

# DEBDEEP PATI

## CONTACT INFORMATION

---

Department of Statistics  
University of Wisconsin, Madison  
7275 Medical Sciences Center  
1300 University Ave  
Madison, WI 53706 , USA

Phone: 608) 262-2598  
Fax: (608) 262-0032  
Website: [www.stat.wisc.edu/~dpati2](http://www.stat.wisc.edu/~dpati2)  
E-mail: [dpati2@stat.wisc.edu](mailto:dpati2@stat.wisc.edu)/  
[dpati2@wisc.edu](mailto:dpati2@wisc.edu)

## EDUCATION AND TRAINING

---

**Duke University**, Durham, North Carolina, USA

Ph.D., Department of Statistical Science (05/15/2012)

- Thesis Topic: Bayesian nonparametric modeling and theory for complex data
- Advisor: Professor David B. Dunson
- Area of Study: Nonparametric Bayes

Master of Science, Department of Statistical Science, (12/05/2010)

- Thesis Topic: Bayesian nonparametric regression with varying residual density
- Advisor: Professor David B. Dunson
- Area of Study: Nonparametric Bayes

**Indian Statistical Institute**, Kolkata, West Bengal, India

Master of Statistics, Department of Statistics, (06/15/2008)

- First Division with Distinction
- Specialization: Mathematical Statistics and Probability

Bachelor of Statistics, Department of Statistics, (06/15/2006)

- First Division with Distinction
- Project Topic: Nonparametric inequality measure based on ranks

## PROFESSIONAL EXPERIENCE

---

Professor, Department of Statistics, University of Wisconsin, Madison, Wisconsin, USA  
**08/19/2024 - Present**

Professor, Department of Statistics, Texas A&M University, College Station, Texas, USA  
**09/01/2022 to 08/18/2024**

Director of PhD program, Department of Statistics, Texas A&M University, College Station, Texas, USA  
**09/01/2021 to 08/18/2024**

Associate Professor, Department of Statistics, Texas A&M University, College Station, Texas, USA  
**09/01/2017 to 08/31/2022**

Assistant Professor, Department of Statistics, Florida State University, Tallahassee, Florida, USA  
**07/18/2012 to 07/07/2017**

## AWARDS AND HONORS

---

### A National and International

#### American Statistical Association

- 2023 JASA Reproducibility Award for “Covariate-Assisted Bayesian Graph Learning for Heterogeneous Data”.

#### International Indian Statistical Association

- Young Researcher Award in the theory and methods category, 2018

#### International Society for Bayesian Analysis

- Honorable mention for the Leonard J. Savage Award for outstanding dissertation in Bayesian statistical theory and methods, 2013

#### The American Statistical Association

- Student paper competition award, Section on Bayesian Statistical Science (SBSS), 2012

#### International Biometric Society

- Distinguished student paper award, International Biometric Society (ENAR), 2010

#### International Society for Bayesian Analysis

- Finalist for the ISBA 10 / Valencia 9 Student Video Competition, Benidorm, Spain (June 2010)

### B Competitive travel awards

#### National Science Foundation

- NSF travel award for participating in International Society for Bayesian Analysis (ISBA) World Meetings, Benidorm, Spain (June 2010)
- Travel Award for attending NSF workshop on high-dimensional theory, methods and applications, Yale University, 2012
- Travel Award for attending 9th Workshop in Bayesian nonparametrics, Amsterdam, The Netherlands, 2013
- Travel Award for attending ISBA, 2014, Cancun, Mexico
- Travel Award for attending 10th Workshop in Bayesian nonparametrics 2015, Raleigh, NC, USA
- Travel Award to participate in the Mathematics Research Communities (MRC) conference on Algebraic Statistics, 2016, Snowbird, Utah

### C Miscellaneous

#### Indian Statistical Institute, Kolkata

- University Scholarship, 2003-2008
- Prizes for good performances in various semesters, 2003-2008

#### Jagadis Bose National Science Talent Search

- JBNSTS Senior Scholarship, 2003-2008

#### West Bengal Board of Higher Education

- Stood 32<sup>nd</sup> in West Bengal Board of Secondary Education out of 600000 students
- Stood 32<sup>nd</sup> in Joint Entrance Examination out of 100000 students
- Stood 4<sup>th</sup> in West Bengal Council for Higher Secondary Education out of 400000 students

## RESEARCH INTERESTS

---

Machine learning and high dimensional applications; Bayes theory and methods in high dimensions; Approximate Bayesian methods; high dimensional network analysis, Bayesian graphical models, efficient Bayesian computation, electronic health record data, hierarchical modeling of complex shapes, point pattern data modeling, real-time tracking algorithms, fair algorithms.

