

Rituparna Sen

Associate Professor
Indian Statistical Institute
8th Mile, Mysore Rd, RVCE Post, Bengaluru,
Karnataka 560059

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Ph: +91-9176620249

EDUCATION

09/99-07/04	PhD in Statistics	University of Chicago
07/96-05/98	Master of Statistics	Indian Statistical Institute
07/93-05/96	Bachelor of Statistics	Indian Statistical Institute

EXPERIENCE

01/20-Present	Associate Professor, Indian Statistical Institute, India
03/21-Present	Editor, Applied Stochastic Models in Business and Industry
09/11-12/19	Assistant Professor, Indian Statistical Institute, India
08/04-08/11	Assistant Professor, University of California at Davis, USA
01/10-06/12	Visiting Scientist, University of Augsburg, Germany
06/00-08/00	Summer Intern, Bell Labs, Lucent Technologies, NJ, USA
09/98-06/99	Graduate student, Stanford University, CA, USA

AWARDS and RECOGNITION

1. 2020 MATRICS research grant (MAThematical Research Impact Centric Support) for 3 years from the Science and Engineering Research Board (SERB), Government of India.
2. 2019 Young Statistical Scientist Award in the Applications category awarded by the International Indian Statistical Association (IISA).
3. 2019 Asian Development Bank travel award for attending World Statistics Congress
4. 2019 Member of Council, International Society for Business and Industrial Statistics
5. 2018 Elected Member, International Statistical Institute
6. 2014 Ambarnath Shanti Ghosh Travel Grant from Indian Statistical Institute
7. 2014 Travel award from International Statistical Institute from The World Bank Trust Fund for Statistical Capacity Building and International Society for Business and Industrial Statistics
8. 2014 Plenary speaker in 8th Statistics Day Conference, The Reserve Bank of India, Mumbai
9. 2010 Summer Research Fellowship, UC Davis.
10. 2010 Faculty Development Award, UC Davis
11. 2009 Women in Mathematical Sciences Award, Technical University of Munich
12. 2004-2010 Annually, Faculty Research Travel Grant, UC Davis
13. 2001 Best Student Paper Award, ASA section on Statistical Computing
14. 2000 Bahadur Memorial Fellowship, University of Chicago
15. 1998 Abram's Award Fellowship, Stanford University
16. 1997 Gold medal for ranking 1st in B. Stat, Indian Statistical Institute

PUBLICATIONS

1. Sen, R. and Das, S. Computational Finance with R, Springer Indian Statistical Institute Series, accepted.
2. Sreelakshmi, N., Kattumannil, S. K. and Sen, R. (2021) Jackknife Empirical Likelihood-based Inference for S-Gini Indices, Communications in Statistics - Simulation and Computation, 50(6), 1645-1661.

