

BHASWATI GANGULI

PERSONAL INFORMATION

*Professor, Dept. of Statistics, University of Calcutta,
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INTERESTS

Interdisciplinary research; Statistical literacy via R and e-learning; Biostatistics; Smoothing and spatial models ; Semiparametric and Mixed models; Environmental modelling. Functional Data Analysis with applications to gait.

WORK EXPERIENCE

- 2013–Present* Professor, Dept. of Statistics,
University of Calcutta
- 2013–Present* Adjunct Professor,
Public Health Foundation of India
- 2008–2013* Associate Professor, Dept. of Statistics,
University of Calcutta
- 2005–2008* Reader, Dept. of Statistics,
University of Calcutta
- 2003–2005* Visiting Assistant Professor,
Indian Institute of Management, Calcutta
- 1997–1999* Biostatistician, Child In Need Institute,
Kolkata

EDUCATION

1999–2002 Harvard University, School of Public Health

*Ph.D. in
Biostatistics*

*Thesis: Feature Significance in Geostatistics.
Advisors: Prof. M.P. WAND.*

1991–1994 University of Calcutta

M.Sc. in Statistics

Ranked First Class First.

1988–1991 Presidency College, Calcutta

*B.Sc. Honours in
Statistics*

Ranked First Class First.

PUBLICATIONS

1. Ganguli, B. and Wand, M.P. (2004). Feature significance in geostatistics. *Journal of Computational and Graphical Statistics*, **13**.
2. Ganguli, B., Staudenmayer, J. and Wand, M.P. (2005). Additive Models with Predictors Subject to Measurement Error. *Australian and New Zealand Journal of Statistics*, **47**.
3. Ganguli, B. and Wand, M.P. (2007). Feature Significance in generalized additive models. *Computational Statistics and Data Analysis*, **17**.
4. Govindarajulu, U.S., Spiegelman, D., Thurston, S., Ganguli, B. and Eisen, E.A. (2007). Comparing smoothing techniques in Cox models for exposure-response relationships. *Statistics in Medicine*, **26(20)**.
5. Wand, M.P., Coull, B.A., French, J.L., Ganguli, B., Kammann, E.E., Staudenmayer, J. and Zanobetti, A. (2005). SemiPar 1.0.R package. <http://cran.r-project.org>
6. Mondal, B., Mukhopadhyay, A., Chaudhuri, U., Ganguli, B. and Dasgupta, U. (2008). Methylation Status of Promoter-Associated CpG Islands in Primary Acute Myeloid Leukemia. *Acta Haematol.*
7. Mondal, D., Hegan, A., Rodriguez-Lado, L., Bradford, W., Hennermann, K., Banerjee, M., Ganguli, B., Giri, A.K. and Polya, D.A. (2008). Multiple regression analysis of arsenic groundwater hazard and assessment of arsenic-attributable human health risks in Chakdha Block, West Bengal. *Mineralogical Magazine*, **72**.
8. Govindarajulu, U.S., Malloy, E.J., Ganguli, B., Spiegelman, D. and Eisen, E.A. (2009). The Comparison of Alternative Smoothing Methods for Fitting Non-Linear Exposure-Response Relationships with Cox Models in a Simulation Study. *The International Journal of Biostatistics*, **5**.
9. Majumdar, S., Chanda, S., Ganguli, B., Guha Mazumder, D.N., Lahiri, S. and Dasgupta, U. (2009). Arsenic exposure induces genomic hypermethylation. *Environmental Toxicology*.
10. Bandopadhyay, S., Ganguli, B. and Chatterjee, A. (2010). Multivariate longitudinal data analysis: a review. *Statistical Methods in Medical Research*, doi:10.1177/0962280209340191.
11. Mondal, D., Banerjee, M., Kundu, M., Banerjee, N., Bhattacharya, U., Giri, A.K., Ganguli, B., Sen Roy, S. and Polya, D.A. (2010). Comparison of drinking water, raw rice and cooking of rice as arsenic exposure routes in three contrasting areas of West Bengal, India. *Environ Geochem Health*, doi 10.1007/s10653-010-9319-5.
12. Polya, D.A., Modal, D., Ganguli, B., Giri, A.K., Banerjee, M., Khattak, S., Phawadee, N. and Sovann, C. (2010). Geogenic Arsenic in Groundwaters and Soils – Re-evaluating Exposure Routes & Risk Assessment. *As Taiwan COST 637 Proceedings*.
13. Balakrishnan K, Ganguli B, Ghosh S, Sankar S, Thanasekaraan V, Rayudu VN, Caussy H. (2011). Part 1. Short-term effects of air pollution on mortality: Results from a time-series analysis in Chennai, India. In: Public Health and Air Pollution in Asia (PAPA): Coordinated Studies of Short-Term Exposure to Air Pollution and Daily Mortality in Two Indian Cities. *HEI Research Report*, **157**.
14. Balakrishnan K, Ganguli B, Ghosh S, Sankar S, Thanasekaraan V, Rayudu VN, Caussy H. (2013). A spatially disaggregated time series analysis of the short term effects of particulate matter exposure on mortality in Chennai, India. *Air Quality, Atmosphere and Health*.
15. Guha Mazumder, D.N., Deb, D., Biswas, A., Saha, C., Nandy, A., Ganguli, B., Ghose, A., Bhattacharya, K. and Majumdar, K.K. (2013). Evaluation of dietary arsenic exposure and its biomarkers: A case study of West Bengal, India. *Journal of Environmental Science and Health A*, **48**.

