

Soudeep Deb

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| 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. <ul style="list-style-type: none">Chairperson, Decision Sciences Area. Apr 2024 - PresentAssociate Professor, Decision Sciences Area. Jul 2024 - PresentAssistant Professor, Decision Sciences Area. Mar 2020 - Jul 2024 NBC Universal Media, LLC. , New York, NY, USA. <ul style="list-style-type: none">Senior Lead Data Scientist, Decision Sciences Division. Sep 2018 - Feb 2020 | Mar 2020 - Present Apr 2024 - Present Jul 2024 - Present Mar 2020 - Jul 2024 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 |
| DOCTORAL STUDENTS | PhD thesis advisor/co-advisor: <ul style="list-style-type: none">Anchal Soni, Decision Sciences, Indian Institute of Management Bangalore. Thesis: Methods of analyzing structural breaks in multivariate time series: Applications to financial data. Feb 2023Siddharth Rawat, Decision Sciences, Indian Institute of Management Bangalore. Thesis: Spatio-temporal models in epidemiology and climate change. May 2023Kapil Gupta, Decision Sciences, Indian Institute of Management Bangalore. Thesis: Analyzing house price dynamics using novel spatio-temporal methods. (Exp) 2025Archi Roy, Dept of Mathematics, Indian Institute of Science Education & Research Pune. Thesis: Nonparametric methods in stochastic regression models for time series data. (Exp) 2025Kunal Rai, Decision Sciences, Indian Institute of Management Bangalore. Thesis: Nonparametric methods and PINN in quantile regression for time series data. (Exp) 2026Chinmay Divekar, Decision Sciences, Indian Institute of Management Bangalore. Thesis: Novel methods for within-game analytics in sports. (Exp) 2026 Doctoral committee member: <ul style="list-style-type: none">Sajad S Santhosh, Public Policy, Indian Institute of Management Bangalore. (Exp) 2025M Mareeswaran, Finance & Accounting, Indian Institute of Management Bangalore. (Exp) 2025Sabhya Rai, Economics, Indian Institute of Management Bangalore. (Exp) 2026 | Feb 2023 May 2023 (Exp) 2025 (Exp) 2025 (Exp) 2026 (Exp) 2026 |
| 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.(Under preparation) (With S. Das) Business Data Analytics: From Data to Decisions. Expected date of publication is May 2025, to be published by Universities Press (India) Private Limited. | |

RESEARCH
GRANTS

India-Israel Joint Research Cooperation (IIJRC) Grant, 10th CFP-2023.

- From 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 – 2026).

Research Challenge Grant from IIM Bangalore, India.

- Co-PI: Prof. Anand Deo, IIM Bangalore, India.
- Project: Estimating spatial extremes using EVT-based scaling.
- Amount: INR 1.5 million for 18 months (March 2025 to September 2026).

Research Travel Grant from London Mathematical Society, United Kingdom (UK).

- Offered under Scheme 5 ‘Collaborations with Developing Countries’ Grant.
- Co-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.

- Project: Nonparametric methods of structural break detection in time series.
- Amount: INR 0.5 million for 18 months (July 2024 to December 2025).

Research Seed Grant from IIM Bangalore, India.

- Project: New techniques to analyze categorical and discrete time series data.
- Amount: INR 0.3 million for two years (August 2021 to December 2023).

Young Faculty Research Chair Grant from IIM Bangalore, India:

- Amount: INR 0.9 million for three years (March 2020 to February 2023)

JOURNAL &
CONFERENCE
PUBLICATIONS

- Deshmukh, S. S., **Deb, S.** (2025) A survey of statistical and machine learning methods of quantile regression in time series and their suitability in predicting dengue outbreaks. *Japanese Journal of Statistics and Data Science*. [\[publication\]](#)
- **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. *Journal of Forecasting*, 43(6), 1814-1834. [\[publication\]](#)
- 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. [\[publication\]](#)
- Chattopadhyay, A., **Deb, S.** (2024) A spatio-temporal model for binary data and its application in analyzing the levels of COVID-19 spread. *AStA Advances in Statistical Analysis*, 108(4), 823-851. [\[publication\]](#)
- Lakshmi M.V., **Deb, S.**, Sen, R. (2024) Environmentally Responsible Index Tracking: Maintaining Performance while Reducing Carbon Footprint of the Portfolio. *Statistics and Applications* (forthcoming).
- 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*. [\[publication\]](#)
- Roy, A., **Deb, S.**, Chakarwanti, D. (2024) Impact of COVID-19 on public social life and mental health: A statistical study of Google Trends data from the USA. *J. Appl. Stat.*, 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. [\[publication\]](#)
- **Deb, S.**, Neves, C., Roy, S. (2024+) Nonparametric quantile regression for spatio-temporal processes. Under review. [\[preprint\]](#)
- Roy, A., Podder, M., **Deb, S.** (2024+) Nonparametric method of structural break detection in stochastic time series regression model. Under review. [\[preprint\]](#)
- Panja, M., Chakraborty, T., Biswas, A., **Deb, S.** (2024+) E-STGCN: Extreme Spatiotemporal Graph Convolutional Networks for Air Quality Forecasting. 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. [\[preprint\]](#)
- 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. [\[preprint\]](#)
- 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. [\[preprint\]](#)
- Bag, S., Gupta, K., **Deb, S.** (2022+). A review and recommendations on variable selection methods in regression models for binary data. Under resubmission. [\[preprint\]](#)

