

Curriculum Vitæ of  
**SUBHASHIS GHOSHAL (variation: GHOSAL)**

Last updated: August 17, 2020

**Mailing & Office Address**

Department of Statistics  
North Carolina State University  
4276 SAS Hall  
2311 Stinson Drive  
Raleigh, NC 27695-8203  
U. S. A.  
E-mail : [ghoshal@stat.ncsu.edu](mailto:ghoshal@stat.ncsu.edu)  
Fax : 1-919-515-1169  
Phone: 1-919-513-0190  
Web: <http://www4.stat.ncsu.edu/~ghoshal>

**Academic Positions**

Department of Statistics, North Carolina State University, U. S. A.:

July, 2018–Present — *Distinguished Professor*.

August, 2008–Present — *Full Professor*.

August, 2004–July, 2008 — *Associate Professor* (with tenure).

August 2001 — July, 2004, *Assistant Professor*.

School of Statistics, University of Minnesota, U. S. A.:

January 2000–August, 2001 — *Assistant Professor*

**Other Appointments**

Sabbatical leave, Columbia University, New York City, NY, Fall 2019;

Royal Netherlands Academy of Arts and Sciences Visiting Professorship,  
hosted by Leiden University, May 21, 2013–May 20, 2014.

EURANDOM Chair Professor, 2010–2011, Eindhoven, The Netherlands.

Sabbatical leave, Vrije University, Amsterdam, The Netherlands, August–October, 2007 (Courtesy Aad van der Vaart).

## Education

**Ph.D.** (Statistics), 1995, Indian Statistical Institute, Calcutta, India.

**M. S.** (Statistics), 1990, Indian Statistical Institute, Calcutta, India.

**B. S.** (Statistics), 1988, Indian Statistical Institute, Calcutta, India.

## Awards

1. De Groot Prize for the best book on Statistical Science in 2019 given by the International Society for Bayesian Analysis for the book “Fundamentals of Nonparametric Bayesian Inference” (co-author: Aad van der Vaart), published by Cambridge University Press, 2017.
2. Distinguished Professor, College of Sciences, North Carolina State University, 2018.
3. IMS Medallion lecturer 2017.
4. Fellow of the International Society for Bayesian Analysis (ISBA), 2016
5. “Thank a teacher” honor for teaching, North Carolina State University, Fall 2016, Spring 2016, Spring 2015.
6. Cavell Brownie Mentoring Award, North Carolina State University, 2015.
7. Fellow of the American Statistical Association, 2010.
8. International Indian Statistical Association Young Researcher Award in Theoretical Statistics, 2006–2007.
9. Fellow of the Institute of Mathematical Statistics, 2006.

10. Sigma Xi research award and elected to be a member of Sigma Xi, 2004.
11. Young Scientist award by the Indian Science Congress in its 82nd session (1995).
12. Professor P. C. Mahalanobis Gold Medal (by the Indian Statistical Institute) awarded to the most outstanding student in M. Stat. (1990).
13. Indian Statistical Institute Alumni Association Gold Medal for performance in M. Stat. (1990).
14. Indian Statistical Institute Alumni Association Gold Medal for performance in B. Stat. (1988).
15. Prizes for good performance in exams 1985–1990.

### **Funded research**

1. **National Science Foundation (DMS-Statistics):** *Optimal Bayesian inference under shape restrictions*. Proposal number 1916419. Funding level \$200,000. Single PI grant. Duration: 08/01/2019–07/31/2022.
2. **College of Sciences, North Carolina State University:** *Optimal Bayesian inference for high-dimensional models*. Faculty Research and Development Program grant, Funding level \$6,000, Single PI grant. Duration: 07/01/2019–06/30/2020.
3. **National Science Foundation (DMS-Statistics):** *Bayesian methods of estimation and uncertainty quantification for high dimensional data*. Proposal number 1510238. Funding level \$200,000. Single PI grant. Duration: 07/01/2015–06/30/2018.
4. **National Science Foundation (DMS-Statistics):** Supplementary funding request for *Bayesian methods of estimation and uncertainty quantification for high dimensional data*. Funding level \$40,000. Duration 08/16/2017–05/15/2018.

5. **Samsung Electronics, Korea:** Sparse high dimensional feature selection with application to yield of semiconductor manufacturing process. Funding level \$150,000. Single PI grant. Duration: 01/01/2017–12/31/2017.
6. **National Security Agency:** *Computational Approaches to Feature Selection For Massive Data*. Proposal number H98230-12-1-0219. Funding level \$117,070. Co-PI (with Hao Helen Zhang). Duration: 01/01/2012–09/30/2014.
7. **National Science Foundation (DMS-Statistics):** *Bayesian methods for structure detection in analysis of object data*. Proposal number 1106570. Funding level \$250,000. Single PI grant. Duration: 06/01/2011–05/31/2015.
8. **National Science Foundation (DMS-Statistics):** *Collaborative Research: Mixture model approach to multiple hypothesis testing for dependent and complex data*. Proposal number 0803540. Funding level \$59,999. PI on collaborative proposal. Duration: 09/01/2008–08/31/2011.
9. **National Science Foundation (DMS-Statistics) CAREER AWARD 2003:** *Default Bayesian Methods for Nonparametric Problems*. Proposal number 0349111. Funding level \$400,000. Single PI grant. Duration: 06/01/2004–05/31/2010.

### Other supports

1. **Stochastic Theoretical and Applied Research (STAR), The Netherlands:** Grant for visiting VU Amsterdam, The Netherlands, June–July 2017, 2000 Euros (Courtesy Eduard Belitser).
2. **Army Research Office:** 10th conference on Bayesian nonparametrics. Funding level \$10000. PI. Duration 2015–16.

3. **Office of Naval Research:** 10th conference on Bayesian nonparametrics. Funding level \$9200. PI. Duration 2015–16.
4. **National Science Foundation (DMS-Statistics):** *10th conference on Bayesian nonparametrics*. Proposal number DMS-1507428. Funding level \$15,000. PI. Duration 2015–16.
5. Faculty course release and a student support for the academic year 2013-2014 obtained from NSF for serving as SAMSI faculty fellow for the program on Low Dimensional Structure in High Dimensional Data.
6. **National Science Foundation (DMS-Statistics):** *9th Conference on Bayesian Nonparametrics*. Proposal number 1262034. Funding level \$20,000. PI. Duration 2013.
7. **National Science Foundation (DMS-Statistics):** *2011 International Conference on Probability, Statistics and Data Analysis*. Proposal number 1105469. Funding level \$20,000. PI. Duration 04/01/2011-03/31/2012.
8. **National Security Agency:** *2011 International Conference on Probability, Statistics and Data Analysis*. Proposal number 1105469. Funding level \$14,950. PI. Duration 04/01/2011-03/31/2012.
9. Royal Netherlands Academy of Arts and Sciences Visiting Professorship grant (Courtesy Aad van der Vaart).
10. Eurandom chair professor support grant from The National Science Foundation of the Netherlands (NWO), 2010–2011 (Courtesy Eduard Belitser, Harry van Zanten and Aad van der Vaart).
11. Sir Isaac Newton Institute (Cambridge, UK) program participant grant, August 2007.
12. Faculty course release and a student support for the academic year 2004-2005 obtained from NSF for serving as a SAMSI faculty fellow for the program on Latent variable Models for Social Sciences.

## Current Research Interests

High Dimensional Models

Nonparametric and Semiparametric Methods

Bayesian Inference

Asymptotic Statistics

Image Processing

Differential equation models

Quantile regression

Functional Data Analysis

Multiple Hypotheses Testing

ROC analysis

Biomedical applications

## Doctoral Student Advising

### Current Students

1. **Wenli Shi:** Expected in 2021.
2. **Kang Wang:** Expected in 2023.
3. **Yuqi Su:** Expected in 2023.

### Students Graduated (In reverse chronological order)

1. **Indrabati Bhattacharya:** June 2020.  
Thesis title: *Bayesian inference on multivariate medians and quantiles.*  
Post-doctoral researcher, University of Rochester.