16. Balakrishnan, K., Ghosh, S., Ganguli, B., Sambandam, S., Bruce, N., Barnes, F.D. and Smith, K.R. (2013). Modeling national average household concentrations of PM_{2.5} from solid cook fuel use for the global burden of disease -2010 assessment: results from cross-sectional assessments in India. *Journal of Environmental Health*, doi:10.1186/1476-069X-12-77.
17. Dasroy P, Basu, C., Das, S., Dasgupta, A. and Ganguli, B. (2013). The role of genotype and phenotype based risk factors in patients suffering from Acute Coronary Syndrome. *Calcutta Statistical Association Bulletin : Triennial Symposium Proceedings Volume*, **65**.
18. Bandopadhyay, S., Ganguli, B. and Sen Roy, S. (2014). Why do we attend Refresher Courses? A case study of preference data analysis. *Calcutta Statistical Association Bulletin*, **66**.
19. Mondal, D., Ganguli, B., Sen Roy, S., Halder, B., Banerjee, N., Banerjee, M., Samanta, M., Giri, A.K. and Polya, D.A. (2014). Diarrhoeal health risks attributable to water-borne-pathogens in arsenic-mitigated drinking water in West Bengal are largely independent of the microbiological quality of the supplied water. *Water, Special Issue on Treatment and Human Health*, **6(5)**.
20. Ganguli, B., Naskar, M., Malloy, E.J. and Eisen, E.A. (2014). Determination of the functional form of the log hazard ratio in a Cox model. *Journal of Applied Statistics*, **42:5**.
21. Ganguli, B., Sen Roy, S., Naskar, M., Malloy, E.J. and Eisen, E.A. (2016) Deletion diagnostics for the Generalized Linear Mixed Model with independent random effects. *Statistics in Medicine*, doi: 10.1002/sim.6810.
22. Chatterjee, Moumita and Shaw, Jyoti and Roy, Sugata Sen and Dasgupta, Anjan Kr and Ganguli, Bhaswati (2016). Review in Nanostatistics—A Measure for Low Level Cellular Perturbations by Nanoparticles and Magnetic Fields Using Cluster Maps. *Nanospectrum: A Current Scenario*, Allied Publishers.
23. Morris, L., Daniels, K., Ganguli, B. and Louw, Q. (2017). An update on the prevalence of low back pain in Africa: a systematic review and meta-analyses. *BMC Musculoskeletal Disord.*, **19: 196**; doi: 10.1186/s12891-018-2075-x.
24. Ray, P., Chakrabarti, A., Ganguli, B. et al. (2018). Demonetization and its aftermath: an analysis based on twitter sentiments. *Sadhana*, **43: 186**; <https://doi.org/10.1007/s12046-018-0949-0>.
25. Mukherjee, J., Poddar, T., Ganguli, B., Kar, M. and Chakrabarti, A. (2019). An Automated Classification Methodology of Sub-centimeter Pulmonary Structures in Computed Tomography Images. *Procedia Computer Science*.
26. Bandyopadhyay SK, Azharuddin M, Dasgupta AK, Ganguli B, SenRoy S, Patra HK, Deb S. (2019) Probing ADP Induced Aggregation Kinetics During Platelet-Nanoparticle Interactions: Functional Dynamics Analysis to Rationalize Safety and Benefits. *Frontiers in Bioengineering and Biotechnology*. **18**, doi: 10.3389/fbioe.2019.00163. eCollection 2019.
27. S. Bandyopadhyay, B. Ganguli and A. Chatterjee (2019). Estimating global exposure effect from longitudinal data on multiple surrogates, *Communications in Statistics: Case Studies, Data Analysis and Applications*, doi: 10.1080/23737484.2019.1631722
28. Mukherjee, J., Poddar, T., Ganguli, B., Kar, M. and Chakrabarti, A. A Clinically Applicable Automated Risk Classification Model for Pulmonary Nodules. Book chapter in *Data Management, Analytics and Innovation*. Springer, 2019. doi: 10.1007/978-981-13-9364-8

