ANIRVAN CHAKRABORTY

Assistant Professor
Department of Mathematics and Statistics,
Indian Institute of Science Education and Research Kolkata,
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PREVIOUS POSITIONS

- *Post-doctoral Fellow* in the Chair of Mathematical Statistics at Ecole Polytechnique Federale de Lausanne (EPFL), Switzerland (June 2015 to December 2017).

- *Visiting Scientist* in the Theoretical Statistics and Mathematics Unit of the Indian Statistical Institute, Kolkata (January – March 2015 & January – June 2018).

EDUCATION

- *Ph.D. in Statistics*
Indian Statistical Institute, Kolkata, India (2010 – 2014)
Thesis title: Nonparametric methods for data in infinite dimensional spaces
(Date of thesis defence: 12th December, 2014)
Supervisor: Prof. Probal Chaudhuri

- *Master of Statistics (Hons.)*
Indian Statistical Institute, Kolkata, India (2006 – 2008)
First Division with Distinction with 85.8% aggregate score
Specialization: Mathematical Statistics and Probability

- *Bachelor of Science (Hons.) in Statistics*
Calcutta University, Kolkata, India (2003 – 2006)
First Class First with 86.2% aggregate score

RESEARCH INTERESTS

Functional and infinite dimensional data
Non-parametric and robust statistics
Stochastic processes
Data depth

AWARDS AND HONOURS

- Awarded the *Indian National Science Academy (INSA) Medal for Young Scientist* in 2019.
- Selected as an *Associate of the Indian Academy of Sciences* (July 2018 – December 2021).
- *DST INSPIRE Faculty Award* (July 2014 batch) – [*The offer was declined in order to pursue post-doctoral research at EPFL, Switzerland*].
- Awarded the prestigious *Shyama Prasad Mukherjee Fellowship* of the Council of Scientific and Industrial Research, Government of India for carrying out Ph.D. work.

PUBLISHED/ACCEPTED PAPERS

1. Chakraborty, A. and Chaudhuri, P. (2014a) The deepest point for distributions in infinite dimensional spaces. *Statistical Methodology, (Special Issue: Re-sampling and Contemporary Inference: A tribute to Kesar Singh)*, **20**, 27–39.

2. Chakraborty, A. and Chaudhuri, P. (2014b) On data depth in infinite dimensional spaces. *Annals of the Institute of Statistical Mathematics*, **66**, 303–324.

3. Chakraborty, A. and Chaudhuri, P. (2014c) The spatial distribution in infinite dimensional spaces and related quantiles and depths. *The Annals of Statistics*, **42**, 1203–1231.

4. Chakraborty, A. and Chaudhuri, P. (2015a) A Wilcoxon–Mann–Whitney type test for data in infinite dimensional spaces. *Biometrika*, **102**, 239-246.
(Supplementary material available at http://biomet.oxfordjournals.org/).

5. Chakraborty, A. and Chaudhuri, P. (2015b) Paired sample tests in infinite dimensional spaces. In *Modern Nonparametric, Robust and Multivariate Methods: Festschrift in honour of Hannu Oja*, K. Nordhausen and S. Taskinen ed., pp. 351–369, Springer.

6. Chakraborty, A. and Chaudhuri, P. (2017) Tests for high dimensional data based on means, spatial signs and spatial ranks. *The Annals of Statistics*, **45**, 771–799.
(Supplementary material available at https://projecteuclid.org/euclid.aos).

7. Chakraborty, A. and Panaretos, V. M. (2019) Hybrid regularisation and the (in) admissibility of ridge regression in infinite dimensional Hilbert spaces. *Bernoulli*, **25**, 1939-1976.
(Supplementary material available at https://projecteuclid.org/euclid.bj).

8. Chakraborty, A. and Panaretos, V. M. (2021) Functional registration and local variations: identifiability, rank, and tuning. *Bernoulli*, **27**, 1103-1130.
(Supplementary material available at https://projecteuclid.org/euclid.bj).

[Affiliations of co-authors:
P. Chaudhuri – Indian Statistical Institute, Kolkata, India
V. M. Panaretos – Ecole Polytechnique Federale de Lausanne, Switzerland]

OTHER PAPERS

1. Chakraborty, A. and Panaretos, V. M. (2019) What is the dimension of a stochastic process? Testing for the rank of a covariance operator. (Submitted, https://arxiv.org/abs/1901.02333)

2. Chakraborty, A. and Panaretos, V. M. (2017b) Regression with genuinely functional errors-in-covariates. (Submitted, https://arxiv.org/abs/1712.04290)

TEACHING EXPERIENCE

• Spring 2021: *Probability - II (Code - MA4204)* – 1st year Master's students in Mathematics at IISER Kolkata.

• Autumn 2020: *Statistical Inference (Code - MA4107)* – 1st year Master's students in Mathematics at IISER Kolkata.

