

Soudeep Deb

CURRENT POSITION	Associate Professor and Chairperson Decision Sciences Area Indian Institute of Management Bangalore, India.	Webpage: soudeepd.github.io Phone: +91 80-26993387 E-mail: soudeep@iimb.ac.in
RESEARCH INTERESTS	Time series, Spatio-temporal modeling, Environmental data analysis, Clustering and classification, Nonparametric methods, Sports analytics, Applications of statistics in finance and other disciplines.	
EXPERIENCE	Indian Institute of Management Bangalore , Bengaluru, KA, India.	Mar 2020 - Present
	<ul style="list-style-type: none">Chairperson, Decision Sciences Area.Associate Professor, Decision Sciences Area.Assistant Professor, Decision Sciences Area.	Apr 2024 - Present Jul 2024 - Present Mar 2020 - Jul 2024
	NBC Universal Media, LLC. , New York, NY, USA.	Sep 2018 - Feb 2020
	<ul style="list-style-type: none">Senior Lead Data Scientist, Decision Sciences Division.	
EDUCATION	University of Chicago , Chicago, IL, USA.	
	Ph.D., Statistics	Aug 2018
	<ul style="list-style-type: none">Thesis: Irregular spaced random field, Spatio-temporal data and Clustering of time seriesAdvisory committee: Dr. Wei Biao Wu, Dr. Ruey S. Tsay, Dr. Michael L. Stein	
	Indian Statistical Institute , Kolkata, WB, India.	
	Master of Statistics (M. Stat.)	May 2013
	<ul style="list-style-type: none">First Division with Distinction, Specialization: Mathematical Statistics and ProbabilityThesis: Association analysis for identifying rare genetic variants, Advisor: Dr. Saurabh Ghosh	
	Bachelor of Statistics (B. Stat.)	May 2011
	<ul style="list-style-type: none">First Division with Distinction	
RESEARCH GRANTS	India-Israel Joint Research Cooperation (IIJRC) Grant , 10th CFP-2023.	
	<ul style="list-style-type: none">Granted jointly by Department of Science & Technology, India, and Ministry of Innovation, Science & Technology, Israel.Co-PI: Prof. Itai Dattner, University of Haifa, Israel.Project: Hybrid-AI Quantile Regression Combining Nonparametric Statistical Methods and Physics-Informed Neural Networks for Analysing Spatio-temporal Climate Data.Amount: INR 1.6 million for two years (2024 – 2025).	
	Research Travel Grant from London Mathematical Society:	
	<ul style="list-style-type: none">Offered under Scheme 5 'Collaborations with Developing Countries' GrantCo-PI: Prof. Rishideep Roy, University of Essex, UK.Amount: GBP 2200 for collaborative research visit to the UK (December 2024)	
	Research Seed Grant from IIM Bangalore, India:	
	<ul style="list-style-type: none">Project: Nonparametric methods of structural break detection in time seriesAmount: INR 300,000 for 18 months (July 2024 to December 2025)	
	Research Seed Grant from IIM Bangalore, India:	
	<ul style="list-style-type: none">Project: New techniques to analyze categorical and discrete time series dataAmount: INR 300,000 for two years (August 2021 to December 2023)	
	Young Faculty Research Chair Grant from IIM Bangalore, India:	
	<ul style="list-style-type: none">Amount: INR 900,000 for three years (March 2020 to February 2023)	