2. **Rui Zhu:** December 2019.  
 Thesis title: *Bayesian Semi-supervised Learning with Application to ROC Surface Estimation.*  
 Data Scientist, Google.
3. **Seonghyun Jeong:** August 2019.  
 Thesis title: *Frequentist Properties of Bayesian Procedures for High-Dimensional Sparse Regression.*  
 Post-doctoral Researcher, University of Chicago.
4. **Moumita Chakraborty:** May 2019. Thesis title: *Bayesian Inference Under Shape Constraints.*  
 Post-doctoral Researcher, M.D. Anderson Cancer Center.
5. **Xiuqi Li:** August 2018 (Operations Research).  
 Thesis title: *Bayesian classification and change point detection for functional data.*  
 Intel Corporation.
6. **Jami Jackson Mulgrave:** August 2018.  
 Thesis title : *Bayesian inference in nonparanormal graphical models.*  
 Post-doc, Columbia University, Statistician, Facebook.
7. **Wei Li:** July 2018.  
 Thesis title: *Bayesian inference about some geometric aspects of nonparametric functions.*  
 Tenure-track assistant professor, Department of Mathematics, Syracuse University.
8. **Bo Ning:** July 2018 (jointly with Peter Bloomfield).  
 Thesis title :*Bayesian dynamic times series and high-dimensional models with their applications.*  
 Post-doc, Department of Statistics, Yale University, University of Paris.
9. **Xingqi (Maggie) Du:** May 2018.  
 Thesis title :*Structure Learning and Classification in Complex*

*Graphical Models.*

Statistician, SAS Inc.

10. **Arkaprava Ray:** (jointly with Ana-Maria Staicu) April 2018.  
Thesis title: *Bayesian Methods for High Dimensional Models in Brain Imaging.*  
Tenure-track Assistant Professor, Department of Biostatistics, University of Florida.
11. **Qianwen (Sherry) Tan:** September 2017.  
Thesis title: *Two-step methods for differential equation models.*  
Statistician, Seattle Genetics.
12. **Ran (Jennifer) Wei:** (jointly with Brian Reich) August 2017.  
Thesis title: *Bayesian Variable Selection Using Shrinkage Prior in Regression Models.*  
Statistician, Eli-Lilly.
13. **Priyam Das:** December 2016.  
Thesis title: *Bayesian quantile regression.*  
Post-doctoral Fellow, M. D. Anderson Cancer Center.
14. **Adam Suarez:** (co-advised with Jesus Rodriguez, NCSU-Math) May 2016.  
Thesis title: *Bayesian Methods for Exploratory Functional Data Analysis and Existence. Theorems for Solutions to Nonlinear Differential and Difference Equations*
15. **Shikai Luo:** (co-advised with Rui Song) March 2016.  
Thesis title: *Optimal treatment strategy for complex data.*
16. **Meng Li:** July 2015.  
Thesis title: Bayesian methods for images and trees.  
Noah Harding Tenure-track Assistant Professor, Rice University.
17. **Prithwish Bhaumik:** March 2015.  
Thesis title: *Bayesian Estimation and Uncertainty Quantification in Differential Equation Models.*  
Finalist of L. J. Savage Award for best thesis in Bayesian Statistics (Theory and Methods, 2016–17).



18. **William Weimin Yoo:** October 2014.  
 Thesis title: *Sup-norm Posterior Convergence Rates for Regression Models with Application to Estimating the Location of Function Maximum.*  
 Lecturer, Queen Mary College, London, UK.
19. **Sayantana Banerjee:** February 2014.  
 Thesis title: *Bayesian inference for high dimensional models: Convergence properties and computational issues.*  
 Finalist of L. J. Savage Award for best thesis in Bayesian Statistics, 2014–15.  
 Assistant Professor, Indian Institute of Management, Indore.
20. **Weining Shen:** May 2013.  
 Thesis title: *Adaptive Bayesian Function Estimation.*  
 Winner of L. J. Savage Award for best thesis in Bayesian Statistics, 2013–14.  
 Tenure-track Assistant Professor, Department of Statistics, University of California-Irvine.
21. **John White:** May 2010.  
 Thesis title: *Bayesian Multiscale Smoothing of Photon-limited Images with Applications to Astronomy and Medicine.*
22. **Carl Dicasoli:** (co-advised with Sujit Ghosh) August 2009.  
 Thesis title: *Bayesian Methods for Crossing Survival Curves.*
23. **Wookyeon Hwang:** August 2009.  
 Thesis title: *Boosting Methods for Variable Selection in High Dimensional Sparse Models.*  
 Assistant Professor, Busan University, Korea.
24. **Yuefeng Wu:** March 2009. North Carolina State University.  
 Thesis title: *Asymptotic Behavior of Some Bayesian Nonparametric and Semiparametric Procedures.*  
 Tenure-track assistant professor, Department of Mathematics and Computer Science, University of Missouri-St. Louis.
25. **S. McKay Curtis:** (co-advised with Sujit Ghosh) July 2008.

North Carolina State University.

Thesis title: *Bayesian Variable Selection Methods and Applications*.

26. **Jiezhun Gu:** July 2007. North Carolina State University.

Thesis title: *Nonparametric and Semiparametric Inference about ROC Curve*.

27. **Liansheng Zu:** (co-advised with Sujit Ghosh): July 2006. North Carolina State University.

Thesis title: *Analyzing Longitudinal Data with Non-ignorable Missing*.

28. **Changku Kang:** December 2005. North Carolina State University.

Thesis title: *Bayesian Regression Via Clustering Using Dirichlet Process*.

29. **Yongqiang Tang:** November 2003, North Carolina State University.

Thesis title: *Bayesian Nonparametric Estimation of the Transition Density and Prediction in a Markov Process*.

## Project Advising

1. **Bradley Turnbull:** NSA funded project “Computational Approaches to Feature Selection For Massive Data”
2. **Priyam Das:** Mathematics Masters thesis “A new global optimization algorithm”. Defended April 2016.
3. **Arkaprava Ray:** Computational project “Regressing multivariate proportion data on high dimensional predictor with applications to bioinformatics”.

## Publications

(in reverse chronological order.)

## Books

- (a) **Ghosal, S.** and van der Vaart, A. W. (2017). *Fundamentals of Non-parametric Bayesian Inference*, Cambridge University Press.
- (b) Clarke, B. S. and **Ghosal, S.** (2008). *Pushing the Limits of Contemporary Statistics: Contributions in honor of Professor Jayanta K. Ghosh*. IMS Collection **3**, Institute of Mathematical Statistics, Beachwood, OH.

## Papers

- Summary of Publication Outlet

(Including accepted and invited revision status)

<i>Ann. Statist.</i>	16	<i>J. Amer. Statist. Assoc.</i>	2
<i>Biometrika</i>	4	<i>J. Roy. Statist. Soc, Ser. B</i>	2
<i>Bernoulli</i>	6	<i>Electron. J. Statist.</i>	10
<i>J. Multivar. Anal.</i>	4	<i>Biometrics</i>	1
<i>Stat. Medicine</i>	3	<i>Bayesian Anal.</i>	6
<i>J. Comp. Graph. Statist.</i>	1	<i>Comp. Statist. Data Anal.</i>	5
<i>J. Statist. Plan. Inf.</i>	6	<i>Sankhya Series A</i>	5
<i>Test</i>	1	<i>Ann. Inst. Statist. Math.</i>	2
<i>J. Theoret. Probab.</i>	2	<i>Acta Math. Hung.</i>	1
<i>Signal Process.</i>	1	<i>Statist. Interface</i>	1
<i>Statist. Anal. Data Mining</i>	1	<i>Statist. Methodology</i>	3
<i>Statist. Decisions</i>	1	<i>Math. Methods Statist.</i>	2
<i>Acta Applicande Math.</i>	1	<i>J. Nonpara. Statist.</i>	1
<i>Cal. Statist. Assoc. Bull.</i>	1	<i>Scand. J. Statist.</i>	1
<i>STAT</i>	1	<i>IEEE Trans. Image</i>	1
<i>Stat. Prob. Lett.</i>	1	<i>J. Roy. Statist. Soc, Ser. A</i>	1
<i>Environmetrics</i>	1	<i>Int. J. Biostat.</i>	1
<i>Statistica Sinica</i>	2	<i>Ann. Appl. Statist.</i>	1
<i>Sankhya Series B</i>	1	<i>Book chapters</i>	18
<i>Submitted</i>	9	<i>Under preparation</i>	8