3. Sikaria, S., Sen, R. and Upadhye, N. S. (2020) Bayesian Filtering for Multi-period Mean-Variance Portfolio Selection, *Journal of Statistical Theory and Practice*, 15, 40, DOI: 10.1007/s42519-021-00175-2
4. Das, S. and Sen, R. (2020) Sparse Portfolio Selection via Bayesian Multiple Testing, *Sankhya B*, In Press . DOI: <https://doi.org/10.1007/s13571-020-00240-z>
5. Sen, R. (2020) Discussion of "Revisiting Multivariate generalized hyperbolic laws for modeling financial log returns by Fotopoulos, Paparas and Jandhyala", *Applied Stochastic Models in Business and Industry*, 36(5): 776-776 .
6. Barik, A. K., Sen, R. and Ganguli, B. (2020) Impact of the COVID-19 epidemic on the aviation industry, *Journal of the Indian Statistical Association*, 58(1): 89-104.
7. Lahiri, A. and Sen, R. (2020) Fractional Brownian Markets with Time-Varying Volatility and High-Frequency Data , *Econometrics and Statistics*, 16: 91-107.
8. Choudhary, D. and R. Sen (2020) Index Tracking for NIFTY50, *Special Proceedings of the 22nd Annual Conference of SSCA, Savitribai Phule Pune University*, 73-84 .
9. Sen, R. (2019) Granger causality in yield curves of different markets, *Proceedings of the 62nd ISI World Statistics Congress, Kuala Lumpur*, Invited Paper Session, Vol 1, 68-74 .
10. Sen, R. and Manavathi, S. (2019) Stylized Facts of the Indian Stock Market, *Asia-Pacific Financial Markets*, 26(4): 479-493.
11. Sen, R and Klueppelberg, C (2019) Time Series of Functional Data, *Applied Stochastic Models in Business and Industry*, 35(4), 1028-1043.
12. Chakrabarti, A. and R. Sen (2018) Some Statistical Problems with High Dimensional Financial data, Abergel, F., Chakrabarti, B.K., Chakraborti, A., Deo, N. and Sharma, K. (Eds.) *New Perspectives and Challenges in Econophysics and Sociophysics* , Springer Nature Switzerland, New Economic Windows, pp 147-167.
13. Chaudhuri, K., R Sen and Z. Tan (2018) Testing Extreme Dependence in Financial Time Series, *Economic Modeling*, 73, 378-394.
14. Sen, R. and P. Mehrotra (2016) Modeling volatility and jumps of Indian Stock market using high-frequency data, *Journal of Quantitative Economics*, 14(1), 137–150.
15. Sen, R., P. Gupta and D. Dey (2016) High Dimensionality Effects on the Efficient Frontier: A Tri-Nation Study, *Journal of Data Analysis and Information Processing*, 4, 13-20.
16. Sen, R and C. Ma (2015) Forecasting Density Function: Application in Finance, *Journal of Mathematical Finance* 5(5) 433-447.
17. Chaplot, A. and R. Sen (2015) Performance of Inequality Indices, Abergel, F., Aoyama, H., Chakrabarti, B.K., Chakraborti, A., Ghosh, A. (Eds.) *Econophysics and Data Driven Modelling of Market Dynamics*, 191-212.
18. Ray, N. and R. Sen (2014) Forecasting Wind Power Generation, *Pioneer Journal of Theoretical and Applied Statistics*, 7(1) 1-13.
19. Sen, R. and Q. Xu (2013) Covolatility, Lap Lambert Academic Publishing, Saarbrücken, Germany.
20. Sen, R. (2012) Covariance between Stochastic Processes observed Sparsely with Noise: Application to Online Auctions, K. Kumar and A. Chaturvedi,(ed) *Some Recent Developments in Statistical Theory and Applications*, 26-37.
21. Sen, R. and Z. Tan (2012) Extreme Dependence in Multivariate Time Series, J. Jiang, G. Roussas and F. Samaniego,(ed), *Nonparametric Statistical Methods and Related Topics: Festschrift in honor of P.K. Bhattacharya on the Occasion of His 80th Birthday*, 347-362.
22. Müller, H. G., R. Sen and U. Stadtmüller (2011) Functional Data Analysis for Volatility. *Journal of Econometrics*. 165(2) 233-245.
23. Sen, R. (2009) Hedging Options in the Incomplete Market with Stochastic Volatility. *Statistics and Its Interface*. 2(4) 469-480.
24. Sen, R. and F. Hsieh (2009) A note on testing regime switching assumption based on recurrence times. *Statistics and Probability Letters*. 79(24) 2443-2450.
25. Sen, R. (2008) Jumps and Microstructure Noise in Stock Price Volatility, Gregoriou, G. N., (ed), *Stock Market Volatility*. 163-180.

26. Sen, R. and Q. Xu (2008) Estimation of Integrated covolatility for asynchronous assets in the presence of microstructure noise, Ashis Sen Gupta, (ed), *Multivariate Statistical Methods*. 437-454.
27. Sen, R. (2006) Intervals for Option Prices. *International Journal of Statistics and Management Sciences*, 1: 59-81.
28. Sen, R. and M.H. Hansen (2003) Predicting Web User's Next Access Based on Log Data. *Journal of Computational and Graphical Statistics*, 12(1): 143-155.