CONSULTING SERVICES	Smart City Mission, Ministry of Housing & Urban Affairs, India 2024
	<ul style="list-style-type: none"> • Topic: Improvement in quality of education through smart classrooms.
	DBS Bank, Singapore 2023
	<ul style="list-style-type: none"> • Topic: Value of data joint study.
	Real Estate Research Initiative (IIMB-RERI), Bengaluru, India Since 2023
	<ul style="list-style-type: none"> • Topic: Developing a commercial rental index through spatial modeling.
	SportsKPI, Bengaluru, India 2022-23
	<ul style="list-style-type: none"> • Topic: Valuation of a Kabaddi player and its use in building strategies.
DOCTORAL STUDENTS	PhD thesis advisor:
	<ul style="list-style-type: none"> • Anchal Soni, Decision Sciences, Indian Institute of Management Bangalore. Feb 2023
	Thesis: Methods of analyzing structural breaks in multivariate time series: Applications to financial data.
	<ul style="list-style-type: none"> • Siddharth Rawat, Decision Sciences, Indian Institute of Management Bangalore. May 2023
	Thesis: Spatio-temporal models in epidemiology and climate change.
	<ul style="list-style-type: none"> • Kapil Gupta, Decision Sciences, Indian Institute of Management Bangalore. (Exp) 2025
	Thesis: Analyzing house price dynamics using novel spatio-temporal methods.
	<ul style="list-style-type: none"> • Kunal Rai, Decision Sciences, Indian Institute of Management Bangalore. (Exp) 2026
	Thesis: Nonparametric methods and PINN in quantile regression for time series data.
	PhD thesis co-advisor:
	<ul style="list-style-type: none"> • Archi Roy, Dept of Mathematics, Indian Institute of Science Education & Research Pune. (Exp) 2025
	<ul style="list-style-type: none"> • Chinmay Divekar, Decision Sciences, Indian Institute of Management Bangalore. (Exp) 2026
	Doctoral committee member:
	<ul style="list-style-type: none"> • Sajad S Santhosh, Public Policy, Indian Institute of Management Bangalore. (Exp) 2025
	<ul style="list-style-type: none"> • M Mareeswaran, Finance & Accounting, Indian Institute of Management Bangalore. (Exp) 2025
	<ul style="list-style-type: none"> • Sabhya Rai, Economics, Indian Institute of Management Bangalore. (Exp) 2026
	TEACHING
	Course instructor , at Indian Institute of Management Bangalore:
	<ul style="list-style-type: none"> • Advanced Statistical Methods & Computing (Core for PhD students) Fall, 2024 • Multivariate Statistics (Core for PhD students) Spring, 2021 - 2024 • Sports Analytics (Elective for MBA students) Fall, 2023 - 2024 • Decision Sciences I (Core for MBA students) Fall, 2020 - 2024 • Statistical Inference (Core for PhD students) Winter, 2020
	Executive Education Programme , at Indian Institute of Management Bangalore:
	<ul style="list-style-type: none"> • Predictive Analytics for Business Forecasting (Programme Director) Jan 2025 • MDP for Food Corporation of India (8 sessions) Apr 2024 • Business Analytics and Intelligence (3 sessions) Fall, 2022 & 2023
	Course instructor , at University of Chicago:
	<ul style="list-style-type: none"> • Introductory Statistics, Chicago Academic Achievement Program (UG) Summer, 2015 & 2017 • Statistical Models and Methods I (UG) Winter, 2015
	BOOKS
	<ul style="list-style-type: none"> • (With D. Dey) Mathematical Techniques for Competitive Examinations. First edition in 2023, published by Orient Blackswan Pvt Ltd. ISBN: 9393330107.
	JOURNAL & CONFERENCE PUBLICATIONS
	<ul style="list-style-type: none"> • Deb, S., Jana, K. (2024) Nonparametric quantile regression for time series with replicated observations and its application to climate data. Statistical Science, 39(3), 428-448. [publication] • Deb, S., Roy, R., Das, S. (2024). Forecasting elections from partial information using a Bayesian model for a multinomial sequence of data. Accepted in the Journal of Forecasting. [publication]. • Chattopadhyay, A., Deb, S. (2024) A spatio-temporal model for binary data and its application in analyzing the levels of COVID-19 spread. Accepted in AStA Advances in Statistical Analysis. [publication]