- Papers Published in Journals

1. Ning, B., Jeong, S. and **Ghosal, S.** (2020). Bayesian linear regression for multivariate response under group sparsity. *Bernoulli* **26**, 2353–2382.
2. Li, W. and **Ghosal, S.** (2020). Posterior contraction and credible sets for filaments of regression functions. *Electronic Journal of Statistics* **14**, 1707–1743.
3. Mulgrave, J. J. and **Ghosal, S.** (2020). Bayesian inference in nonparanormal graphical models. (Winner of ASA-SBSS Student Paper Award, 2018) *Bayesian Analysis* **15**, 449–475.
4. Wei, R. and **Ghosal, S.** (2020). Contraction properties of shrinkage priors in logistic regression. *Journal of Statistical Planning and Inference* **207**, 215–229.
5. Wei, R., Reich, B., Hoppins, J. and **Ghosal, S.** (2020). Bayesian variable selection for additive nonparametric models with applications to studying effects of pesticides on health. *Statistica Sinica* **30**, 55–79.
6. Tan, Q. and **Ghosal, S.** (2019). Bayesian analysis of mixed-effect regression models driven ordinary differential equations. *Sankhya, Series B* (invited paper in J. K. Ghosh memorial volume), <https://doi.org/10.1007/s13571-019-00199-6>.
7. Roy, A., **Ghosal, S.**, Prescott, J., Roy Choudhury, K. (2019). Bayesian modeling of structural connectome data for Alzheimer disease detection. *Annals of Applied Statistics* **13**, 1791–1816.
8. Zhu, R. and **Ghosal, S.** (2019). Bayesian nonparametric estimation of ROC surface under verification bias. *Statistics in Medicine* **38**, 2330–2358
9. Du, X. and **Ghosal, S.** (2019). Multivariate Gaussian network structure learning. *Journal of Statistical Planning and Inference* **133**, 40–52.

10. Yoo, W. W. and **Ghosal, S.** (2019). Bayesian mode and maximum estimation and accelerated rates of contraction. *Bernoulli* **25**, 2330–2358.
11. Zhu, R. and **Ghosal, S.** (2019). Bayesian ROC surface estimation under verification bias. *Computational Statistics and Data Analysis* **133**, 40–52.
12. Ning, B., **Ghosal, S.** and Thomas, J. (2019). Bayesian method for causal inference in spatially-correlated multivariate time series. *Bayesian Analysis* **14**, 1–28.
13. Du, X. and **Ghosal, S.** (2018). Optimal Bayesian classification with many predictors. Invited paper in P. C. Mahalanobis special volume, *Sankhya, The Indian Journal of Statistics, Series A* **80**, 112–145.
14. Li, X. and **Ghosal, S.** (2018). Bayesian classification of multi-class functional data. *Electronic Journal of Statistics* **12**, 4669–4696.
15. Das, P. and **Ghosal, S.** (2018). Bayesian nonparametric simultaneous quantile regression for complete and grid data. *Computational Statistics and Data Analysis* **127**, 172–186.
16. Li, M. and **Ghosal, S.** (2017). Bayesian detection of image boundaries. *Annals of Statistics* **45**, 2190–2217.
17. Shen, W. and **Ghosal, S.** (2017). Posterior contraction rates of density derivative estimation. *Sankhya, The Indian Journal of Statistics, Series A*, **79**, 336–354. Invited paper in a special volume on concentration inequality.
18. Banerjee, S. and **Ghosal, S.** (2017). Invited discussion of “Sparse graphs using exchangeable random measures” by F. Caron and E. Fox, *Journal of the Royal Statistical Society, Series B* **79** 1343.
19. Sundaram, R., Ma, L. and **Ghosal, S.** (2017). Median cost analysis associated with recurrent episodic illnesses in presence of terminal events. *International Journal of Biostatistics* **13**. <https://doi.org/10.1515/ijb-2016-0057>

20. Bhaumik, P. and **Ghosal, S.** (2017). Efficient Bayesian estimation and uncertainty quantification in differential equation models. *Bernoulli* Vol. 23, 3537–3570. Winner of 2015 Laplace student paper award by SBSS of ASA.
21. Das, P. and **Ghosal, S.** (2017). Analyzing US ozone concentration by Bayesian spatio-temporal quantile regression. *Environmetrics* **28** <https://doi.org/10.1002/env.2443>.
22. Bhaumik, P. and **Ghosal, S.** (2017). Bayesian inference for higher order ordinary differential equation models. *Journal of Multivariate Analysis* **157**, 103–114.
23. **Ghosal, S.** and Roy, A. (2017). Discussion of “Should we sample a time series more frequently?: decision support via multirate spectrum estimation” by G. Nason, B. Powell, D. Elliott and P. A. Smith. *Journal of the Royal Statistical Society, Series A* **180**, 393–394.
24. Suarez, A. J. and **Ghosal, S.** (2017). Bayesian principal component analysis for functional data. *Bayesian Analysis* **12** 311–333.
25. Das, P. and **Ghosal, S.** (2017). Bayesian quantile regression using random B-spline series prior. *Computational Statistics and Data Analysis* **109** 121–143.
26. **Ghosal, S.** (2016). Editorial overview: Special issue on Bayesian nonparametrics. *Electronic Journal of Statistics* **10** 3217–3218.
27. Luo, S. and **Ghosal, S.** (2016). Forward Selection and Estimation in High Dimensional Single Index Model. *Statistical Methodology* **33** 172–179.
28. **Ghosal, S.**, Turnbull, B., Zhang, H. H. and Hwang, W. (2016). Sparse penalized forward selection for support vector classification. *Journal of Computational and Graphical Statistics* **25**, 493–514.
29. Yoo, W. W. and **Ghosal, S.** (2016). Uniform norm posterior contraction and credible sets for nonparametric multivariate regression. *Annals of Statistics* **44** 1069–1102.

30. Suarez, A. J. and **Ghosal, S.** (2016). Bayesian clustering of functional data using local features. *Bayesian Analysis* **11**, 71–98.
31. Shen, W. and **Ghosal, S.** (2016). Adaptive Bayesian density regression for high dimensional data. *Bernoulli* **22**, 396–420.
32. Li, M. and **Ghosal, S.** (2015). Fast translation invariant multiscale denoising. *IEEE Transactions on Image Processing* **24**, 4876–4887.
33. Bhaumik, P. and **Ghosal, S.** (2016). Bayesian two-step estimation in differential equation models. *Electronic Journal of Statistics* **9**, 3124–3154.
34. Shen, W. and **Ghosal, S.** (2015). Adaptive Bayesian procedures using random series prior. *Scandinavian Journal of Statistics* **42**, 1194–1213.
35. **Ghosal, S.** (2015). Invited Discussion of "Frequentist coverage of adaptive nonparametric Bayesian credible sets" by Szabo, van der Vaart and van Zanten, *Annals of Statistics* **43**, 1455–1462.
36. Luo, S. and **Ghosal, S.** (2015). Prediction consistency of forward iterated regression and selection technique. *Statistics and Probability Letters* **107**, 79–83.
37. Banerjee, S. and **Ghosal, S.** (2015). Bayesian estimation of sparse precision matrix. *Journal of Multivariate Analysis* **136**, 147–162.
38. Banerjee, S. and **Ghosal, S.** (2014). Bayesian variable selection in generalized additive partial linear models. *STAT* **3**, 363–378.
39. Gu, J., **Ghosal, S.** and Kleiner, D. (2014). Bayesian ROC curve estimation under verification bias. *Statistics in Medicine* **33**, 5081–5096.
40. Banerjee, S. and **Ghosal, S.** (2014). Posterior convergence rates for estimating a large precision matrix using graphical models. *Electronic Journal of Statistics* **8**, 2111–2137. (Winner of SBSS student paper competition, 2013).

