Soudeep Deb

CURRENT POSITION
Assistant Professor
Decision Sciences Area
Indian Institute of Management Bangalore, India.

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CITIZENSHIP India

RESEARCH INTERESTS Time series, Spatial statistics, Spatio-temporal modeling, Environmental data analysis, Clustering and classification, Sports analytics, Application of time series and spatial statistics in finance and other disciplines.

EXPERIENCE

Indian Institute of Management Bangalore, KA, India. Mar 2020 - Present

- Assistant Professor, Decision Sciences Area.

NBC Universal Media, LLC., New York, NY, USA. Sep 2018 - Feb 2020

- Senior Lead Data Scientist, Decision Sciences Division.

EDUCATION

University of Chicago, Chicago, IL, USA.

Ph.D., Statistics Aug 2018

- Thesis: Irregular spaced random field, Spatio-temporal data and Clustering of time series
- Advisor: Dr. Wei Biao Wu
- Other committee members: Dr. Ruey S. Tsay and Dr. Michael L. Stein

Indian Statistical Institute, Kolkata, WB, India.

Master of Statistics (M. Stat.) May 2013

- First Division with Distinction
- Specialization: Mathematical Statistics and Probability
- Dissertation: Association analysis for identifying rare genetic variants
- Advisor: Dr. Saurabh Ghosh

Bachelor of Statistics (B. Stat.) May 2011

- First Division with Distinction

RESEARCH GRANTS

Research Seed Grant from IIM Bangalore, India:

- Project: New techniques to analyze categorical and discrete time series data
- Amount: INR 300,000 for two years (August 2021 to December 2023)

Young Faculty Research Grant from IIM Bangalore, India:

- Amount: INR 900,000 for three years (March 2020 to February 2023)

DOCTORAL STUDENTS

PhD thesis advisor:

- Anchal Soni, Indian Institute of Management Bangalore. Feb 2023
  Thesis: Methods of analyzing structural breaks in multivariate time series: Applications to financial data.
- Siddharth Rawat, Indian Institute of Management Bangalore. May 2023
  Thesis: Spatio-temporal models in epidemiology and climate change.
- Kapil Gupta, Indian Institute of Management Bangalore. (Expected) 2025
- (Co-advised) Archi Roy, Indian Institute of Science Education & Research Pune. (Expected) 2025

PhD committee member:

- Sajad S Santhosh, Indian Institute of Management Bangalore. (Expected) 2024

Teaching

Course instructor, at Indian Institute of Management, Bangalore:

- Sports Analytics (PGP/MBA) — Fall, 2023
- Multivariate Statistics (FPM/PhD) — Spring, 2021 - 2023
- Decision Sciences I (PGP/MBA) — Fall, 2020 - 2023
- Statistical Inference (FPM/PhD) — Winter, 2020

Course instructor, at University of Chicago:

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

Publications

1. 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. Accepted in Energy Economics.
2. **Deb, S.**, Karmakar, S. (2023) A novel spatio-temporal clustering algorithm with applications on COVID-19 data from the United States. Accepted in Computational Statistics & Data Analysis.
3. 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. Accepted in the Journal of the Royal Statistical Society Series A.
4. Roy, A., **Deb, S.**, Chakarwarti, D. (2023) Impact of COVID-19 on public social life and mental health: A statistical study of Google Trends data from the USA. Accepted in Journal of Applied Statistics.
5. **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.
6. **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.
7. **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.
8. **Deb, S.**, Majumdar, M. (2022). A quadratic trend-based time series method to analyze the early incidence pattern of COVID-19. Accepted in Biostatistics & Epidemiology.
9. Rawat, S., **Deb, S.** (2021). A spatio-temporal statistical model to analyze COVID-19 spread in the USA. Accepted in the Journal of Applied Statistics.
10. 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).
11. **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.
12. **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.
13. **Deb, S.** (2019). VAR Model Based Clustering Method for Multivariate Time Series Data. Journal of Mathematical Sciences, 237(6), 754-765.
14. Prickett, K.C., Guiterrez, C., **Deb, S.** (2019). Family Firearm Ownership and Firearm-related Mortality among Young Children: 1976-2016. Pediatrics, 143(2), e20181171.
15. 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.
16. **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.