TEACHING EXPERIENCE

Indian Statistical Institute, BMath

Statistics 2, Spring 2020
Statistics 1, Fall 2020, Fall 2021
Probability 2, Spring 2021

Indian Statistical Institute, MStat

Computational Finance: Spring 2017, Spring 2018
Large Sample Statistical Methods: Fall 2013, Fall 2014, Spring 2016, Spring 2017
Multivariate Analysis: Spring 2018
Probability and Stochastic Processes I: Fall 2012
Statistical Inference II: Spring 2012

Indian Statistical Institute, Business Analytics

Weekend classes for the professional program

Indian Institute of Quantitative Finance

Post Graduate Program in Financial Engineering
Certificate Program in Applied Mathematical Finance for Engineers

Madras School of Economics

Statistical Methods, Fall 2012

Chennai Mathematical Institute

Mathematics and Finance Summer School, 25 May-25 June, 2019.
Mathematics and Finance Summer School, 25 May-25 June, 2018.
Certificate Program on Data Science, May 5-13, 2018
Risk Management, Spring 2012

University of California at Davis

Advanced Topics in Mathematical Finance: Fall 2010.
Applied Statistics: Winter/Spring 2008, Winter 2009.
Multivariate Analysis: Spring 2008
Probability for Engineers: Spring 2007.
Probability Modeling: Fall 2005, Fall 2006, Spring 2009.
Mathematical Statistics: Fall 2005
Elementary Statistics: Fall 2004, Winter/Summer/Fall 2006, Summer 2007, Spring/Fall 2009.

University of Chicago

Elementary Statistics, Spring/Fall 2001

STUDENTS SUPERVISED

Main PhD thesis advisor for:

Shubhangi Sikaria IIT Madras expected 2022

Arnab Chakrabarti ISI 2020
Zheng Tan UC Davis 2012
Qiuyan Xu UC Davis 2008

Member of PhD thesis reading/defense committee for:

Aastha M Sathe IITM 2021
Sudhanshu Pani NMIMS 2020
Rongqi Chen UC Davis 2011
Yanhua Zhang UC Davis 2009
Ping-Shi Wu UC Davis 2005

Post-doctoral researchers supervised:

Dr Kumarapandiyam Gnanasegaran, currently Assistant Professor at Madras Christian College
Dr Ashmita Gupta, currently Visiting Faculty at Asian Development Research Institute
Dr Arun Kumar, currently Assistant Professor at IIT Ropar
Dr Ayon Ganguly, currently Assistant Professor at IIT Guwahati
Dr Suparna Biswas, under Women Scientists Scheme (WOS-A) from Department of Science and Technology, Government of India

Masters Thesis Project supervised

Mbhense Lindokuhle. S, University of Zululand, 2021
Chittala Sai Ram, IITM, 2021
Divyashish Chowdhury, IITM, 2020
Manavathi S., PSG College of Technology, Coimbatore 2018
Nilabja Ray, ISI Chennai, Mstat 2013

Summer internship

Rahul Krishnakumar, IISER, Bhopal, 2021
Parvathy A., SVNIT, Surat, 2020
V. Aravindan, BITS, Pilani, 2020
Pramit Das, ISI, 2019
Arya PV, IISER Pune, 2019
Divya Andrews, CUSAT, 2019
Souvik Nath, Pondicherry University, 2018
Anjana K., Loyola College, 2018
Adeetya Tantia, IISER Mohali, 2017
Abhishek Siwach, IIT Kharapur, 2017
Ravi Shah, CMI, 2016
Georgy C Luke, IISER Bhopal, 2016
Pulkit Gupta, IIT Kharapur, 2015
Aviral Maheshwari, Madras School of Economics, 2015
Vaibhav Gupta, Delhi University, 2015
Sarwan Kumar Bishnoi, Chennai Mathematical Institute, 2015
Debanjana Dey, IMA, Bhubaneswar, 2014
Khanand, IIT Kharapur, 2014
Anjali Patel, IIT Roorkee, 2014
Niraj Kumar, IIT Kanpur, 2014
Vibhanshu, IIT, Guwahati, 2014
K.K.Chaitanya Patnaik, IISER, Kolkata, 2014
Anurag Chaplot, IIT Kharapur, 2014
Aisha Saeed, Univ Allahabad, 2014
Nilanjan Chakraborty, St Xaviers Kolkata, 2014
Vishal Jain, IIT Guwahati, 2013
Pulkit Mehrotra, IIT Kharapur, 2012
Rahul Deora, IIT Kharapur, 2012