41. Li, M. and **Ghosal, S.** (2014). Bayesian multiscale smoothing for Gaussian noised images. *Bayesian Analysis* **9**, 733–758. (Winner of SBSS student paper competition, 2014).
42. Curtis, S. M., Banerjee, S. and **Ghosal, S.** (2014). Fast Bayesian model assessment for nonparametric additive regression. *Computational Statistics and Data Analysis*, Special issue on Bayesian Computing, Methods and Applications, **71**, 347–358.
43. Turnbull, B., **Ghosal, S.** and Zhang, H. H. (2013). Iterative selection using orthogonalized regression techniques. *Statistical Analysis and Data Mining* **6**, 557–564.
44. Shen, W., Tokdar, S. T. and **Ghosal, S.** (2013). Adaptive Bayesian multivariate density estimation with Dirichlet mixtures. *Biometrika* **100**, 627–640.
45. White, J. T. and **Ghosal, S.** (2013). Denoising three-dimensional and colored images using a Bayesian multi-scale model for photon counts. *Signal Processing* **93**, 2906–2914.
46. Bean, G. J., DeRose, E. A., Mercer, L. D., Thayer, L. K., Roy, A. and **Ghosal, S.** (2013). Skew-mixture models for estimation of positive false discovery rates. *Statistical Methodology* **10** 46–57.
47. Belitser, E. N., **Ghosal, S.** and van Zanten, H. (2012). Optimal two-stage procedures for estimating location and size of maximum of multivariate regression functions. *The Annals of Statistics* **40** 2850–2876.
48. **Ghosal, S.** and Roy, A. (2011). Predicting false discovery proportion under dependence. *Journal of the American Statistical Association* **106**, 1208–1218.
49. White, J. T. and **Ghosal, S.** (2011). Bayesian smoothing of photon-limited images with applications in astronomy. *Journal of Royal Statistical Society, Series B* **73**, 579–599.
50. **Ghosal, S.** and Roy, A. (2011). Identifiability of proportion of null hypotheses in mixture models for p-value distributions. *Electronic Journal of Statistics* **5**, 329–341.



51. Wu, Y. and **Ghosal, S.** (2010). The  $L_1$ -consistency of Dirichlet mixtures in multivariate density estimation. *Journal of Multivariate Analysis*. **101** 2411–2419.
52. Clarke, B. S. and **Ghosal, S.** (2010). Posterior normality and reference priors for exponential families with increasing dimension. *Electronic Journal of Statistics* **4**, 737–780.
53. Hwang, W., Zhang, H. H. and **Ghosal, S.** (2009). FIRST: Combining forward selection and shrinkage in high dimensional linear regression. *Statistics and Its Interface* **2**, 341–348.
54. Wu, Y. and **Ghosal, S.** (2008). Posterior consistency for some semiparametric problems. *Sankhyā, Ser. A*, (Invited paper), **70**, 267–313.
55. Roy, A., **Ghosal, S.** and Rosenberger, W. F. (2008). Convergence properties of sequential Bayesian D-optimal designs. *Journal of Statistical Planning and Inference* **139**, 425–440.
56. Gu, J. and **Ghosal, S.** (2008). Bayesian ROC curve estimation under binormality using a partial likelihood based on ranks. *Journal of Statistical Planning and Inference*, **139** 2076–2083.
57. Gu, J., **Ghosal, S.** and Roy, A. (2008). Nonparametric estimation of ROC curve. *Statistics in Medicine* **27**, 5407–5420.
58. Gu, J. and **Ghosal, S.** (2008). Strong approximations for resample quantile process and applications to ROC methodology. *Journal of Nonparametric Statistics* **20**, 229–240.
59. Wu, Y. and **Ghosal, S.** (2008). Kullback-Leibler property of kernel mixture priors in Bayesian density estimation. *Electronic Journal of Statistics* **2**, 298–331, 2008.  
Correction: *Electronic Journal of Statistics* **3**, 316–317, 2009.
60. **Ghosal, S.**, Lember, J. and van der Vaart, A. W. (2008). Nonparametric Bayesian model selection and averaging. *Electronic Journal of Statistics* **2**, 63–89.

61. Tang, Y., **Ghosal, S.** and Roy, A. (2007). Nonparametric Bayesian estimation of positive false discovery rates. *Biometrics* **63**, 1126–1134.
62. **Ghosal, S.** and van der Vaart, A. W. (2007). Convergence rates of posterior distribution for noniid observations. *The Annals of Statistics* **35**, 192–223.
63. **Ghosal, S.** and van der Vaart, A. W. (2007). Posterior convergence rates of Dirichlet mixtures of normal distributions at smooth densities. *The Annals of Statistics* **35**, 697–723.
64. Tang, Y. and **Ghosal, S.** (2007). A consistent nonparametric Bayesian procedure for estimating autoregressive conditional densities. *Computational Statistics and Data Analysis* **51**, 4424–4437.
65. Tang, Y. and **Ghosal, S.** (2007). Dirichlet mixture of normal models for Markov processes. *Journal of Statistical Planning and Inference* **137**, 1711–1726.
66. Choudhuri, N., **Ghosal, S.** and Roy, A. (2007). Bayesian nonparametric binary regression using a Gaussian process prior. *Statistical Methodology* **4**, 227–243.
67. **Ghosal, S.** and Roy, A. (2006). Posterior consistency of Gaussian processes for nonparametric binary regression. *The Annals of Statistics* **34**, 2413–2429.
68. **Ghosal, S.** and Tang, Y. (2006). Bayesian consistency for Markov processes. *Sankhyā* **68**, 227–239.
69. Choudhuri, N., **Ghosal, S.** and Roy, A. (2004). Bayesian estimation of the spectral density of a time series. *Journal of the American Statistical Association* **99**, 1050–1059.
70. Choudhuri, N., **Ghosal, S.** and Roy, A. (2004). Contiguity of the Whittle measure in a Gaussian time series. *Biometrika* **91**, 211–218.

71. **Ghosal, S.**, Lember, J. and van der Vaart, A. W. (2003). On Bayesian adaptation. *Acta Applicandae Mathematica* **79**, 165–175.
72. Belitser, E. N. and **Ghosal, S.** (2003). Adaptive Bayesian inference on the mean of an infinite dimensional normal distribution. *The Annals of Statistics* **31**, 536–559.
73. Amewou-Atisso, M., **Ghosal, S.**, Ghosh, J. K. and Ramamoorthi, R. V. (2003). Posterior consistency for semiparametric regression problems. *Bernoulli* **9**, 291–312.
74. **Ghosal, S.** and van der Vaart, A. W. (2001). Entropies and rates of convergence for Bayes and maximum likelihood estimation for mixture of normal densities. *The Annals of Statistics*, **29**, 1233–1263.
75. **Ghosal, S.** (2001). Convergence rates for density estimation with Bernstein polynomials. *The Annals of Statistics* **29**, 1264–1280.
76. **Ghosal, S.**, Sen, A. and van der Vaart, A. W. (2000). Testing Monotonicity of Regression. *The Annals of Statistics* **28**, 1054–1082.
77. **Ghosal, S.**, Ghosh, J. K. and van der Vaart, A. W. (2000). Convergence rates of posterior distributions. *The Annals of Statistics* **28**, 500–531.
78. **Ghosal, S.** (2000). Asymptotic normality of posterior distributions for exponential families when the number of parameters tends to infinity, *Journal of Multivariate Analysis* **74**, 49–69.
79. **Ghosal, S.** (1999). Probability matching priors for non-regular cases. *Biometrika*, **86**, 956–964.
80. **Ghosal, S.**, Ghosh, J. K. and Samanta, T. (1999). Approximation of the posterior distribution in a change point problem. *Annals of the Institute of Statistical Mathematics* **51**, 479–497.