RESEARCH PROJECTS

<i>United States Agency for International Development (USAID)</i>	LISA 2020: Creating Institutional Statistical Analysis and Data Science Capacity(2018-2021). Principal Investigator. Jointly with University of Colorado, Boulder.
<i>University Grants Commission scheme for University with Potential for Excellence Indian Council of Medical Research</i>	Imaging in Modern Biology. Jointly with the Departments of Information Technology and Applied Physics. (2017-). Principal co-Investigator Impact of Meteorological Changes and Air Pollution on Respiratory Health and Morbidity: A Retrospective Multicentric Study. Jointly with the Postgraduate Institute for Medical Education and Research, Chandigarh. (2017-). Principal Investigator.
<i>Reserve Bank of India research endowment</i>	Savings, growth and financial inclusion. Jointly with the Centre for Studies in Social Sciences, Calcutta. (2015-). Principal Statistician
<i>Indo-South Africa Science and Technology Co-operation Programme Council for Scientific and Industrial Research,SA</i>	Nanomedicine as a biomedical intervention against Acute Cardiac Syndrome and associated statistical models. Jointly with Council of Scientific and Industrial Research (CSIR), South Africa (2011-14). Principal Investigator The application of functional data analytic techniques for modelling gait. Jointly with Council of Scientific and Industrial Research (CSIR), SA and the University of Stellenbosch, SA (2015-16). Principal biostatistician
<i>Institute of Development Studies, India</i>	A survey of barriers to re-entry of ex-prisoners into society with particular focus on employer attitudes and factors precipitating/protective against recidivism (2014-16). co-Principal Investigator
<i>University of Queensland, Australia</i>	Ethel M. Raybould fellowship for Visiting Researcher at the School of Mathematics and Centre for Applications in Natural Resource Mathematics, University of Queensland, Australia (2013).
<i>Indian Council of Medical Research</i>	Fellowship for Young Biomedical Scientists 2012 at the Department of Environmental Health, University of California, Berkeley (2012).
<i>Indian Council of Medical Research</i>	Innovative statistical techniques for construction of exposure metrics and quantification of the effects of exposure to ambient air pollution on health. Jointly with Sri Ramachandra Medical Centre, India (2011-13). Principal Investigator.
<i>Indian Council of Medical Research</i>	Initial five year funding for Centre for Advanced Research on Environmental Health and World Health Organization Collaborating Center for Occupational Health at Sri Ramachandra University, India (2009-16). Principal Biostatistician
<i>Indo-U.K. Science and Technology Co-operation Programme</i>	Probabilistic Risk Assessment for Arsenic Mitigation: A study on alternative exposure routes for arsenic. Jointly with Indian Institute of Chemical Biology (2008-10). Principal Biostatistician

<i>Health Effects Institute (HEI, Boston)</i>	Multi city study of the effect of short term particulate matter exposure on daily mortality across Asia. Jointly with Sri Ramachandra University, India (2005 - 2010). Principal Biostatistician
<i>National Institute of Health (N.I.H.), U.S.A</i>	Dose Response Modeling in Epidemiological Studies. Jointly with Harvard University, U.S.A. (2004-9). Subcontract.

CONSULTING

<i>Cytel, Pune and Boston</i>	Algorithm and software development for multiple testing in adaptive clinical trials.(2012-14).
<i>Data Info Com, Toronto</i>	Data analysis and development of algorithms and software for evaluation of customer satisfaction in BPOs.(2009-11)
<i>Genpact India</i>	Department co-ordinator for joint teaching and research programme following MOU between the University of Calcutta and Genpact India. (2014 – present).