• Spring 2020: *Probability - II (Code - MA4204)* – 1st year Master's students in Mathematics at IISER Kolkata.

• Autumn 2019: *Statistical Inference (Code - MA4107)* – 1st year Master's students in Mathematics at IISER Kolkata.

• Spring 2019: *Statistics - I (Code - MA3205)* – 3rd year Bachelor's students in Mathematics & Physics at IISER Kolkata.

• Fall 2018: *Mathematical Statistics - I (Code- ID4105)* – 1st year Master's students in Mathematics & Physics at the IISER Kolkata.

• Fall 2016: *Introduction to Functional Data Analysis* – Ph.D. course for Mathematics and Statistics students at Ecole Polytechnique Federale de Lausanne, Switzerland.

• Fall 2014: *Probability and Statistics* – 2nd year Master's students in Mathematics at the Ramakrishna Mission Vidyamandira in Belur, West Bengal, India.

PRESENTATIONS IN CONFERENCES/WORKSHOPS

• Invited speaker in a session on "*Advances in the analysis of functional data and functional time series*" at the 13th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2020) held virtually during 19-21 December, 2020.

• Organizer and Speaker of an Invited session on "*Recent Advances in Functional and High Dimensional Statistical Methods*" at the 62nd ISI World Statistics Congress 2019 held in Kuala Lumpur, Malayasia in August, 2019.

• Invited speaker for delivering a mini-course in the Fourth Russian-Indian Joint Conference in Statistics and Probability held in St. Petersburg, Russia in June, 2019.

• Organizer of an Invited session on "*Recent Advances in Functional Data Analysis*" at the 4th Conference of the International Society for NonParametric Statistics (ISNPS) in Salerno, Italy, in June, 2018.

- Invited speaker in a session on *"Analysis of high-dimensional and functional data"* at the 3rd International Statistics Conference in Colombo, Sri Lanka in December, 2017.

- Contributed speaker in a session on *"Functional Data Analysis"* at the European Meeting of Statisticians (EMS) held in Helsinki, Finland, in July, 2017.

- Speaker at the *"International Workshop on Functional and Operatorial Statistics (IWFOS 2017)"* held in A Coruña, Spain, in June, 2017.

- Invited speaker in a session on *"Statistics for high-dimensional and infinite-dimensional data"* at the International Society for NonParametric Statistics (ISNPS) Meeting held in Avignon, France, in June, 2016.

- Speaker at the *"Workshop on Functional Data Analysis - Recent Progress and New Perspectives"* held in Les Diablerets, Switzerland, in May, 2016.

- Invited speaker in a session on *"Nonparametric Functional Data Analysis"* at the International Conference of the ERCIM WG on Computational and Methodological Statistics held in London, United Kingdom, in December, 2015.

- Invited speaker in a session on *"Statistical Analysis of Massive and High Dimensional Datasets"* at the International Society for NonParametric Statistics (ISNPS) Meeting held in Graz, Austria, in July, 2015.

- Invited speaker in a session on *"Recent Advances in Statistical Depth"* at the European Meeting of Statisticians (EMS) held in Amsterdam, The Nethelands, in July, 2015.

- Invited speaker in a session on *"Robustness based on Data Depth"* at the International Conference on Robust Statistics (ICORS) held in Kolkata, India, in January, 2015.

- Invited speaker in a session on *"Nonparametric Methods for Infinite Dimensional Data – Conceptual and Practical Issues"* at the 3rd Institute of Mathematical Statistics Asia-Pacific Rim Meeting (IMS–APRM) held in Taipei, Taiwan, in June, 2014.

- Invited speaker in a session on *"Multivariate nonparametric methods with applications to high dimensional data"* at the 59th International Statistical Institute (ISI) World Statistics Congress held in Hong Kong, China, in August, 2013.

- Invited Speaker in a session on *"Data and Inference"* at the conference organized by the International Indian Statistical Association (IISA), Chennai, India, in January, 2013.

OTHER ACADEMIC ACTIVITIES

Served as a referee for The Annals of Statistics, Journal of the American Statistical Association (Theory & Methods), Biometrika, Bernoulli, Statistica Sinica, Electronic Journal of Statistics, International Statistical Review, Journal of Multivariate Analysis, Journal of Computation and Graphical Statistics, Journal of Statistical Planning and Inference, The American Statistician, Statistical Methodology, Statistics and Probability Letters, STAT, Advances in Statistical Analysis.

Experience in Statistical Computing

Experienced in R and have working knowledge of MATLAB. Worked on Windows, Mac and Linux platforms.

Other Experience

Worked at Barclays Bank PLC, Mumbai, India from July 2008 to July 2009 as part of its Business Intelligence Unit (Retail). Have carried out various statistical analyses to facilitate several projects on the policy and decision making of the company.