

Curriculum Vitae - Deepayan Sarkar

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Education

2000-2006 Ph.D (Statistics), University of Wisconsin–Madison.
Dissertation topic: “On the Analysis of Optical Mapping Data”.
1998-2000 M.Stat with distinction, Indian Statistical Institute
1995-1998 B.Stat (Hons), Indian Statistical Institute

Employment

Sep–Dec 2023 Visiting Associate Professor, Center for Computational Biomedicine (DBMI), Harvard Medical School, Boston.
2015–Present Associate Professor, Theoretical Statistics and Mathematics Unit, Indian Statistical Institute, Delhi.
2009–2015 Assistant Professor, Theoretical Statistics and Mathematics Unit, Indian Statistical Institute, Delhi.
2006–2009 Postdoctoral Research Fellow in Computational Biology, Public Health Sciences at the Fred Hutchinson Cancer Research Center, Seattle.

Teaching

2009–Present Statistical Inference, Programming and Data Structures, Pattern Recognition, Statistical Computing, Linear Algebra, Linear Models, Regression Techniques, Multivariate Statistics, Introductory Computer Programming, Data Exploration, Data Analysis.
2004–2005 Co-instructor for the Summer Institute for Training in Biostatistics (SIBS) program at UW Madison.
2000–2002 Teaching Assistant at UW Madison for Statistics 301 (*Introduction to Statistics*), Statistics 849 and 850 (*Theory & Application of Regression & Analysis of Variance I and II*).

Publications

- Laha Ale, Robert Gentleman, Christopher Endres, Sam Pullman, Nathan Palmer, Rafael Goncalves and Deepayan Sarkar. Enhancing Statistical Analysis of Real World Data. 2025. (accepted)
Preprint: <https://doi.org/10.1101/2025.05.28.25328502>
- Sajal Ghosh, Gambheer Singh and Deepayan Sarkar. A note on some open problems on quitting games. *Annals of Operations Research* (2025): 1–13.

- Sajal Ghosh, Gambheer Singh, Deepayan Sarkar and S. K. Neogy. On solving a larger subclass of linear complementarity problems by Lemke's method. *Indian J Pure Appl Math*, 2024.
- Sunil Chebolu and Deepayan Sarkar. Capturing the Invisible Hopping Rabbit. American Mathematical Society Feature Column, 2024. <https://mathvoices.ams.org/featurecolumn/2024/12/01/capturing-the-invisible-hopping-rabbit/>
- Laha Ale, Robert Gentleman, Teresa Filshstein Sonmez, Deepayan Sarkar and Christopher Endres. **nhanesA**: achieving transparency and reproducibility in NHANES research. *Database*, Volume 2024, baae028, 2024.
- Jayasree Sengupta, Thomas Kroneis, Amy M Boddy, Rahul Roy, Anish Sarkar, Deepayan Sarkar, Debabrata Ghosh and Berthold Huppertz. Sperm intrusion into the implantation-stage blastocyst and its potential biological significance. *Evolution, Medicine, and Public Health*, 12 (1), 2024. <https://doi.org/10.1093/emph/eoad043>
- Alope Dey and Deepayan Sarkar. D-Efficient Composite-type Second Order Designs via Computer Search. *Statistics and Applications*, 17(1):33-40, 2019.
- Alope Dey and Deepayan Sarkar. A new family of orthogonal Latin hypercube designs. *Australasian Journal of Combinatorics*, 69(1):58-62, 2017.
- Arijit Chakrabarty, Rajat Subhra Hazra and Deepayan Sarkar. From random matrices to long range dependence. *Random Matrices: Theory and Applications*, 5(2), 2016. doi:10.1142/S2010326316500088.
- Alope Dey and Deepayan Sarkar. A Note on the Construction of Orthogonal Latin Hypercube Designs. *Journal of Combinatorial Designs*, 24(3):105-111, 2016. doi: 10.1002/jcd.21408.
- Arijit Chakrabarty, Rajat Subhra Hazra and Deepayan Sarkar. Limiting spectral distribution for Wigner matrices with dependent entries. *Acta Physica Polonica B*, 46(9):1637-1652, 2015. doi:10.1142/S2010326316500088.
- Aditya Gupta, Michael Place, Steven Goldstein, Deepayan Sarkar, Shiguo Zhou, Konstantinos Potamouisis, Jaehyup Kim, Claire Flanagan, Yang Li, Michael A. Newton, Natalie S. Callander, Peiman Hematti, Emery H. Bresnick, Jian Ma, Fotis Asimakopoulos, and David C. Schwartz. Single-molecule analysis reveals widespread structural variation in multiple myeloma. *Proceedings of the National Academy of Sciences (USA)*, 112(25):7689-7694, 2015.
- Deepayan Sarkar. R Graphics. In *Handbook of Statistics 32: Computational Statistics with R*, M. B. Rao and C. R. Rao (Editors). Elsevier, Oxford. 2014.
- India Project Team of the International Cancer Genome Consortium. Mutational landscape of gingivo-buccal oral squamous cell carcinoma reveals new recurrently-mutated genes and molecular subgroups. *Nature Communications* 4:2873, 2013. doi: 10.1038/ncomms3873