81. **Ghosal, S.**, Ghosh, J. K. and Ramamoorthi, R. V. (1999). Consistent semiparametric Bayesian inference about a location parameter. *Journal of Statistical Planning and Inference* **77**, 181–193.
82. **Ghosal, S.**, Ghosh, J. K. and Ramamoorthi, R. V. (1999). Posterior consistency of Dirichlet mixtures in density estimation *The Annals of Statistics* **27**, 143–158.
83. **Ghosal, S.** (1999). Asymptotic normality of posterior distributions in high dimensional linear models. *Bernoulli* **5**, 315–331.
84. **Ghosal, S.** and Chandra, T. K. (1998). Complete convergence of martingale arrays. *Journal of Theoretical Probability* **11**, 621–631.
85. Chandra, T. K. and **Ghosal, S.** (1997). On extensions of an inequality of Kolmogorov. *Calcutta Statistical Association Bulletin* **47**, 1–9.
86. **Ghosal, S.** (1997). Normal approximation to the posterior distribution for generalized linear models with many covariates. *Mathematical Methods of Statistics* **6**, 332–348.
87. **Ghosal, S.** (1997). Reference prior in multiparameter nonregular cases. *Test*, **6**, 159–186.
88. **Ghosal, S.** and Samanta, T. (1997). Expansion of Bayes risk for entropy loss and reference prior in nonregular cases. *Statistics and Decisions* **15**, 129–140.
89. **Ghosal, S.** and Samanta, T. (1997). Asymptotic expansions of posterior distributions in nonregular cases. *Annals of the Institute of Statistical Mathematics* **49**, 181–197.
90. Chandra, T. K. and **Ghosal, S.** (1996). Strong law of large numbers for weighted average of dependent variables. *Journal of Theoretical Probability* **9**, 797–809.
91. Chandra, T. K. and **Ghosal, S.** (1996). Extensions of the strong law of large numbers of Marcinkiewicz and Zygmund under dependence. *Acta Mathematica Hungarica* **71**, 327–336.

92. **Ghosal, S.** and Samanta, T. (1995). Asymptotic behaviour of Bayes estimates and posterior distribution in multiparameter nonregular cases. *Mathematical Methods of Statistics* **4**, 361–388.
93. **Ghosal, S.**, Ghosh, J. K. and Samanta, T. (1995). On convergence of posterior distributions. *The Annals of Statistics* **23**, 2145–2152.
- Papers Published in Conference Proceedings or Book Chapters (refereed)
 

94. **Ghosal, S.**, Purkayastha, S. and Ramamoorthi, R. V. (2018). Ghosh, Jayanta Kumar. Wiley Statistics Reference Online.

95. White, J. T. and **Ghosal, S.** (2014). Multiple testing methods for removing background noise from images. In *Topics in Non-Parametric Statistics: Proceedings of the First Conference of the International Society for Nonparametric Statistics* (M. Akritas, S. N. Lahiri and D. Politis, eds.), Springer Proceedings in Mathematics and Statistics, **74**, 95–104.

96. **Ghosal, S.** (2011). Invited discussion of “Integrated objective Bayesian estimation and hypothesis testing” by J. M. Bernardo. In *Bayesian Statistics* **9**, 1–68, Oxford University Press.

97. **Ghosal, S.** (2010). Dirichlet process, related priors and posterior asymptotics. In *Bayesian Nonparametrics*, (N. L. Hjort, *et al.*, eds.), 35–79, Cambridge University Press.

98. **Ghosal, S.** and Roy, A. (2009). Bayesian nonparametric approach to multiple testing. In *Perspectives in Mathematical Sciences I* (N. S. N. Sastry, *et al.*, eds.), 139–164, World Scientific Publishing Company, Singapore.

99. Kang, C. and **Ghosal, S.** (2007). Clusterwise regression using Dirichlet mixtures. In *Advances in Multivariate Statistical Methods*. (A. Sengupta, ed.), 305–325, World Scientific Publishing Company, Singapore.

A shorter version of this paper appears in the JSM Proceedings, 2007, Section on Nonparametric Statistics, 1624–1631.

100. Clarke, B. S. and **Ghosal, S.** (2008). J. K. Ghosh’s contribution to statistics: A brief outline. In *IMS Collection 3: Pushing the Limits of Contemporary Statistics: Contributions in honor of Professor Jayanta K. Ghosh* (B. Clarke and S. Ghosal, eds.), 1–18. Institute of Mathematical Statistics, Beachwood, OH.
101. **Ghosal, S.**, Roy, A. and Tang, Y. (2008). Posterior consistency of Dirichlet mixtures of beta densities in estimating positive false discovery rates. In *IMS Collection 1: Beyond Parametrics in Interdisciplinary Research: Festschrift in honor of Professor Pranab K. Sen*, (E. Pena and M. Silvapulle, eds.), 105–115. Institute of Mathematical Statistics, Beachwood, OH.
102. Ghosh, S. K. and **Ghosal, S.** (2006). Semiparametric accelerated failure time models for censored data. In *Bayesian Statistics and its Applications* (S. K. Upadhyay *et al.*, eds.), 213–229, Anamaya Publishers, New Delhi.
103. Choudhuri, N., **Ghosal, S.** and Roy, A. (2004). Bayesian methods for function estimation. In *Handbook of Statistics 25*, 373–414, (D. Dey., ed.), Elsevier.
104. **Ghosal, S.** (2003). Invited discussion of “A Nonparametric Bayesian Approach to Inverse Problems” by R. L. Wolpert, K. Ickstadt and M. B. Hansen. In *Bayesian Statistics 7* (J. M. Bernardo *et al.*, eds.), 403–417, Oxford University Press.
105. **Ghosal, S.** and van der Vaart, A. W. (2003). Discussion of “New Tools for Consistency in Bayesian Nonparametrics” by G. Salinetti. In *Bayesian Statistics 7* (J. M. Bernardo *et al.*, eds.), 369–384, Oxford University Press.
106. **Ghosal, S.**, Ghosh, J. K. and Ramamoorthi, R. V. (1999). Consistency issues in Bayesian nonparametrics. In *Asymptotics, Nonparametrics and Time Series: A Tribute to Madan Lal Puri* (Subir Ghosh, Ed.), 639–667, Marcel Dekker, Inc.

107. Chandra, T. K. and **Ghosal, S.** (1998). Some elementary strong law of large numbers: a review. In *Frontiers in Probability and Statistics* (S. P. Mukherjee *et al.*, eds.), 61–81, Narosa Publishing House, New Delhi.
108. **Ghosal, S.**, Ghosh, J. K. and Ramamoorthi, R. V. (1997). Non-informative priors via sieves and packing numbers. In *Advances in Statistical Decision Theory and Applications* (S. Panchapakesan and N. Balakrishnan, Eds.), 119–132, Birkhauser, Boston.
109. Chandra, T. K. and **Ghosal, S.** (1994). On Borel-Cantelli lemmas. In *Essays on Probability and Statistics, Festschrift in honour of Professor Anil Kumar Bhattacharya* (S. P. Mukherjee *et al.* (eds.)), Department of Statistics, Presidency College, Calcutta, 231–239.
110. Ghosh, J. K., **Ghosal, S.** and Samanta, T. (1994). Stability and convergence of posterior in non-regular problems. In *Statistical Decision Theory and Related Fields V* (S. S. Gupta and J. O. Berger, eds.), 183–199.

Papers Accepted or Revision Invited in Journals

111. Belitser, E. and **Ghosal, S.** (2019). Empirical Bayes oracle uncertainty quantification for linear regression. *Annals of Statistics* (to appear).
112. Chakraborty, M. and **Ghosal, S.** (2019). Coverage of Bayesian credible intervals for monotone regression. *Annals of Statistics* (to appear).
113. Roy, A., **Ghosal, S.**, Roy Choudhury, K. (2019). High dimensional single index Bayesian modeling of the brain atrophy over time. *Bayesian Analysis* (appeared online).
114. Li, W. and **Ghosal, S.** (2019). Posterior contraction and credible sets for level sets. Revision invited from *Electronic Journal of Statistics*.

115. **Ghosal, S.** (2020). Preface of the special issue in honor of Professor Jayanta Kumar Ghosh. *Sankhya*, Series A (to appear).
  116. Bhattacharya, I. and **Ghosal, S.** (2018). Bayesian inference for multivariate  $\ell_1$ -median and multivariate quantiles. *Statistica Sinica* (appeared online).
  117. Jeong, S. and **Ghosal, S.** (2019). Posterior contraction in sparse generalized linear models. *Biometrika* (to appear).
  118. Banerjee, S., Castillo, I. and **Ghosal, S.** (2020). Bayesian inference in high-dimensional models. Under revision for Springer volume on Statistics and Data Science.
- Papers Accepted in Conference Proceedings or Book Chapters (refereed)
    119. Tan, Q. and **Ghosal, S.** (2018). Bayesian quantile regression in differential equation models. Proceedings of the 4th Conference of International Society for NonParametric Statistics (ISNPS). To appear.