## PUBLISHED JOURNAL ARTICLES

---

Convention: Mentored PhD Students / postdocs: Publications marked with \* → PhD student, \*\* → Postdoc

- (J1) **Pati D.**, Reich B.J. and Dunson D.B. (2011). Bayesian geostatistical modeling with informative sampling locations. *Biometrika* **98** (1): 35-48. Winner of the ENAR Distinguished student paper award.
- (J2) **Pati D.**, Dunson D.B and S.T. Tokdar (2013). Posterior consistency in conditional distribution estimation. *Journal of Multivariate Analysis*, **116**: 456-472.
- (J3) **Pati D.** and Dunson, D.B. (2014). Bayesian nonparametric regression with varying residual density. *The Annals of the Institute of Statistical Mathematics*, **66** (1): 1-31.
- (J4) Bhattacharya A., **Pati D.** and Dunson D.B. (2014) Anisotropic function estimation using multi-bandwidth Gaussian processes. *The Annals of Statistics*, **32** (1): 352-381.
- (J5) **Pati D.**, Bhattacharya A., Pillai N.S. and Dunson D.B. (2014) Posterior contraction in sparse Bayesian factor models for massive covariance matrices. *The Annals of Statistics*, **42** (3): 1102-1130.
- (J6) Sarkar A.\*, Mallick B., Staudenmayer J., **Pati D.**, Carroll R.J. (2014) Bayesian Semiparametric Density Deconvolution in the Presence of Conditionally Heteroscedastic Measurement Errors. Winner of the SBSS student paper award. *Journal of Computational and Graphical Statistics*, **23** (4): 1101-1125.
- (J7) Cervone D.\*, Pillai N.S., **Pati D.**, Berbecko R. and Lewis J.H. (2014) A location-mixture autoregressive model for online forecasting of lung-tumor motion. *The Annals of Applied Statistics*, **8** (3): 1341-1371.
- (J8) Gu K.\*, **Pati D.** and Dunson D.B. (2014) Bayesian multiscale modeling of closed curves in point clouds. *Journal of the American Statistical Association*, **109** (508): 1481-1494.
- (J9) Bhattacharya A., **Pati D.**, Pillai N.S. and Dunson D.B. (2015) Dirichlet Laplace priors for optimal shrinkage. *Journal of the American Statistical Association*, **110** (512): 1479-1489. (See [BLOG entry](#): Gelman, A. (2013). Infill asymptotics and sprawl asymptotics. *Statistical Modeling, Causal Inference, and Social Science*).
- (J10) Tang Y.\*, Sinha D., **Pati D.**, Lipsitz S.R., Lipshultz S. (2015) Bayesian partial linear model for skewed longitudinal data. Winner of the ENAR Distinguished student paper award in 2013. *Biostatistics*, **16** (3): 441-453.
- (J11) Zhang Z.\*, **Pati D.**, Srivastava A. (2015) Bayesian clustering of shapes of curves. *Journal of Statistical Planning and Inference*, **166**: 171-186.
- (J12) **Pati D.**, Bhattacharya A. (2015) Adaptive Bayesian inference in the Gaussian sequence model using exponential-variance priors. *Statistics & Probability Letters*, **103**, 100 -104.
- (J13) **Pati D.**, Bhattacharya A., Cheng G. (2015) Optimal Bayesian estimation in random covariate design with a rescaled Gaussian process prior. *The Journal of Machine Learning Research*, **16**, 2837-2851.