- Mohana Ray, Steve Goldstein, Shiguo Zhou, Konstantinos Potamouisis, Deepayan Sarkar, Michael A. Newton, Elizabeth Esterberg, Christina Kendziorski, Oliver Bogler, and David C. Schwartz. Discovery of structural alterations in solid tumor oligodendroglioma by single molecule analysis. *BMC Genomics* **14**:505, 2013. doi: 10.1186/1471-2164-14-505
- Deepayan Sarkar, Steve Goldstein, David C. Schwartz, and Michael A. Newton. Statistical Significance of Optical Map Alignments. *Journal of Computational Biology*. **19**(5): 478–492, 2012. doi: 10.1089/cmb.2011.0221.
- Emily C. Knouf, Kavita Garg, Jason D. Arroyo, Yesenia Correa, Deepayan Sarkar, Rachael K. Parkin, Kaitlyn Wurz, Kathy C. O’Briant, Andrew K. Godwin, Nicole D. Urban, Walter L. Ruzzo, Robert Gentleman, Charles W. Drescher, Elizabeth M. Swisher, and Muneesh Tewari. An integrative genomic approach identifies p73 and p63 as activators of miR-200 microRNA family transcription. *Nucleic Acids Research*, **40** (2):499–510, 2012. doi: 10.1093/nar/gkr731.
- Brian Teague, Michael S. Waterman, Steven Goldstein, Konstantinos Potamouisis, Shiguo Zhou, Susan Reslewic, Deepayan Sarkar, Anton Valouev, Christopher Churas, Jeffrey M. Kidd, Scott Kohn, Rodney Runnheim, Casey Lamers, Dan Forrest, Michael A. Newton, Evan E. Eichler, Marijo Kent-First, Urvashi Surti, Miron Livny, and David C. Schwartz. High-resolution human genome structure by single-molecule analysis. *Proceedings of the National Academy of Sciences (USA)*, **107**(24):10848–10853, 2010.
- Yi Cao, Zizhen Yao, Deepayan Sarkar, Michael Lawrence, Gilson J. Sanchez, Maura H. Parker, Kyle L. MacQuarrie, Jerry Davison, Martin T. Morgan, Walter L. Ruzzo, Robert C. Gentleman, Stephen J. Tapscott. Genome-wide MyoD Binding in Skeletal Muscle Cells: A Potential for Broad Cellular Reprogramming. *Developmental Cell*, **18**(4):662–674, 2010.
- Kyongryun Lee, Florian Hahne, Deepayan Sarkar, Robert Gentleman. iFlow: A Graphical User Interface for Flow Cytometry Tools in Bioconductor. *Advances in Bioinformatics* vol. 2009, Article ID 103839, 3 pages, 2009. doi:10.1155/2009/103839.
- F. Hahne, N. Le Meur, R. R. Brinkman, B. Ellis, P. Haaland, D. Sarkar, J. Spidlen, E. Strain, R. Gentleman. flowCore: a Bioconductor package for high throughput flow cytometry. *BMC Bioinformatics* **10**(1):106, 2009.
- D. Sarkar, R. Parkin, S. Wyman, A. Bendoraite, C. Sather, J. Delrow, A. Godwin, C. Drescher, W. Huber, R. Gentleman, and M. Tewari. Quality assessment and data analysis for microRNA expression arrays. *Nucleic Acids Research*, **37** (2): e17, 2008.
- Deepayan Sarkar. *Lattice: Multivariate Data Visualization with R*. Springer, New York, 2008. URL: <http://lmdvr.r-forge.r-project.org>. ISBN 978-0-387-75968-5.