Papers Submitted/to be Submitted for Publication  
(Preprints available)

120. Jeong, S. and **Ghosal, S.** (2020). Unified Bayesian asymptotic theory for sparse linear regression. Submitted.
121. Li, X. and **Ghosal, S.** (2020). Bayesian change-point detection for functional data. Submitted.
122. Mulgrave, J. J. and **Ghosal, S.** (2020). Regression based Bayesian approach for nonparanormal graphical models. Submitted. <https://arxiv.org/abs/1812.04442>
123. Bhaumik, P., Shi, W. and **Ghosal, S.** (2020). Bayesian generalized regression in partial differential equation models. Submitted.



124. Chakraborty, M. and **Ghosal, S.** (2020). Convergence rates for Bayesian estimation and testing in monotone regression. Submitted.
125. Bhattacharya, I. and **Ghosal, S.** (2020). Bayesian multiple output quantile regression using dependent Dirichlet process prior. Submitted.
126. Bhattacharya, I. and **Ghosal, S.** (2020). Bayesian nonparametric tests for multivariate locations. Submitted.
127. Chakraborty, M. and **Ghosal, S.** (2019). Bayesian inference for monotone densities. Submitted.
128. Roy, A. and **Ghosal, S.** (2020). Optimal Bayesian smoothing of functional observations over a large graph. Submitted.
129. Chakraborty, M. and **Ghosal, S.** (2019). Bayesian inference on monotone regression quantile and accelerated rate of contraction. Under preparation.
130. Jarquin, D., Roy, A., Clarke, B. S. and **Ghosal, S.** (2019). Combining phenotypic and genomic data to improve prediction of binary traits. Submitted.
131. Mulgrave, J. J. and **Ghosal, S.** (2018). Bayesian rank likelihood method for nonparanormal graphical models. Submitted <https://arxiv.org/abs/1812.02884>
132. Das, P., Li, M. and **Ghosal, S.** (2017). Bayesian analysis of tree data. Under preparation.
133. Tan, Q. and **Ghosal, S.** (2019). Two-step approach for quantile regression driven by ordinary differential equations. Under preparation.
134. Shi, W., **Ghosal, S.** and Martin, R. (2019). Bayesian inference in graphical models under measurement error. Under preparation.
135. Banerjee, S., Chakraborty, S. and **Ghosal, S.** (2019). Bayesian analysis of gene-pathway data. Under preparation.

136. Li, W., Li M. and **Ghosal, S.** (2018). Bayesian learning of level curves of regression functions. Under preparation.

## University and professional services

### • Editorial activities

1. Guest editor, *Sankhyā*, the Indian Journal of Statistics, Series A, Special volume in honor of J. K. Ghosh, 2018–2019.
2. Editor of *Sankhyā*, the Indian Journal of Statistics, Series A, 2012–2015.
3. Guest editor, *Electronic Journal of Statistics*, special volume on Bayesian Nonparametrics, 2015–2016.
4. Guest editor, *Journal of Statistical Planning and Inference*, special volume on Bayesian Nonparametrics, 2013–2014.
5. Associate Editor, *The Annals of Statistics*, 2005–present.
6. Associate Editor, *Bernoulli*, from January, 2013–December 2015.
7. Associate Editor, *Electronic Journal of Statistics*, 2007–present.
8. Associate Editor, *Statistics Surveys* 2005–present.
9. Associate Editor, *Journal of Japan Statistical Society* From June 2013.
10. Co-editor of *Sankhyā*, the Indian Journal of Statistics, 2004–2011.

### • Academic Activities

- Chair-elect, Bayesian Nonparametric (BNP) section, ISBA, 2020–2021, chair 2021–2022, past chair 2022–2023.
- Program Committee, IISA 2019.
- Program committee, ISBA 2016.
- IMS nomination committee, 2014–2015.
- ISBA prize committee, 2014–2017, chair 2015–2016.

Chair of local organizing committee of 10th Conference on Bayesian Nonparametrics, Raleigh, June 2015.

Member of faculty team for SAMSI program Low Dimensional Structure in High Dimensional Models, 2013–2014.

Chair of the scientific committee, 9th Workshop on Bayesian Nonparametrics, Amsterdam, The Netherlands, 2013.

Member of Advisory Board of EURANDOM, Eindhoven, The Netherlands, 2012–2016.

Founding member, International Society for Nonparametric Statistics.

Savage Thesis Award Committee, 2010–2011.

Program committee, Nonparametric Bayesian workshop, Veracruz, Mexico, 2011.

Co-chair of organizing committee, International Indian Statistical Association Conference, Raleigh, April 2011.

Program chair for summer conference of Southern Regional Council on Statistics (SRCOS), 2010.

Program committee, Nonparametric Bayesian workshop, Turin, Italy, 2009.

Young Researcher Award Committee, International Indian Statistical Association, 2008.

Member of faculty team for SAMSI program Latent Variable Models for Social Sciences, 2004–2005.

IMS nominee to the ISBA.

Member of the program committee of eighth Valencia conference, 2006.

Regularly referee papers for many journals including *Annals of Statistics*, *Journal of the American Statistical Association*, *Probability Theory and Related Fields*, *Bernoulli*, *Journal of Multivariate Analysis*, *Scandinavian Journal of Statistics*, *Sankhyā*, *Australian Journal of Mathematics*, *Calcutta Statistical Association*

*Bulletin, Statistics and Probability Letters, Journal of Statistical Planning and Inference, Econometric theory, Statistica Sinica, Metrika, Metron, Journal of Korean Statistical Society, Indian Journal of Pure and Applied Mathematics, IEEE transaction on Pattern Recognition and Machine Learning*

Regularly review proposals submitted to US and foreign funding agencies.

- **Doctoral Committee Member**

Served as or currently serving as a member of doctoral committee:

North Carolina State University: Chang Liu, Suchit Mehrotra, Yue Yang, Debraj Das, Yifang Li, Bradley Turnbull, Lovely Goyal, Muhtar Osman (Statistics), Daniel Finkel, Girish Ramachandra (Operations Research), Suvajit Samanta (Bioinformatics), Maryam Sadat Sakhaei Far (Civil Engineering), Natalie Wright (Psychology), Zhiyi Mai, Alicia Xu (economics) and numerous masters committees (occasionally as chair).

Other institutions: Nurzhan Nurushev (VU Amsterdam), Alisa Kirichenko (University of Amsterdam), Azharuddin (Pondichery University), Natesh Pillai (Duke University), Taeryon Choi (Carnegie Mellon University), Pam Binns (University of Minnesota).

- **Inter-disciplinary collaboration**

A participating member of the project entitled “Establishing an East African consortium to promote collaborative research effort to address health issues, namely HIV/AIDS, tuberculosis (TB), malaria, and control of water hyacinth in Lake Tana, Ethiopia” proposed to the College of Sciences, NCSU

Participated in Engineering Research Center proposal at NCSU and UIUC to address statistical issues in this multi-disciplinary research.

- **Consulting**

1. Served as the faculty advisor for consultant Trena Phipps on a project on psychological test of working environments.
2. Served as the faculty advisor for consultant Sanggohn Han on a project on network sharing protocol.
3. Served as the faculty advisor for consultant Ming Xiong on a project on survey of consumer preferences for specific patterns and images in printed textiles.

- **Committee work**

Served in many departmental committees including Statistics search committee (2004-05; 2005-06; 2012-13; 2015-16), Ph. D. qualifier committee (August 2015; chairs August 2005; January 2006; August 2011), written prelim committee (2003; co-chair 2008; 2010, chair 2012), curriculum committee (2006-07, 2008-09), post-tenure review committee (2008-11, 2018-21), COS/PAMS research advisory council (2008-14), seminar committee (2010-11), graduate admission committee (2017-18), COS RPT Committee (2020-23).

- **Mentoring work**

Faculty mentor of Yichao Wu (Assistant Professor, NCSU, 2008-2013) and Arnab Maity (Assistant Professor, NCSU, 2010-2016).

