport in statistics and data analysis
- Stochastic analysis and applied probability

PREPRINTS AND PUBLICATIONS

- S. Singha, M. Kratz, S. Vadlamani (2023); From geometric quantiles to halfspace depths: A geometric approach for extremal behaviour, [arXiv:2306.10789](#)
- S. Singha, M. Kratz, S. Vadlamani (2024); Multivariate Q-Q plot and related test statistics based on optimal transport, [arXiv:2404.19700](#)
- [Ongoing] M. Dacorogna, M. Kratz, S. Singha; Generating economic stress scenarios using different depth functions.
- [Ongoing] G. Jérémy, Y. Issartel, P. Mozharovskyi, S. Singha; A gradient-based method for computing data depths in selected distribution classes
- [Ongoing] P. Mozharovskyi, S. Singha; A stochastic gradient descent approach for large-scale depth computation with surrogate gradients

TALKS

- Comparing multivariate distributions: A novel approach using optimal transport-based plots, Association for Mathematics Applied to Social and Economic Sciences at Ischia, Italy, September 7, 2024
- Extremal behaviour and convergence rates for sample-based geometric quantiles and half space depths, International Symposium on Nonparametric Statistics at Braga, Portugal, June 27, 2024
- Two depth functions, half-space and spatial, and their relation to tail of distribution, CM Statistics conference at HTW Berlin, Germany, December 18, 2023
- Decay rate of two depth functions, half-space depth and spatial depth, according to tail distribution behaviour, iPOD seminar at University of Leiden, Netherlands, December 7, 2023
- Decay rate of half-space depth according to tail distribution behaviour: Population and empirical studies, S2A seminar at Télécom Paris, France, November 16, 2023
- Risk measures in terms of multivariate quantiles, Short talk at Bangalore Probability Seminar, May 2, 2022

TEACHING

Graduate courses:

- Brownian motion and stochastic process [Teaching Assistant; 2023]
- Advance calculus and differential geometry [Teaching Assistant; 2022]
- Probability theory [Teaching Assistant; 2020, 2021]

Under graduate workshops:

- Summer Workout in Applied Mathematics (SWIM) [TA, July 12 - August 06, 2022]
- Summer Workout in Applied Mathematics (SWAM) [TA, June 01 - June 28, 2021]

SKILLS

Languages Bengali (mother tongue), English, Hindi

Programming languages PYTHON, R, C, FORTRAN, MATLAB

Documentation L^AT_EX, Word

FELLOWSHIPS AND GRANT

- National Board of Higher Mathematics (NBHM) Travel grant, 2023
- Doctoral fellowship at Tata Institute of Fundamental Research (TIFR), 2020-2024
- Masters fellowship at Tata Institute of Fundamental Research (TIFR), 2017-2020