- (J14) Bhattacharya A., **Pati D.**, Pillai N.S. and Dunson D.B. (2016) Sub-optimality of some continuous shrinkage priors. *Stochastic Processes and their Applications*, **126**(12): 3828–3842. (Invited paper in memoriam: Evarist Giné)
- (J15) Li H.\*, **Pati D.** (2017) Variable selection using shrinkage priors. *Computational Statistics & Data Analysis*, **107**, 107–119.
- (J16) Norets A., **Pati D.** (2017) Adaptive Bayesian estimation of conditional densities. *Econometric Theory* **33**, 980-1012.
- (J17) Bhattacharya A., **Pati D.** (2017) Posterior contraction in Gaussian process regression using Wasserstein approximations. *Information and Inference*, **6**, 416–440.
- (J18) Vo G.\*, **Pati D.** (2017) Sparse additive Gaussian process with soft interactions. *Open Journal of Statistics*, **7**, 567-588.
- (J19) Sarkar A.\*, **Pati D.**, Chakrabarty A., Mallick B., Carroll R.J. (2018) Bayesian semiparametric multivariate density deconvolution. *Journal of the American Statistical Association*. **113**, (521) 401–416.
- (J20) Sabnis G.\*, **Pati D.**, Bhattacharya A. (2018) Compressed covariance estimation with automated dimension learning. *Sankhya (Series A)*, to appear. [\[DOI\]](#)
- (J21) Bhingare A.\*, Sinha D., **Pati D.**, Bandyopadhyay, D., Lipsitz S.R. (2018) Semiparametric Bayesian latent variable regression for skewed multivariate data Winner of ENAR distinguished student paper award and SBSS student paper competition. *Biometrics*. [\[DOI\]](#)
- (J22) Geng J.\*, Bhattacharya A., **Pati D.** (2019) Probabilistic community detection with unknown number of communities. *Journal of the American Statistical Association*. **114**, (526) 893–905.
- (J23) Bhattacharya A., **Pati D.**, Yang Y (2019) Bayesian fractional posteriors. *The Annals of Statistics*, **47** (1): 39-66. (Author names in alphabetical order)
- (J24) Dasgupta S.\*, **Pati D.**, Srivastava A. (2019) Bayesian Shape-Constrained Density Estimation, *Quarterly of Applied Mathematics*. [\[Link\]](#)
- (J25) Dasgupta S.\*, **Pati D.**, Srivastava A. (2019) A two-step geometric framework for density modeling. [\[Link\]](#), *Statistica Sinica*, to appear.
- (J26) Zhou, S.\*, Giuliani, P.\*, Piekarewicz, J., Bhattacharya A., Pati, D. (2019) Reexamining the proton-radius problem using constrained Gaussian processes. Winner of SETCASA Poster competition 2019 Second prize. [\[Link\]](#), *Physical Review C*, **99** (5): 055202
- (J27) Dhara K.\*, **Pati D.**, Sinha D., Lipsitz S.R. (2019) A New Bayesian Single Index Model with or without Covariates Missing at Random, [\[Link\]](#), *Bayesian Analysis*, to appear.
- (J28) Mukherjee T., Kumar P., **Pati D.**, Blasch E., Pasiliao E., Xu L. (2019) Large scale FM signal strength map estimation for passive approximate localization. **2** (4): 319–348. *IEEE Journal of Big data mining and analytics*, to appear. [\[Link\]](#)
- (J29) Ghosh P\*\*., **Pati D.**, Bhattacharya A. (2019) Optimal Bayesian estimation in stochastic block models. [\[Link\]](#), *Sankhya Series A*, (invited for special volume in honor of Prof. J.K. Ghosh) to appear.
- (J30) Ray, P.\*, **Pati, D.**, Bhattacharya A. (2020) Efficient Bayesian shape-restricted function estimation with constrained Gaussian process priors. [\[Link\]](#) Winner of SETCASA Poster competition 2019 First prize. *Statistics and Computing*, **30**: 839–853.
- (J31) Yang Y., **Pati D.**, Bhattacharya A. (2020)  $\alpha$ -Variational inference with statistical guarantees. [\[Link\]](#), *The Annals of Statistics*, **48**, (2) 886–905.