Arnab Saikat Nayak, CMI, 2012
Amlan Modak, CMI, 2012
Kaustav Sarkar, CMI, 2012

Externally funded project:

2017 Mathematical examination of a load forecasting model for Hitachi India
2016 Finding the best possible precision in a changing environment for Hitachi India
2015 Predictive Analytics for Lucid Technologies
2013 Classification of ECG for Intel Bangalore

PRESENTATIONS

1. Invited talk, Statistics Department, Savitribai Phule Pune University, Sept 29, 2021.
2. Invited talk, Applied Statistics Unit, ISI Kolkata, Mar 16, 2021.
3. Invited talk, Visionary Innovations in Statistical Theory and Applications (VISTA), ICAR, Hyderabad, Feb 27-28, 2021.
4. Invited talk, International Virtual Conference on Advanced Statistical Techniques in Business and Industry, CUSAT, Cochin, Dec 28-30, 2020.
5. Invited talk, Webinar Series organized by Shri Madhwa Vadiraja Institute of Technology & Management, Bantakal, Dec 12, 2020.
6. Contributed talk at Online International Conference in Actuarial Science, Data Science and Finance, Université Lyon, France, April 28-29, 2020.
7. Invited talk at 22nd Annual Conference of the Society of Statistics, Computer and Applications, Savitribai Phule Pune University, Pune, Jan 2-4, 2020.
8. Lectures at workshop on Data Science in Finance at Chennai Mathematical Institute, Chennai, Dec 16-18, 2019
9. Invited talk at World Statistics Congress, Kuala Lumpur, Malaysia, 22 August, 2019.
10. Invited talk at VIASM, Hanoi, Vietnam, 29 March.
11. Ford Global Data Insight and Analytics (GDI&A) India Guest Lecture, 19 Feb, 2019.
12. Lectures at Faculty Development Program on Research Methodology, M.O.P. Vaishnav College for Women, Chennai, 7-13 Dec, 2018.
13. Special lecture at DRBCC Hindu College, 24 Sept, 2018.
14. Invited talk at International Symposium on Statistics in Business and Industry, Athens, July 4 - 6, 2018.
15. Invited talk at Workshop on Mathematical Finance, IISER Pune, July 12-16, 2018.
16. Invited talk at annual meeting of International Indian Statistical Association, Hyderabad, Dec 28-30, 2017.
17. Invited talk at Econophys & Asia Pacific Econophysics Conference, Jawaharlal Nehru University / Delhi University, New Delhi, Nov 15-18, 2017.
18. Invited talk at The Economy as a Complex System IV: Can economics be a physical science, IMSc Chennai Nov 13-14, 2017.
19. Lectures at National Workshop on Computational Mathematics, Anna University, Chennai, March, 2-15, 2017.
20. Lectures at National Workshop on Big Data Analytics Tools (NWBAT '17) in SRM University on Feb 23-27, 2017
21. Talk for students of Utkal university, Bhubaneswar, Odisha on their Educational Tour to ISI, Chennai Jan 13, 2017
22. Invited talk at IIT Madras math dept colloquium Nov 3, 2016
23. Invited talk at Joint Statistical Meetings, Chicago, July 30-Aug 4, 2016