- D. Sarkar, N. Le Meur, R. Gentleman. Using flowViz to visualize flow cytometry data. *Bioinformatics* 24(6):878–9, 2008.
- Deepayan Sarkar. Extending lattice: using generics and methods to implement new visualization methods within the Trellis framework. *Computational Statistics*, 2008. doi:10.1007/s00180-007-0098-0.
- V. J. Carey, J. Gentry, D. Sarkar, R. Gentleman, and S. Ramaswamy. SGDI: system for genomic data integration. In *Proceedings of the Pacific Symposium on Biocomputing 2008* 141–152, 2008.
- T. Chiang, D. Scholtens, D. Sarkar, R. Gentleman, W. Huber. Coverage and error models of protein-protein interaction data by directed graph analysis. *Genome Biology*, 8 (9):R186, 2007.
- M. A. Newton, A. Noueiry, D. Sarkar, P. Ahlquist. Detecting differential gene expression with a semiparametric hierarchical mixture method. *Biostatistics*, 5 (2):155–176, 2004.
- M. G. Edwards, D. Sarkar, R. Klopp, J. D. Morrow, R. Weindruch, T.A. Prolla. Age-related impairment of the transcriptional responses to oxidative stress in the mouse heart. *Physiological Genomics* 13 (2):119-127, 2003.
- Deepayan Sarkar. Some Notes on lattice. *Proceedings of the 3rd International Workshop on Distributed Statistical Computing*, 2003.
- Deepayan Sarkar. Lattice. *R News* 2/2:19–23, 2002.

Works in Progress

- Kaustav Nandy and Deepayan Sarkar. Bayesian Image Reconstruction using Locally Dependent Gradient Priors and Efficient Sparse Matrix Computations. <https://www.isid.ac.in/~deepayan/pubs/preprints/brecon.pdf>
- Siva Athreya, Deepayan Sarkar, and Steve Tanner. *Probability and Statistics with Examples using R*. <https://psweur.github.io/>

Software

- Christopher Endres, Laha Ale, Robert Gentleman and Deepayan Sarkar (2024). *nhanesA: NHANES Data Retrieval*. R package version 1.1. <https://doi.org/10.32614/CRAN.package.nhanesA>
- Deepayan Sarkar (2024). *lattice: Trellis Graphics for R*. R package version 0.22-6. <https://doi.org/10.32614/CRAN.package.latticeExtra>
- Deepayan Sarkar and Felix Andrews (2022). *latticeExtra: Extra Graphical Utilities Based on Lattice*. R package version 0.6-30. <https://doi.org/10.32614/CRAN.package.lattice>

- Deepayan Sarkar and Kaustav Nandy (2020). *Interface to OpenCV Image Processing Routines*. R package version 0.1-1.
<https://github.com/deepayan/rip>
- Deepayan Sarkar and Kaustav Nandy (2020). *Image Reconstruction Utilities*. R package version 0.1-2.
<https://github.com/deepayan/rip>
- Deepayan Sarkar (2018). *hmmcount: Fitting Hidden Markov Models for Count Data*. R package version 0.1-1.
<https://github.com/deepayan/hmmcount>

Awards

- The 2004 John M. Chambers Statistical Software Award for “Lattice: A package implementing Trellis Graphics in R”

New Delhi, October 2025