- Lakshmi M.V., Deb, S., Sen, R. (2024) Environmentally Responsible Index Tracking: Maintaining Performance while Reducing Carbon Footprint of the Portfolio. Accepted in Statistics and Applications.
- Gupta, K., Krishnamurthy, V., **Deb, S.** (2024) What elements of the opening set influence the outcome of a tennis match? An in-depth analysis of Wimbledon data. IIMB Management Review. [\[publication\]](#)
- Divekar, C., **Deb, S.**, Roy, R. (2024) Real-time forecasting within soccer matches through a Bayesian lens. Journal of the Royal Statistical Society Series A: Statistics in Society, 187(2), 513–540. [\[publication\]](#)
- Roy, A., **Deb, S.**, Chakarwarti, D. (2024) Impact of COVID-19 on public social life and mental health: A statistical study of Google Trends data from the USA. Journal of Applied Statistics, 51(3), 581-605. [\[publication\]](#)
- Roy, A., Soni, A., **Deb, S.** (2023) A wavelet-based methodology to compare the impact of pandemic versus Russia-Ukraine conflict on crude oil sector and its interconnectedness with other energy and non-energy markets. Energy Economics, 124, 106830. [\[publication\]](#)
- **Deb, S.**, Karmakar, S. (2023) A novel spatio-temporal clustering algorithm with applications on COVID-19 data from the United States. Computational Statistics & Data Analysis, 107810. [\[publication\]](#)
- Mareeswaran, M., Sen, S., **Deb, S.** (2023). New methods of structural break detection and an ensemble approach to analyze exchange rate volatility of Indian rupee during COVID-19. Journal of the Royal Statistical Society Series A: Statistics in Society, 187(1), 39-61. [\[publication\]](#)
- **Deb, S.** (2023). Analyzing airlines stock price volatility during COVID-19 pandemic through internet search data. International Journal of Finance & Economics, 28(2), 1497-1513. [\[publication\]](#)
- Rawat, S., **Deb, S.** (2023). A spatio-temporal statistical model to analyze COVID-19 spread in the USA. Journal of Applied Statistics, 50(11-12), 2310-2329. [\[publication\]](#)
- **Deb, S.**, Majumdar, M. (2023). A quadratic trend-based time series method to analyze the early incidence pattern of COVID-19. Biostatistics & Epidemiology, 7(1), e2076529. [\[publication\]](#)
- Majumdar, M., Banerjee, M., Sengupta, J., **Deb, S.**, Jana, C. K., Roy, B. K. (2023) Prevalence and spectrum of diabetic peripheral neuropathy and its correlation with insulin resistance – An experience from eastern India. International Journal of Advanced Research, 11(06), 1085-1094. [\[publication\]](#)
- **Deb, S.**, Deb, S. (2022). An ensemble method for early prediction of dengue outbreak. Journal of the Royal Statistical Society Series A, 185(1), 84-101. [\[publication\]](#)
- **Deb, S.** (2022). A goal based index to analyze the competitive balance of a football league. Journal of Quantitative Analysis in Sports, 18(3), 171-186. [\[publication\]](#)
- Nahata, S., **Deb, S.** (2021) A Machine Learning Approach to Analyze the Effect of Situational and Player-Dependent Features on Converting Freekicks in Soccer. In Conference Proceedings 2021 Asia-Singapore Conference on Sport Science (p. 19). [\[publication\]](#)
- **Deb, S.**, Tsay, R. S. (2019). Spatio-temporal Models with Space-time Interaction and Their Applications to Air Pollution Data. Statistica Sinica, 29, 1181-1207. [\[publication\]](#)
- **Deb, S.**, Dey, D. (2019). Spatial Modeling of Shot Conversion in Soccer to Single out Goalscoring Ability. Journal of Sports Analytics, 5(4), 281-297. [\[publication\]](#)
- **Deb, S.** (2019). VAR Model Based Clustering Method for Multivariate Time Series Data. Journal of Mathematical Sciences, 237(6), 754-765. [\[publication\]](#)
- Prickett, K.C., Guterrez, C., **Deb, S.** (2019). Family Firearm Ownership and Firearm-related Mortality among Young Children: 1976-2016. Pediatrics, 143(2), e20181171. [\[publication\]](#)
- Chazin, H., **Deb, S.**, Falk, J., Srinivasan, A. (2019). New Statistical Approaches to Intra-individual Isotopic Analysis and Modelling of Birth Seasonality in Studies of Herd Animals. Archaeometry, 61(2), 478-493. [\[publication\]](#) [\[R package\]](#)
- **Deb, S.**, Pourahmadi, M., Wu, W. B. (2017). An Asymptotic Theory for Spectral Analysis of Random Fields. Electronic Journal of Statistics, Vol. 11, No. 2, p. 4297-4322. [\[publication\]](#)
- Zechner, C., **Deb, S.**, Koepl, H. (2013). Marginal Dynamics of Stochastic Biochemical Networks in Random Environments. In Control Conference (ECC), 2013 European, p. 4269-4274, IEEE. [\[publication\]](#)

PREPRINTS &
SUBMITTED
ARTICLES

- **Deb, S.**, Neves, C., Roy, S. (2024+) Nonparametric quantile regression for spatio-temporal processes. Under review. [\[preprint\]](#)
- **Deb, S.**, Das, S. (2024+). Optimal selection of starting lineup for a football team. Under review. [\[preprint\]](#)
- Gupta, K., **Deb, S.** (2024+) A divide-and-conquer approach for spatio-temporal analysis of large house price data from Greater London. Under review. [\[preprint\]](#)
- Paul, M., Roy, R., **Deb, S.** (2022+). Effect of influence in voter models and its application in detecting frauds in an election. Under major revision.
- Bag, S., Gupta, K., **Deb, S.** (2022+). A review and recommendations on variable selection methods in regression models for binary data. Under resubmission. [\[preprint\]](#)
- Rawat, S., Durrant, A., Simpson, A., Nielson, G., Berrett, C, **Deb, S.** (2023+) A Bayesian approach to identify changepoints in spatio-temporal ordered categorical data: An application to COVID-19 data. Currently being prepared for submission. [\[preprint\]](#)