24. Lectures at DST sponsored training program on Big Data Analytics at Velammal Institute of Technology on April 28-29, 2016
25. Special Invited Lecture at IISA conference in Pune, Dec 20-24, 2015
26. Invited talk at IGIDR, Mumbai, Oct 15, 2015
27. Popular lecture to students of Vellore Institute of Technology, Chennai Campus, Sept 28, 2015.
28. Popular lecture to students of Hindustan University, April 8, 2015
29. Invited talk at Recent Trends in Statistical Theory and Practice at University of Madras, March 16-17, 2015
30. Statistics and Society in the New Information Age: Challenges and Opportunities, Colombo, Sri Lanka, Dec 28-30, 2014
31. Plenary speaker in 8th Statistics Day Conference, The Reserve Bank of India, Mumbai, September 25th, 2014
32. National Level Advanced Orientation Programme in Statistics, S.D.N.B. Vaishnav College for Women, Chennai, August 18 -22, 2014.
33. IMS-Asia Pacific Rim Meeting Taiwan, June 29-July 3, 2014
34. International Symposium on Business and Industrial Statistics/Conference of the ASA Section on Statistical Learning and Data Mining at Durham, NC, USA June 9-11, 2014
35. National University of Singapore, Singapore 2014
36. Econophysics Kolkata VIII conference, 2014
37. SDNB Vaishnav college on Feb 28, 2014
38. Indian Institute of Management, Bangalore, 2014
39. Advanced Training Programme in Statistics for College Teachers and Research Scholars in Statistics, Pondicherry, Nov. 2013.
40. Training Program for doctoral students at Tirunelveli University, Sept 2013
41. University of Madras, Chennai, India 2013
42. Workshop on Industry & Practices for Forecasting organized by EDF, Paris, 2013
43. International Indian Statistical Association Conference, Chennai, India 2013
44. Forum for Interdisciplinary Mathematics Conference at Panjab University, India 2012
45. Indian Statistical Institute, Bangalore, India 2012
46. Madras School of Economics, Chennai, India, 2011
47. Annual convention of Indian society for probability and statistics, Cochin, India 2011
48. International Conference on Mathematical Finance and Economics, Istanbul, Turkey 2011
49. Sacramento Statistical Association Meeting, Sacramento, USA 2011
50. International conference on recent developments in statistics, applied econometrics and forecasting, Allahabad, India 2010
51. SIAM Conference on Financial Mathematics and Engineering, San Francisco, USA 2010
52. Third Western Conference in Mathematical Finance, UC Santa Barbara, USA 2009.
53. Stochastic Processes and Their Applications, Berlin, Germany 2009
54. Department of Mathematics University of Augsburg, Germany 2009
55. Fourth Statistical Days at University of Luxembourg, Luxembourg 2009
56. Oxford Man Institute Financial Econometrics & Vast Data Conference, Oxford, UK 2008
57. Department of Mathematics, Munich Technical University, Germany 2008
58. Bachelier Finance conference, London, UK 2008
59. Annual Meeting of International Indian Statistical Association, Storrs, USA 2008
60. Department of Statistics, University of California, Davis, USA 2007
61. Computational And Financial Econometrics, Geneva, Switzerland 2007
62. Department of Economics, University of California, Santa Cruz, USA 2007
63. Risk Analysis, Extreme Events and Decision Theory, SAMSI, USA 2007
64. Smith School of Business, University of Maryland, USA 2007
65. Conference on Multivariate Statistics, Indian Statistical Institute, Kolkata, India 2006
66. Institute of Mathematical Statistics Annual meeting, Rio de Janeiro, Brazil 2006
67. Department of Statistics, University of California, Davis, USA 2005
68. Joint Statistical Meetings, Minneapolis, USA 2005

69. Department of Economics, University of California, Davis, USA 2004
70. Model Risk Management and Model Specifications Issues in Finance, IMA, Minneapolis, USA 2004
71. Department of Operations Research and Financial Engineering, Princeton University, USA 2004
72. Bell Laboratories, New Jersey, USA 2004
73. American Mathematical Society Fall Southeastern Section Meeting, Orlando, USA 2002
74. Joint Statistical Meetings, Atlanta, USA 2001.