- (J32) Sarkar A., **Pati D.**, Mallick B., Carroll R.J. (2020) Bayesian Copula Density Deconvolution for Zero-Inflated Data with Applications in Nutritional Epidemiology. *Journal of the American Statistical Association*, to appear. [\[Link\]](#)
- (J33) Olivier Binette\*, **Pati D.** and Dunson D.B. (2020) Bayesian fitting of closed surfaces through tensor products, *The Journal of Machine Learning Research*, **21**, (119) 1–26. [\[Link\]](#)
- (J34) Plummer S.\* , **Pati D.**, Bhattacharya A. (2020) Dynamics of coordinate ascent variational inference: A case study in 2D Ising models. *Entropy* **22**, (11), 1263. [\[Link\]](#)
- (J35) Dasgupta S.\* , **Pati D.**, Jermyn, I. Srivastava A. (2020) Modality-Constrained Density Estimation via Deformable Templates. *Technometrics*, to appear. [\[Link\]](#)
- (J36) Niu Y.\* , **Pati D.**, Mallick, B. (2021) Bayesian Graph Selection Consistency Under Model Misspecification. *Bernoulli*. **27**, (1), 637–672. Winner of SETCASA Poster competition 2019 Second prize. [\[Link\]](#)
- (J37) Lim Y., Bhattacharya A., Holt J. W., **Pati D.** (2021) Revisiting constraints on the maximum neutron star mass in light of GW190814. *Letter in Physical Review C*, to appear. [\[Arxiv\]](#)
- (J38) Lei B., Tanner Q. K., Bhattacharya A., **Pati D.**, Qian X., Arroyave R., Mallick B.K. (2021) Bayesian Optimization with Adaptive Surrogate Models for Automated Experimental Design. *Nature Computational Materials*, to appear.
- (J39) Bandyopadhyay D., Hilden P., **Pati D.**, Fernandes J., Russell S. L., Fellows J. L., Nagarajan R. (2021). Correlated tooth-level caries status in a Type-2 diabetic Gullah population, *Modern Approaches in Dentistry and Oral Health Care*, to appear.
- (J40) Ghosh I.\* , Bhattacharya A., **Pati D.** (2022) Statistical optimality and stability of tangent transform algorithms in logit models. [\[Arxiv\]](#), *Journal of Machine Learning Research*, to appear.
- (J41) Zhou S\*., Ray P., **Pati D.**, Bhattacharya A. (2022) Mass-shifting phenomenon of truncated multivariate normal priors, [\[Arxiv\]](#), *Journal of the American Statistical Association*, to appear.
- (J42) Acharyya S.\* , Zhang Z., Bhattacharya A., **Pati D.** (2022) Bayesian Hierarchical Modeling on Covariance Valued Data. Winner of SBSS student paper competition. [\[Arxiv\]](#), *Stat*, to appear
- (J43) Zhou S.\* , Wang T. **Pati D.**, Yang Y., Carroll R.J. (2023) Gaussian processes with Error in Variables: Theory and Computation. [\[Arxiv\]](#), *Journal of Machine Learning Research*, to appear.
- (J44) Acharyya S.\* , **Pati D.**, Bandyopadhyay D., Sun S (2023) A monotone single index model for missing-at-random longitudinal proportion data, *Journal of Applied Statistics*, to appear.
- (J45) Niu Y.\* , Ni Y., **Pati D.**, Mallick B.K. (2023) Covariate-Assisted Bayesian Graph Learning for Heterogeneous Data, *Journal of the American Statistical Association*, to appear.
- (J46) Karwa V., **Pati D.**, Petrović S., Solus L. et al (2023) Exact tests for stochastic block models. [\[Arxiv\]](#), *Journal of Royal Statistical Society, Series B*, to appear.
- (J47) Chakraborty A.\* , Bhattacharya A., **Pati D.** (2024) Constrained Reweighting of Distributions: An Optimal Transport Approach. *Entropy* 26.3 (2024): 249 [\[Link\]](#).
- (J48) Chakraborty A.\* , Bhattacharya A., **Pati D.** (2024) A Gibbs Posterior Framework for Fair Clustering. *Entropy* 26.1 (2024): 63 [\[Link\]](#).
- (J49) Chuu E.\* , Niu Y. \*\*, Bhattacharya A, **Pati D.** (2024) EPSOM-Hyb: a general purpose estimator of log-marginal likelihoods with applications to probabilistic graphical models. *Algorithms* 17(5), 213. 63 [\[Link\]](#).