COURSES TAUGHT

<i>M.Sc. and Ph.D. courses</i>	Analysis of discrete data; Longitudinal data analysis; Epidemiology; Clinical Trials, Statistical Computing using R; Linear Models.
<i>Service courses</i>	Introductory courses in Statistics and Biostatistics for students and researchers from the Biological Sciences and Nanotechnology Centre of Calcutta University.
<i>Training Programmes</i>	Director, Fogarty training programme on (Statistics for) Environmental and Occupational Health (ITREOH) jointly with University of California, University of Berkeley and Indian Institute of Chemical Biology, India. (2005–10).
<i>Short courses</i>	<ul style="list-style-type: none"> • Introductory Statistics, Monash University, (2005). • Spatial Statistics, The Energy Research Institute (TERI), (2005.) • Generalized Additive Models, The Energy Research Institute (TERI), (2005). • Functional Data Analysis, Annual South African Statistical Association (SASA) meeting,(2012). • Functional Data Analysis,University of Queensland (2013). • Time Series methods, University of Queensland (2013). • Econometrics for recruits of the Indian Statistical Service (2011). • Multivariate Analysis, Alexander Hollandaer course on Genetic Toxicology and Arsenic Exposure Assessment (2008). • Epidemiology for developing countries, International Society for Bayesian Analysis (ISBA) meeting (2003).

<i>Development of e-learning resources</i>	National co-ordinator for Statistics for the University Grants Commission (UGC) sponsored <i>e-PG Pathshala</i> initiative to develop e-content at the postgraduate level across 80 subjects in India. http://epgp.inflibnet.ac.in/ . (2014-15)
<i>MOOC online courses</i>	Course co-ordinator for online courses in Biostatistics and Discrete Data Analysis as part of the MHRD SWAYAM project for e-learning. (2017-19)

PH.D. THESIS SUPERVISION

<i>Souvik Bandopadhyay</i>	The use of latent variables for functional data analysis. Expected to submit 2020. <i>Principal Supervisor.</i>
<i>Santu Ghosh</i>	Development and application of Semi-parametric Regression Models for estimation of short-term health effects related to Air Pollution in Chennai. Submitted 2015. <i>Principal Supervisor.</i>
<i>Moumita Chatterjee</i>	Extensions of common survival models. Submitted 2016. <i>Joint supervisor with Prof. S. Sen Roy.</i>
<i>Paramita Ray</i>	Synthesis of textual and quantitative information. <i>Joint supervisor with Prof. A. Chakrabarti, School of Information Technology, Calcutta University.</i>

COMPUTER SKILLS

R, RStudio, SPSS, Matlab, L^AT_EX, OpenOffice, Linux, Microsoft Windows.

Wand, M.P., Coull, B.A., French, J.L., Ganguli, B., Kammann, E.E., Staudenmayer, J. and Zanobetti, A. (2005). SemiPar 1.0. R package. <http://cran.r-project.org>.

OTHER INFORMATION

<i>Administrative Experience</i>	Head of the Department of Statistics, University of Calcutta (2011 - 13).
<i>Memberships</i>	Elected member of the International Statistical Institute.
<i>Member, DSMB</i>	Member of the Data Safety and Monitoring Board for the NIH funded ESSENCE clinical trial to test the efficacy of online training for health workers responsible for HIV related counselling conducted by Harvard Medical School in Bhopal, India. (2019-)
<i>Mentor, COVID-19 special research group</i>	A special interest inter university research group with the aim of using data science to understand the progression of the COVID-19 pandemic. Analyses and case studies available at https://www.covidpandemic2020.in/ (2020-)

REFERENCES

1. Prof. Louise Ryan
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School of Mathematical Sciences,

University of Technology, Sydney;
15 Broadway; Ultimo NSW 2007; Australia. +61 2 9514 2275 ·
Louise.M.Ryan@uts.edu.au

2. Dr. Eric Vance
Associate Professor,
Department of Applied Mathematics,
University of Colorado, Boulder;
+1 303 4920471 · Eric.Vance@Colorado.EDU
3. Prof. David Polya
Professor of Environmental Geochemistry
School of Earth, Atmospheric & Environmental Sciences;
The University of Manchester
UNITED KINGDOM M13 9PL. + 44 161 275 3818 ·
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