SERVICE

1. Chair, Organizing Committee, Weekend Online Program on Statistical Machine Learning, Centre for Artificial Intelligence and Machine Learning, ISI, 3 weekends in March 2021.
2. Member, Scientific Committee, International Virtual Conference on Advanced Statistical Techniques in Business and Industry, CUSAT, Dec 28-30, 2020.
3. Member, Centre for Artificial Intelligence and Machine Learning, ISI, 2020-Present.
4. Associate Editor, Journal of Indian Statistical Association, 2020-2022.
5. Member, Publications Committee, International Statistical Institute, 2020-2022.
6. Member, Scientific Program Committee of International Indian Statistical Association meeting, Mumbai, Dec 26-30, 2019.
7. Member, Organizing committee, Fifth Research Workshop and Conference on Statistical methods in finance at CMI, Chennai Dec 16-21, 2019.
8. Member, Organizing committee, Fourth Research Workshop and Conference on Statistical methods in finance at CMI, Chennai Dec 17-20, 2018.
9. Organizer and resource person, Summer Training Program for BSc statistics students, ISI Chennai, May 7-June 15, 2018.
10. Member, Scientific Committee and student paper competition committee, International Conference on Business and Industrial Statistics, Athens, Greece, July 4-6, 2018.
11. Member, organizing committee, Conference in ISI Kolkata to celebrate 125th birth centenary of P. C. Mahalanobis, Jan 2-4, 2018.
12. Chair, student paper competition and member, Scientific Program Committee of International Indian Statistical Association meeting, Hyderabad, Dec 27-30, 2017.
13. Member, organizing committee, Third Research Workshop and Conference on Statistical methods in finance at CMI, Chennai Dec 17-20, 2017.
14. Associate Editor Indian Statistical Institute book series by Springer.
15. Member, organizing committee, Second Research Workshop and Conference on Statistical methods in finance at CMI, Chennai Dec 18-22, 2016.
16. Associate Editor of Sankhya, Series B, 2016-Present.
17. Organized Invited Session in Joint Statistical Meetings Chicago, July 2016.
18. Member, Organizing Committee, First Research Workshop and Conference on Statistical methods in finance at CMI, Chennai July 13-17, 2015.
19. Associate Editor Applied Stochastic Models in Business and Industry 2014-2020.
20. Reviewed papers for JASA, JRSS(B), ASMBI, JFM, JBES, JMVA, Managerial Finance, QF, JAS, Indian Growth and Development Review, Communications in Statistics
21. Reviewed book proposal for Wiley
22. Reviewed research grant proposal for Indo-French Centre for the Promotion of Advanced Research
23. In-charge, Student Academic affairs, ISI Chennai, 2013 - 2015
24. Member, Organizing Committee and Program Committee, First Conference on Business Analytics, Feb 28-Mar 1, 2015 ISI Chennai
25. Member, Organizing committee, Statistical Methods for Business and Industry Applications Workshop, Chennai, India January 8-9, 2015.
26. Question paper setting committee for CSIR-NET Junior Research Fellowship examination 2014

27. Coordinator, National Level Advanced Orientation Programme in Statistics, S.D.N.B. Vaishnav College for Women, Chennai, Aug18 -22, 2014.
28. Organized an invited session in Pacific Rim Meeting in Taiwan organized by Institute of Mathematical Statistics, June 2014
29. Director, Weekend Professional Training Program on Business Analytics, ISI Chennai, Feb-Apr 2014
30. Organizer of Statistical Science Symposium in ISI Chennai, Feb 2014
31. Reviewed proposal for Indo-French centre for the promotion of advanced research 2013
32. Organizer of Advanced Training Programme in Statistics for College Teachers and Research Scholars in Statistics, Pondicherry, Nov 18-22, 2013
33. Organized Statistics Training Program for doctoral students at Thirunelveli University, Sept 12-13, 2013
34. Co-organizer of 2-day symposium to celebrate International Year of Statistics on 23-24 March 2013 at ISI Chennai
35. Treasurer of IISA Conference Statistics, Science, and Society: New Challenges and Opportunities held during January 2-5, 2013.
36. Member of NBER-NSF Time Series Meeting Committee 2009
37. Reviewed NSF proposal for Infrastructure Program. 2009
38. Chair of University of California Davis committee on new undergraduate program on Statistical Finance 2008-09
39. Arranged Invited Session for International Indian Statistical Association 2008
40. Arranged topic contributed session for Business and Economics Section of ASA in JSM 2007
41. Panelist for NSF Graduate Research Fellowship in the Mathematical Sciences 2007
42. Reviewed books "Emerging Markets" and "Current Banking Crisis" for CHAPMAN & HALL
43. Member of PhD Qualifying Written Exam Committee in Statistics at UCDavis 2004-2008.
44. Member of Faculty Search Committee in Statistics at UCDavis 2006-2008.