

Soudeep Deb

CURRENT POSITION	Assistant Professor 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. <ul style="list-style-type: none">Assistant Professor (tenured since Oct 2023), Decision Sciences Area. NBC Universal Media, LLC. , New York, NY, USA. <ul style="list-style-type: none">Senior Lead Data Scientist, Decision Sciences Division.	Mar 2020 - Present Sep 2018 - Feb 2020
EDUCATION	University of Chicago , Chicago, IL, USA. Ph.D., Statistics <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.) <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.) <ul style="list-style-type: none">First Division with Distinction	Aug 2018 May 2013 May 2011
CONSULTING SERVICES	Smart City Mission, Ministry of Housing & Urban Affairs , India <ul style="list-style-type: none">Topic: Improvement in quality of education through smart classrooms. DBS Bank , Singapore <ul style="list-style-type: none">Topic: Value of data joint study. Real Estate Research Initiative (IIMB-RERI) , Bengaluru, India <ul style="list-style-type: none">Topic: Developing a commercial rental index through spatial modeling. SportsKPI , Bengaluru, India <ul style="list-style-type: none">Topic: Valuation of a Kabaddi player and its use in building strategies.	2024 2023 Since 2023 2022-23
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 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)	

DOCTORAL
STUDENTS

PhD thesis advisor:

- 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.
- Siddharth Rawat, Decision Sciences, Indian Institute of Management Bangalore. May 2023
Thesis: Spatio-temporal models in epidemiology and climate change.
- Kapil Gupta, Decision Sciences, Indian Institute of Management Bangalore. (Exp) 2025
Thesis: Analyzing house price dynamics using novel spatio-temporal methods.
- 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:

- Archi Roy, Dept of Mathematics, Indian Institute of Science Education & Research Pune. (Exp) 2025
- Chinmay Divekar, Decision Sciences, Indian Institute of Management Bangalore. (Exp) 2026

Doctoral committee member:

- Sajad S Santhosh, Public Policy, Indian Institute of Management Bangalore. (Exp) 2024
- M Mareeswaran, Finance & Accounting, Indian Institute of Management Bangalore. (Exp) 2025

TEACHING

Course instructor, at Indian Institute of Management Bangalore:

- Multivariate Statistics (Core for PhD students) Spring, 2021 - 2024
- Sports Analytics (Elective for MBA students) Fall, 2023
- Decision Sciences I (Core for MBA students) Fall, 2020 - 2023
- Statistical Inference (Core for PhD students) Winter, 2020

Executive Education Programme, at Indian Institute of Management Bangalore:

- Business Analytics and Intelligence (3 sessions) Fall, 2022 & 2023

Course instructor, at University of Chicago:

- Introductory Statistics, Chicago Academic Achievement Program (UG) Summer, 2015 & 2017
- Statistical Models and Methods I (UG) Winter, 2015

JOURNAL &
CONFERENCE
PUBLICATIONS

- **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. [\[preprint\]](#).
- **Deb, S.**, Jana, K. (2024) Nonparametric quantile regression for time series with replications and its application to climate data. Accepted in Statistical Science. [\[preprint\]](#)
- Divekar, C., **Deb, S.**, Roy, R. (2024) Real-time forecasting within soccer matches through a Bayesian lens. Accepted in the Journal of the Royal Statistical Society Series A. [\[publication\]](#)
- 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, qnad078. [\[publication\]](#)
- Roy, A., **Deb, S.**, Chakarwari, D. (2023) 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, 1-25. [\[publication\]](#)
- **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.**, Das, S. (2023+). Optimal selection of the starting lineup for a football team. Under review.
- Chattopadhyay, A., **Deb, S.** (2022+) A spatio-temporal model for binary data and its application in analyzing the levels of COVID-19 spread. Under 2nd revision.
- Gupta, K., Krishnamurthy, V., **Deb, S.** (2022+). What elements of opening set influence the outcome of a tennis match? In-depth analysis of Wimbledon data. Under major revision.
- 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. [\[preprint\]](#)

BOOK

- (With D. Dey) Mathematical Techniques for Competitive Examinations. First edition in 2023, published by Orient Blackswan Pvt Ltd. ISBN: 9393330107.

LATEST SEMINARS

- 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

	<ul style="list-style-type: none"> 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 A new classification method for multivariate time series data. 14th International Conference of the ERCIM WG on Computational and Methodological Statistics, London, UK. Dec 2021 Impact of global warming on rainfall: A Spatio-temporal study. RSS International conference 2021 (virtual), Manchester, UK. Sep 2021 A Mathematical Take on the Competitive Balance of a Football League. Guest lecture (virtual), Mathematics of Sports, Stanford University, Stanford, USA. May 2021
HONORS	<p>At Indian Institute of Management Bangalore:</p> <ul style="list-style-type: none"> Excellence in Teaching Award 2021-22 <p>At University of Chicago:</p> <ul style="list-style-type: none"> 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 <p>Earlier awards:</p> <ul style="list-style-type: none"> Kishore Vaigyanik Protsahan Yojana scholarship, Indian Institute of Science 2007 to 2013 Selected for International Mathematical Olympiad Training Camp, India 2007 & 2008
PROFESSIONAL SERVICES	<p>Administrative roles, at Indian Institute of Management Bangalore:</p> <ul style="list-style-type: none"> Doctoral Program Coordinator, Decision Sciences Area. Since 2023 Mentor in Pre-doctoral Programme, Decision Sciences Area. Since 2021 <p>Session chairs, at the following conferences:</p> <ul style="list-style-type: none"> (Upcoming) IISA Conference, Cochin, India. Dec 2024 (Upcoming) EcoSta 2024, Beijing, China Jul 2024 EcoSta 2023, Tokyo, Japan Aug 2023 14th and 15th CMStatistics, London, UK Dec, 2021 & 2022 IISA Conference, Bengaluru, India. Dec 2022 <p>Reviewer, for many journals including the following:</p> <ul style="list-style-type: none"> Biometrics BMC Public Health 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	<p>Technical strength:</p> <ul style="list-style-type: none"> Proficient: R, MATLAB, L^AT_EX, Microsoft Office. Working knowledge: Python, SQL, C. <p>Languages:</p> <ul style="list-style-type: none"> Bilingual proficiency: English, Bengali. Intermediate proficiency: Hindi. Basic proficiency: Portuguese.