## Conferences, seminars and academic visits

1. **Plenary/distinguished speaker in**

- Closing speech of Aad van der Vaart 60th Birthday Conference, Leiden, June 2019;
- Institute of Mathematical Statistics Medallion lecture, JSM 2017, Baltimore;
- 7th Statistics Day Conference, The Reserve Bank of India, Mumbai, August 30, 2013: Bayesian methods for structure detection in high dimensional models;

- van Dantzig distinguished seminar, University of Amsterdam, The Netherlands, 2013: Bayesian methods for high dimensional models — convergence issues and computational challenges;
- Eurandom Chair Public Lecture, Eurandom, Eindhoven, The Netherlands, 2011: Bayesian methods for finding structures in complex data objects;
- Workshop of Bayesian Nonparametric Regression, Cambridge, UK, 2007: Dirichlet process and posterior asymptotics;

## 2. **Invited speaker in**

- Workshop on Uncertainty Quantification, Cambridge, UK, July 2020 (online);
- Meeting of International Society for Bayesian Analysis, Kunming, China, June-July 2021 (forthcoming);
- 5th Conference of International Society for Nonparametric Statistics, Paphos, Cyprus, June 2021 (forthcoming);
- Joint Statistical Meeting, Denver, CO, July-August 2019;
- Aad van der Vaart 60th Birthday Conference, Leiden, The Netherlands, June 2019;
- 33rd New England Statistics Symposium, Hartford, CT, May 2019 ;
- Sixth Bayesian, Fiducial, and Frequentist (BFF) conference, Duke University, Durham, April–May 2019;
- Second EcoSta Conference, Hong Kong, June 19–21, 2018
- Invited session in 4th ISNPS conference, Salerno, Italy, June 11–15, 2018.
- Invited session in 9th International Purdue Symposium on Statistics, West Lafayette, IN, June 6–8, 2018.
- Special Invited Session in 2018 Conference of International Indian Statistical Association, Gainesville, FL, May 17–20, 2018.

- Workshop on Uncertainty Quantification, Lorentz center, Leiden, The Netherlands, April 16-20, 2018.
- Statistics 2018 Annual Winter Workshop, University of Florida, Gainesville, January 18–20, 2018.
- PCM 125: International Conference in Statistics and Probability, Kolkata, India, January 2–4, 2018.
- IISA International Conference on Statistics, Hyderabad, India, December 28–30, 2017.
- 61st World Statistics Congress, Marrakech, Morocco, July 16–21, 2017.
- 11th Conference on Bayesian Nonparametrics, Paris, France, June 26–30, 2017.
- Statistical Foundations of Uncertainty Quantification for inverse problems, Cambridge, UK, June 18–22, 2017;
- Latent variable workshop, University of South Carolina, Columbia, October 12–14, 2016;
- International Indian Statistical Association Conference, Corvallis, OR, August 17-21, 2016;
- Statistics Research Day, Maxpoint Inc., August 10, 2016;
- World Congress on Probability and Statistics, Toronto, ON, July 11-15, 2016;
- IMS Asia-Pacific Rim Conference, Hong Kong, June 27–30, 2016;
- 3rd conference of International Society for Non-Parametric Statistics, Avignon, France, June 2016;
- Second International Conference on Statistics, Dhaka University Statistics Department Alumni Association, Dhaka, Bangladesh, December 27–29, 2015;
- 2015 IISA Conference, Pune, India, December 20–24, 2015 (special invited speaker);
- Joint Statistical Meeting, 2015, Seattle, August 2015;

- Summer Research Conference of SRCOS, Wilmington, NC, June 2015;
- Workshop on “Probabilistic techniques in modern statistics”, Oberwolfach, Germany, May 2015;
- 2014 IISA Conference, Riverside, CA, July 11–13, 2014 (also chair and session organizer);
- IMS Annual Meeting, Sydney, Australia, July 7–10, 2014;
- CANSSI–SAMSI Workshop: Geometric Topological and Graphical Model Methods in Statistics;
- First Conference of the International Society for Nonparametric Statistics, Chalkidiki, Greece, June 2012 (also chair and session organizer);
- Contemporary issues and applications of statistics, Indian Statistical Institute, Kolkata, 2012.
- Workshop on “Very high dimensional semiparametric models”, Oberwolfach, Germany, 2011;
- 58th Conference of International Statistical Institute, Dublin, 2011;
- 8th Workshop on Bayesian Nonparametrics, Veracruz, Mexico, 2011;
- Frontiers of Statistical Decision Making and Bayesian Analysis - in Honor of James O. Berger, San Antonio, TX, 2010;
- IISA 2010 conference, Visakhapatnam, India, 2010;
- Calcutta Triennial Conference, Kolkata, India, 2009;
- Neural Information Processing Systems Conference, Whistler, BC, 2009;
- 7th Workshop on Bayesian nonparametrics, Turin, Italy, 2009;
- International *Indian Statistical Association meeting* 2008, Storrs, CT;



- Indian Statistical Institute Platinum Jubilee Conference, Kolkata, India, 2008;
- Bayesian Nonparametric Regression, Cambridge, U.K., 2007;
- WNAR-IMS session 2007, Irvine, CA;
- Multivariate Conference in Honor of S. N. Roy, Kolkata, India, 2006;
- Mini symposium on Bayesian nonparametrics, Storrs, 2006;
- Joint Statistical Meeting, 2006, Seattle;
- IMS Annual Meeting, 2006, Rio de Janeiro, Brazil;
- Bayesian Nonparametric Workshop, Jeju Island, Korea, 2006;
- Bayesian Nonparametric Workshop, Rome, 2004;
- Army Research Conference, Raleigh, 2002;
- IMS Annual Meeting 2002;
- 8th Vilnius conference on Probability and Statistics, Vilnius, Lithuania, 2002;
- IMS Annual Meeting, Banff, AB, 2002;
- European Meeting of Statisticians, Funchal, Portugal, 2001;
- Nonparametric Bayesian Workshop, Ann Arbor, 2001;
- Joint Statistical Meeting, Indianapolis, 2000;
- AMS-IMS-SIAM Summer Research Conference, Mount Holyoke, MA, 2000;
- International Workshop on Objective Bayesian Methodology, Valencia, 1999;
- National Seminar on Bayesian Statistics and its Applications, Varanashi, 1996;
- National Seminar on Reliability and Survival Analysis, Calcutta, 1995.

### 3. Short course on

- Bayesian Nonparametrics, 2011, EURANDOM, The Netherlands;
- Bayesian Nonparametrics, 2007, Bilkent, Turkey;
- Bayesian Nonparametrics, 2006, Luminy, France.

4. **Invited discussant** at

- Lead panel discussant in SAMSI program Bayesian nonparametrics: synergies between statistics, probability and mathematics 2015;
- O'Bayes 2015, Valencia, Spain, June 2015;
- ISBA Meeting, Kyoto, Japan, 2012;
- Objective Bayes 5, Branson, MO, June 4–8, 2005;
- 7th Valencia Meeting, Tenerife, Spain, 2002.

5. **Invited participant** at

- Bayesian Nonparametric Inference: Dependence Structures and their Applications, Banff Center, Oaxaca, Mexico, December 3–8, 2017.

6. **Organizer** of

- Invited session in ISBA Meeting, Kunming, China, June 28–July 3, 2020.
- Invited session in 5th ISNPS conference, Paphos, Cyprus, June 15–19, 2020.
- Invited session in IISA conference, Mumbai, India, December 28–30, 2019.
- Invited session in Joint Statistical Meeting, Denver, July 27–Aug 1, 2019.
- Invited session in 4th ISNPS conference, Salerno, Italy, June 11–15, 2018.
- Invited session in International Statistical Institute Meeting, Marrakesh, Morocco, July 16–21, 2017;

- Invited session in International Indian Statistical Association Conference, Corvallis, OR, August 17-21, 2016;
- Topic contributed session in IMS Asia-Pacific Rim Conference, Hong Kong, June 27–30, 2016;
- Invited session in 3rd conference of International Society for Non-Parametric Statistics, Avignon, France, June 2016;
- IMS Invited session in JSM 2015, Seattle, WA;
- Invited Session in 2014 IISA Conference, Riverside, CA, July 11–13, 2014;
- Invited Session in IMS Annual Meeting, Sydney, Australia, July 7–10, 2014;
- Second week workshop on Bayesian Nonparametrics, June 17–21, 2013, Leiden, The Netherlands;
- Invited Session in ISBA Regional Meeting, Varanashi, India, 2013;
- Invited session in First Conference of International Society for Nonparametric Statistics, Chalkidiki, Greece, 2012;
- Invited session in ISBA Meeting, Kyoto, Japan, 2012;
- Invited sessions in Summer Research Conference of Southern Regional Conference on Statistics, Virginia Beach, VA, 2010;
- IMS invited session “Bayes-frequentist reconciliation in large parameter spaces”, Joint Statistical Meeting, Washington DC, 2009.