17. Zechner, C., **Deb, S**., Koeppl, H. (2013). Marginal Dynamics of Stochastic Biochemical Networks in Random Environments. In Control Conference (ECC), 2013 European, p. 4269-4274, IEEE.

18. Ghosh, S., **Deb, S.** (2013). A Clustering Approach for Mapping Rare Variants Based in Mutual Association. Human Heredity, Vol. 76, No. 2, pp. 98-98.

Articles under revision

1. Divekar, C., **Deb, S.**, Roy, R. (2023+) Real-time forecasting within soccer matches through a Bayesian lens. Under revision. Pre-print: https://arxiv.org/abs/2303.12401.

2. **Deb, S.**, Jana, K. (2022+). Nonparametric quantile regression for time series with replications and its application to climate data. Under revision. Pre-print: https://arxiv.org/abs/2107.02091.

3. Chattopadhyay, A., **Deb, S.** (2022+) A spatio-temporal model for binary data and its application in analyzing the levels of COVID-19 spread. Under revision.

4. Bag, S., Gupta, K., **Deb, S.** (2022+). A review and recommendations on variable selection methods in regression models for binary data. Under revision. Pre-print: https://arxiv.org/abs/2201.06063.

Latest seminars

1. Nonparametric methods to deal with quantile regression problems in time series and spatio-temporal settings. Symposium, National University of Singapore, Singapore. May 2023

2. 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

3. A Bayesian approach to identify changepoints in spatio-temporal ordered categorical data. IISA 2022 Conference, Bengaluru, India. Dec 2022

4. A nonparametric approach to deal with spatio-temporal quantile regression problems. CMStatistics 2022 Conference, London, UK. Dec 2022

5. Analyzing count data using a time series model with an exponentially decaying covariance structure. EURO 2022 Conference, Finland. Jul 2022

6. A goal based index to analyze the competitive balance of a football league. 8th Western Conference on Football and Finance, Reading, UK. May 2022

7. Developing statistical methods in Health (Epidemiological) Data. SERB-AV Workshop 2022, IIIT Dharwad, India. May 2022

8. New methods of structural break detection in multivariate time series and its use in modeling financial data. StatFin Webinar 2022, IISER Pune, India. Mar 2022

9. 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

10. Impact of global warming on rainfall: A Spatio-temporal study. RSS International conference 2021 (virtual), Manchester, UK. Sep 2021

11. Analyzing count data using a time series model with an exponentially decaying covariance structure. 2021 Australian and New Zealand Statistical Conference (virtual), Australia. Jul 2021

12. Spectral density based clustering method for spatio-temporal datasets. 4th International Conference on Econometrics and Statistics, EcoSta 2021 (virtual), Hong Kong. Jun 2021

13. A Mathematical Take on the Competitive Balance of a Football League. Guest lecture (virtual), Mathematics of Sports, Stanford University, Stanford, USA. May 2021

Professional Services

Positions of responsibility, at Indian Institute of Management Bangalore:

- Doctoral Program Coordinator, Decision Sciences Area. — Since 2023
- Mentor to pre-doctoral students, Decision Sciences Area. — Since 2021

Session chairs, at the following conferences:

- (Upcoming) 6th EcoSta, Tokyo, Japan — Aug 2023
- 14th CMStatistics, London, UK — Dec 2021
- 15th CMStatistics, London, UK — Dec 2022
- IISA Conference, Bengaluru, India. — Dec 2022

Reviewer, for the following journals:

- Biometrics
- Electronic Journal of Statistics
- IIMB Management Review
- Indian Journal of Science and Technology
- Journal of Advances in Management Research
- Journal of Behavioral and Experimental Finance
- Journal of Multivariate Analysis
- Journal of Sports Analytics
- Journal of the Royal Statistical Society: Series A and Series C
- Linear Algebra and its Applications
- Sankhya A and Sankhya B
- Scientific Reports
- Statistics and Probability Letters

Honors

At University of Chicago:

- International House Ralph W. Nicholas Fellowship Award — 2017-18
- Graduate Council Travel Fund Award — 2017
- Senior Consultant, Department of Statistics — 2016-17
- 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

Skills

Technical strength:

- Proficient: R, MATLAB, LaTeX, Microsoft Office
- Working knowledge: Python, SQL, C.

Languages:

- Fluent in reading, writing, speaking: English, Bengali, Hindi.
- Basic reading and speaking: Portuguese.