LATEST
SEMINARS

- A divide-and-conquer approach for spatio-temporal analysis of large house price data from Greater London. EcoSta Conference 2024, Beijing, China. Jul 2024
- A workshop on Data summarisation and Visual Storytelling using Statistics, PES University Research Workshop Series, Bengaluru, India. Jul 2024
- Real-time forecasting in sports. AI Frontiers Series, Commonwealth Bank of Australia (virtual). Jun 2024
- A workshop on Sports Analytics. Conference on Excellence in Research & Education, Indian Institute of Management Indore, India. May 2024
- Introduction to Bayesian methods in Econometrics and Statistics. IIMK Skill-Building Series (virtual), Kozhikode, India. Mar 2024
- Nonparametric estimation of shape-constrained time series regression model, RMS Annual Conference 2023, Guwahati, India. Dec 2023
- Using t-SNE in analyzing multivariate time series data, EcoSta 2023, Tokyo, Japan. Aug 2023
- Nonparametric methods to deal with quantile regression problems in time series and spatio-temporal settings. Symposium, National University of Singapore, Singapore. May 2023
- New methods of structural break detection in multivariate time series and its use in modeling financial data. Symposium, Indian Statistical Institute, Kolkata, India. Mar 2023
- A Bayesian approach to identify changepoints in spatio-temporal ordered categorical data. IISA 2022 Conference, Bengaluru, India. Dec 2022
- Analyzing count data using a time series model with an exponentially decaying covariance structure. EURO 2022 Conference, Finland. Jul 2022
- A goal based index to analyze the competitive balance of a football league. 8th Western Conference on Football and Finance, Reading, UK. May 2022
- Developing statistical methods in Health (Epidemiological) Data. SERB-AV Workshop 2022, Indian Institute of Information Technology, Dharwad, India. May 2022

HONORS

At Indian Institute of Management Bangalore:

- Excellence in Teaching Award 2021-22, 2023-24

At University of Chicago:

- International House Ralph W. Nicholas Fellowship 2017-18
- Graduate Council Travel Fund Award 2017
- Runner-up for Department of Statistics Consulting Award 2016
- Nominated for Best Teaching Assistant in Physical Sciences Division Winter 2014

Earlier awards:

- Kishore Vaigyanik Protsahan Yojana scholarship, Indian Institute of Science 2007 to 2013
- Selected for International Mathematical Olympiad Training Camp, India 2007 & 2008

PROFESSIONAL SERVICES	Administrative roles , at Indian Institute of Management Bangalore:	
	<ul style="list-style-type: none"> Chair, Decision Sciences Area. Doctoral Program Coordinator, Decision Sciences Area. Mentor in Pre-doctoral Programme, Decision Sciences Area. 	<div>Apr 2024 - present</div> <div>2023-24</div> <div>Since 2021</div>
	Session chairs , at the following conferences:	
	<ul style="list-style-type: none"> (Upcoming) IISA Conference, Cochin, India. (Upcoming) EcoSta 2024, Beijing, China EcoSta 2023, Tokyo, Japan 14th and 15th CMStatistics, London, UK 	<div>Dec 2024</div> <div>Jul 2024</div> <div>Aug 2023</div> <div>Dec, 2021 & 2022</div>
	Reviewer , for many journals including the following:	
	<ul style="list-style-type: none"> Biometrics Electronic Journal of Statistics IIMB Management Review Journal of Multivariate Analysis Journal of Sports Analytics Journal of the Royal Statistical Society: Series A and Series C Sankhya A and Sankhya B Scientific Reports Statistics and Probability Letters 	
SKILLS	Technical strength:	
	<ul style="list-style-type: none"> Proficient: R, MATLAB, \LaTeX, Microsoft Office; Working knowledge: Python, SQL, C, C++. 	
	Languages:	
	<ul style="list-style-type: none"> Bilingual: English, Bengali; Intermediate: Hindi; Basic: Portuguese. 	