#### 7. **Contributed speaker** at

- 12th Conference on Bayesian nonparametrics, Oxford, UK, 2019;
- Joint Statistical Meeting, San Diego, CA, 2012;
- Joint Statistical Meeting, Vancouver, BC, 2010;
- Joint Statistical Meeting, Washington, DC, 2009;
- Joint Statistical Meeting, Denver, CO, 2008 (topic contributed);
- IMS Annual Meeting and World Congress in Probability and Statistics, Singapore, 2008;

- Joint Statistical Meeting, Salt Lake City, UT, 2007;
- Joint Statistical Meeting, San Francisco, CA, 2003;
- Joint Statistical Meeting, New York, NY, 2002;
- 6th Purdue Symposium, West Lafayette, IN, 1998;

#### 8. **Poster presenter at**

- Latin American Meeting on Probability and Statistics, Los Cabos, Mexico, 2005;
- Regional Meeting of ISBA, Laguna Beach, CA, 2001;
- 6th Valencia Meeting, Alcossebre, Spain, 1998.

#### 9. **Visited**

- University of Amsterdam, The Netherlands, October 2017;
- US Census Bureau, May 17–19, 2016;
- Leiden University, The Netherlands, 2015, 2014, 2013;
- University of Paris 7: 2015, 2013;
- Eurandom, 2012, 2010–2011;
- Nanyang Technological University, 2009;
- Utrecht University, the Netherlands, 2009, 2002;
- Collegio Alberto, Moncalieri, Italy, 2009;
- Isaac Newton Institute, Cambridge, U.K., 2007;
- VU, Amsterdam, 2019, 2017, 2016, 2007, 2004, 2002;
- Bilkent University, Ankara, Turkey, 2007;
- Indian Statistical Institute, New Delhi, 2017, 2007;
- Indian Statistical Institute, Kolkata, 2016, 2015, 2014, 2013, 2007, 2006, 2004, 2003;
- University of Florida, Gainesville, 2003;
- University di Roma “La Sapienza”, 1999;
- University of Hyderabad, 1997, 1996;

- Indian Statistical Institute, Bangalore, 1996;
- Tata Institute of Fundamental Research, 1989.

10. **Seminars at**

- University of Connecticut, Storrs, December 2019;
- Columbia University, New York, September 2019;
- Indian Institute of Management, Indore, August 2019;
- Collegio Carlo Alberto, Torino, Italy, June 2019;
- University of California, Irvine, April 2019;
- University of California, Los Angeles, April 2019;
- University of Illinois at Chicago, February 2019;
- Johns Hopkins University (Applied Math and Stat), March 2018;
- Florida State University, October 2017;
- Binghamton University, October 2016;
- University of Paris 6, June 2016;
- Bayes Club, University of Amsterdam, February 2019; October 2017; June 2016;
- US Census Bureau, May 2016;
- University of Texas at Austin, April 2016.
- University of Georgia, Athens, March 2016.
- Purdue University, September 2015.
- University of Paris 7, France, May 2015.
- University of Nebraska, Lincoln, March 2015.
- Rutgers University, Piscataway, November 2014.
- Temple University, Philadelphia, November 2013;
- Virginia Commonwealth University, Richmond, Department of Biostatistics, October 2013;
- University of Missouri, Columbia, Department of Statistics, October 2013;

- Division of Statistics, The Reserve Bank of India, Mumbai, August 2013;
- Applied Statistics Unit, Indian Statistical Institute, Kolkata, August 2019; March 2019; June 2016; December 2015; August 2013;
- University of Michigan, Department of Statistics, February 2013;
- Yale University, Department of Statistics, 2012;
- Bordeaux Segalen University, France, 2011;
- Concordia University, Montreal, QC, 2011;
- University of Minnesota, Minneapolis, MN, 2011;
- George Washington University, Washington DC, 2011;
- Princeton University, 2010;
- University of Maryland, Baltimore County, 2012, 2009, 2002;
- Utrecht University, the Netherlands, 2009, 2002;
- Iowa State University, Ames, IA, 2008;
- Jawaharlal Nehru University, New Delhi, 2007;
- Indian Statistical Institute, New Delhi, 2017, 2012, 2007;
- VU University, Amsterdam, 2011, 2007, 1997–1999;
- University of North Carolina-Chapel Hill, Biostatistics, 2006;
- Carnegie Mellon University, 2005;
- University of Connecticut, 2004;
- Duke University, 2004;
- North Carolina Chapter of the American Statistical Association, 2004;
- University of Florida, Gainesville, 2003;
- University of North Carolina, Chapel Hill, Statistics, 2011, 2003;
- Case Western Reserve University, 2002;
- Bocconi University, Italy, 2002;
- EURANDOM, The Netherlands, 2011, 2010, 2002;

- Tilburg University, The Netherlands, 2001;
- University di Roma “La Sapienza”, 1999;
- Michigan State University, 1998;
- Indian Statistical Institute, Calcutta, 2007, 2004, 2003, 2001, 2000, 1999, 1990–1997;
- Indian Institute of Sciences, Bangalore, 1997;
- University of Hyderabad, 1996;
- Indian Statistical Institute, Bangalore, 1996;
- Hong Kong University of Science and Technology, 1996;

#### 11. SAMSI program participation:

- Bayesian nonparametrics: synergies between statistics, probability and mathematics 2015;
- Low-dimensional Structure in High-dimensional Systems (2013–14);
- Analysis of Object Data (2010–11);
- Semiparametric Bayesian Inference in PKPD Analysis (2010);
- Geometry and Statistics of Shape Spaces (2007);
- High Dimensional Inference and Random Matrices (2006);
- Latent (Hidden) Variable Models in the Social Sciences (2004–05);
- Data Mining and Machine Learning (2003–04).

#### Society Membership

Institute of Mathematical Statistics (IMS), Bethesda, Maryland, U. S. A.  
(life member).

Indian International Statistical Association (life member).

Indian Statistical Institute (life member).

International Society for Bayesian Analysis (ISBA).

American Statistical Association, 2007–2012.

Founding member of Bayesian nonparametric section of ISBA.

Founding member of International Society for NonParametric Statistics (ISNPS).

## Teaching Experience

### 1. North Carolina State University:

- Statistics 790: Asymptotic Statistics (developed this advanced elective course) 4 times;
- Statistics 790: Bayesian nonparametrics (developed this advanced elective course) 2 times;
- Statistics 810V: Bayesian nonparametrics (developed this special topics course) 2 times;
- Statistics 778: Measure theory and advanced probability I (2 times);
- Statistics 779 (new syllabus): Measure theory and advanced probability (6 times);
- Statistics 779 (old syllabus): Measure theory and advanced probability II (3 times);
- Statistics 746: Stochastic Processes (10 times);
- Statistics 361: Statistics for engineers (5 times);
- Statistics 810K: Weak convergence (developed this special topics course);
- Statistics 740: Bayesian Inference and Analysis (3 times);



- ST 521: Statistical Theory I (4 times);
  - ST 522: Statistical Theory II (4 times).
  - ST 502: Fundamentals of Statistical Inference II (3 times, online 1).
2. University of Minnesota, Twin Cities:  
Statistics 3021: Introduction to Probability and Statistics (4 times).
  3. Indian Statistical Institute, Calcutta, India:  
*Statistical Methods in Large Samples, Non-parametric Inference, Asymptotic Theory of Inference* (3 times), *Sequential Analysis and Optimal Stopping* (3 times), *Statistical Inference II, Probability tutorial* (2 times), *Statistical Methods in Biology, Multivariate Analysis tutorial*.