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| TEACHING | Course instructor , at Indian Institute of Management Bangalore: | |
| | • Advanced Statistics for Business (Core for BBA students) | Winter, 2025 |
| | • 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: | |
| | • Data Science & Artificial Intelligence (Programme Co-director) | Feb 2025 |
| | • Predictive Analytics for Business Forecasting (Programme Director) | Jan 2025 |
| • Data Science & Artificial Intelligence (5 sessions) | Sep 2024 | |
| • MDP for Food Corporation of India (8 sessions) | Apr 2024 | |
| • Business Analytics and Intelligence (3 sessions) | Fall, 2022 – 2024 | |
| CONSULTING SERVICES | Course instructor , at University of Chicago: | |
| | • Introductory Statistics, Chicago Academic Achievement Program (UG) | Summer, 2015 & 2017 |
| | • Statistical Models and Methods I (UG) | Winter, 2015 |
| | Smart City Mission, Ministry of Housing & Urban Affairs , India | 2024 |
| | • Topic: Improvement in quality of education through smart classrooms. | |
| | DBS Bank , Singapore | 2023 |
| | • Topic: Value of data joint study. | |
| | Real Estate Research Initiative (IIMB-RERI) , Bengaluru, India | Since 2023 |
| | • Topic: Developing a commercial rental index through spatial modeling. | |
| | SportsKPI , Bengaluru, India | 2022-23 |
| • Topic: Valuation of a Kabaddi player and its use in building strategies. | | |
| LATEST SEMINARS | • Real-time forecasting in football matches. IIMA R&P Seminar Series, Ahmedabad, India. | Feb 2025 |
| | • Nonparametric Regression of Spatio-temporal Data using Infinite-dimensional Covariates. IISA Conference 2024, Cochin, India. | Dec 2024 |
| | • Structural breaks in the spatial network of real estate dynamics: A study of UK property transactions. Essex Data Science Seminar Series, University of Essex, Colchester, UK. | Dec 2024 |
| | • Structural breaks in the spatial network of real estate dynamics: A study of UK property transactions. CMStatistics Conference 2024, London, UK. | Dec 2024 |
| | • Nonparametric changepoint detection in time series data. COMPSTAT 2024, Giessen, Germany. | Sep 2024 |
| | • 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 |

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| HONORS | <p>At Indian Institute of Management Bangalore:</p> <ul style="list-style-type: none"> • Excellence in Teaching Award 2021-22, 2023-24 <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"> • Chairperson, Decision Sciences Area. Apr 2024 - present • Doctoral Program Coordinator, Decision Sciences Area. 2023-24 • Mentor in Pre-doctoral Programme, Decision Sciences Area. 2021 - 2024 <p>Editorial Board member, for the following journal:</p> <ul style="list-style-type: none"> • Journal of Sports Analytics, Associate Editor. 2025 – present • Scientific Reports, Associate Editor in the Climate Change track. 2024 – present <p>Session chairs, at the following conferences:</p> <ul style="list-style-type: none"> • IISA Conference, Cochin, India. Dec 2024 • EcoSta 2024, Beijing, China Jul 2024 • EcoSta 2023, Tokyo, Japan Aug 2023 • 14th and 15th CMStatistics, London, UK Dec, 2021 & 2022 <p>Reviewer, for many journals including the following:</p> <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 | <p>Technical strength:</p> <ul style="list-style-type: none"> • Proficient: R, MATLAB, L^AT_EX, Microsoft Office, Google Suite • Working knowledge: Python, SQL, C, C++ <p>Languages:</p> <ul style="list-style-type: none"> • Bilingual: English, Bengali; Intermediate: Hindi; Basic: Portuguese. |