# Soudeep Deb

Current Assistant Professor Webpage: soudeepd.github.io POSITION Decision Sciences Area Phone: +91 80-26993387 Indian Institute of Management, Bangalore, India. E-mail: soudeep@iimb.ac.in

CITIZENSHIP India

Research Time series data, Spatial statistics, Spatio-temporal modeling, Clustering and classification, Sports analytics, Interests 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, Young Faculty Research Chair, 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

TEACHING Course instructor, at Indian Institute of Management, Bangalore:

> • Decision Sciences I (PGP/MBA) Term 1 of 2021 • Statistical Inference (FPM/PhD) Term 2 of 2020 • Decision Sciences I (PGP/MBA) Term 1 of 2020

Course instructor, at University of Chicago:

• Introductory Statistics at Chicago Academic Achievement Program Summers of 2015, 2017 Statistical Models and Methods I Winter 2015

Research GRANTS

Research Seed Grant from IIM Bangalore, India:

• Project: New techniques to analyze categorical and discrete time series data

• Amount: INR 250,000 for two years (August 2021 to July 2023)

Young Faculty Research Grant from IIM Bangalore, India:

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

#### **Publications**

- 1. Rawat, S., **Deb**, **S.** (2021). A spatio-temporal statistical model to analyze COVID-19 spread in the USA. To appear in the Journal of Applied Statistics.
- 2. **Deb, S.**, Deb, S. (2021). An ensemble method for early prediction of dengue outbreak. To appear in the Journal of the Royal Statistical Society: Series A.
- 3. **Deb, S.** (2021). Analyzing airlines stock price volatility during COVID-19 pandemic through internet search data. To appear in the International Journal of Finance & Economics.
- 4. **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.
- 5. **Deb, S.** (2019). VAR Model Based Clustering Method for Multivariate Time Series Data. Journal of Mathematical Sciences, 237(6), 754-765.
- Prickett, K.C., Guiterrez, C., Deb, S. (2019). Family Firearm Ownership and Firearm-related Mortality among Young Children: 1976-2016. Pediatrics, 143(2), e20181171.
- 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.
- 8. **Deb, S.** (2018). Irregular Spaced Data, Spatio-temporal Modeling and Clustering of Time Series. The University of Chicago. PhD Thesis.
- 9. **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.
- 10. **Deb, S.**, Dey, D. (2017). Spatial modeling of shot conversion in soccer to single out goalscoring ability. Journal of Sports Analytics, (Preprint), 1-17.
- 11. 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.
- 12. 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.

# Submitted Articles

- 1. **Deb, S.**, Jana, K. (2021). Nonparametric quantile regression for time series with replicated observations and its application to climate data. Pre-print: https://arxiv.org/abs/2107.02091.
- 2. **Deb, S.**, Roy, R., Das, S. (2021). Modeling a sequence of multinomial data with randomly varying probabilities. Pre-print: https://arxiv.org/abs/2104.02924.
- 3. **Deb, S.** (2021). A mathematical take on the competitive balance of a football league. Pre-print: https://arxiv.org/abs/2102.09288.
- 4. Gupta, K., Krishnamurthy, V., **Deb, S.** (2021). What elements of the opening set influence the outcome of a tennis match? An in-depth analysis of Wimbledon data. Pre-print available on request.
- 5. **Deb, S.** (2020). Analyzing count data using a time series model with an exponentially decaying covariance structure. Pre-print: https://arxiv.org/abs/2004.03130.
- 6. **Deb, S.**, Majumdar, M. (2020). A time series method to analyze incidence pattern and estimate reproduction number of COVID-19. Pre-print: https://arxiv.org/abs/2003.10655.
- Majumdar, M., Banerjee, M., Sengupta, J., Deb, S., Jana, C. K., Roy, B. K. (2020). Prevalence and spectrum of diabetic peripheral neuropathy and its correlation with insulin resistance-An experience from eastern India. Pre-print: https://www.medrxiv.org/content/10.1101/2020.04.12.20056150v1.

#### Seminars

- 1. A Mathematical Take on the Competitive Balance of a Football League. Guest lecture (virtual), Mathematics of Sports, Stanford University, Stanford, USA.
- 2. New Methods of Clustering Time-series Data and its Applications. Colloquium, Indian Statistical Institute, Bangalore, India. Nov 2019
- 3. Spatio-temporal Models with Space-time Interaction and Their Applications to Air Pollution Data. Statistics colloquium, Northern Illinois University, Dekalb, USA.
- 4. VAR Model Based Clustering Method for Multivariate Time Series Data. XXXIV. International Seminar on Stability Problems for Stochastic Models, Debrecen, Hungary. Aug 2017
- 5. Spatio-temporal Models with Space-time Interaction and Their Applications to Air Pollution Data. NBER/NSF Time Series Conference, New York, USA. Sep 2016
- 6. Hydropower Construction and Deforestation in the Tapajós River Basin: The Effect on Water Balance. Symposium on deforestation, Ministry of Environment, Brasília, Brazil. Aug 2016
- 7. Estimating Genetic Relationship between Random Individuals from Genome Sequence Data. Young Statisticians Conference, Melbourne, Australia. Feb 2013
- 8. Estimating Genetic Relationship between Random Individuals from Genome Sequence Data. Conference on Contemporary Issues and Applications in Statistics, Kolkata, India. Jan 2012
- 9. Estimating Genetic Relationship between Random Individuals from Genome Sequence Data. D. Basu Memorial Award Lecture Series, Indian Statistical Institute, Kolkata, India. Sep 2011

#### PEER REVIEW Reviewer for the following journals:

#### Services

- Biometrics
- Electronic Journal of Statistics
- IIMB Management Review
- Indian Journal of Science and Technology
- Journal of Advances in Management Research
- Journal of Sports Analytics
- Linear Algebra and its Applications
- Statistics and Probability Letters

# Honors

# 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

### Other Awards:

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

# OTHER EXPERIENCE

# The Alan Turing Institute, London, United Kingdom

Dec 2017

- Position: Delegate for the Data Study Group.
- Project: Geospatial time-series analyses to predict demand for a global satellite communications network.

#### Instituto de Pesquisa Ambiental do Amazônia, Brasília, Brazil

Jun - Aug 2016

- Position: Summer fellow.
- Project: Hydropower Construction and Deforestation in the Tapajós River Basin: Linking Forest Cover to Changes in Water Balance.

#### Eidgenossische Technische Hochschule (ETH), Zurich, Switzerland

May - Jul 2013

- Position: Summer research intern.
- Project: Moment-Closure Approximations for Mass-action Models in Chemical Kinetics.

# Eidgenossische Technische Hochschule (ETH), Zurich, Switzerland

Jun - Jul 2012

- Position: Summer research intern.
- Project: Marginal Dynamics of Stochastic Biochemical Networks in Random Environments.

#### Ministry of Statistics and Programme Implementation, Govt. of India

May 2012

- Position: Team member
- Project: Forecasting of Foreign-tourist Arrivals in India.

# Johns Hopkins University, Baltimore, United States of America

May - Jul 2011

- Position: Summer research intern
- Project: Estimating Relationship between Random Individuals from Genome Sequence Data.

# OTHER INFORMATION

#### 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.