- (J50) Helwig J.\*, Dasgupta S. \*\*, Zhao P.\*\*, Mallick B.K., **Pati D.** (2024) covdepGE: a Covariate-Dependent Approach to Gaussian Graphical Modeling in R. *ACM Transactions on Mathematical Software*, to appear
- (J51) Das S\*, Niu Y.\*, Ni Y., Mallick B.K, **Pati D.** (2024) Blocked Gibbs sampler for hierarchical Dirichlet processes. [\[Arxiv\]](#). *Journal of Computational & Graphical Statistics*, to appear
- (J52) Zhao P.\*\*, Bhattacharya A., **Pati D.**, Mallick B.K. (2024) Structured Optimal Variational Inference for Dynamic Latent Space Models. [\[Arxiv\]](#) *Journal of Machine Learning Research*, accepted pending minor revisions.

## PEER REVIEWED CONFERENCE PUBLICATIONS

---

- (C1) Miratrix L. Feller, A. Pillai N. **Pati, D.** (2016) Using Dirichlet Processes for Modeling Heterogeneous Treatment Effects across Sites. Society for Research on Educational Effectiveness.
- (C2) Dasgupta S.\* **Pati D.**, Jermyn I, Srivastava S. (2018) Shape-Constrained and Unconstrained Density Estimation Using Geometric Exploration, 2018 IEEE Statistical Signal Processing Workshop (SSP), to appear.
- (C3) **Pati D.**, Bhattacharya A., Yang Y (2018) On statistical optimality of Variational Bayes. Proceedings of the Twenty-First International Conference on Artificial Intelligence and Statistics (AISTATS), 1579–1588. [\[link\]](#)
- (C4) Plummer S.\*, Zhou S., Bhattacharya A., Dunson D.B., **Pati D.** (2021) Statistical Guarantees for Transformation Based Models with applications to Implicit Variational Inference. AISTATS 2021, to appear. [\[Arxiv\]](#)
- (C5) Chuu E.\*, **Pati D.**, Bhattacharya A. (2021) A Hybrid Approximation to the Marginal Likelihood. AISTATS 2021, to appear.
- (C6) Guha B.\*, Bhattacharya A., **Pati D.** (2021) Statistical Guarantees and Algorithmic Convergence Issues of Variational Boosting, IEEE-ICTAI [\[Arxiv\]](#)
- (C7) Wang H.\*, Bhattacharya A., Yang Y., **Pati D.** (2022) Structured Variational Inference in Bayesian State-Space Models. AISTATS 2022, to appear.

## MANUSCRIPTS SUBMITTED / UNDER REVISION

---

- (R1) Yang Y., **Pati D.** (2018+) Bayesian model selection consistency and oracle inequality with intractable marginal likelihood. [\[Arxiv\]](#)
- (R2) Yang Y., Bhattacharya A., **Pati D.** (2018+) Frequentist coverage and sup-norm convergence rate in Gaussian process regression. [\[Arxiv\]](#)
- (R3) Bhattacharya A., **Pati D.** (2020+) Nonasymptotic Laplace approximation under model misspecification. [\[Arxiv\]](#)
- (R4) Dhara K.\*, Hupf B.\*, Hajcak G., **Pati D.**, Sinha D. (2020+) Frequentist and Bayesian Analysis of Monotone Single-Index Models.
- (R5) Bhattacharya A., **Pati D.**, Plummer S.\*, (2020+) Evidence bounds in singular models: probabilistic and variational perspectives. [\[Arxiv\]](#)
- (R6) Guha B.\*, **Pati D.**, (2021+) Adaptive posterior convergence in sparse high dimensional clipped generalized linear models. [\[Arxiv\]](#)
- (R7) Lee S., Zhao P.\*\*, **Pati D.**, Mallick B.K. (2021+) Tail adaptive Bayesian shrinkage. [\[Arxiv\]](#)



- (R8) Zhao P.\*\*, Bhattacharya A., **Pati D.**, Mallick B.K. (2022+) Factorized Fusion Shrinkage for Dynamic Relational Data. [\[Arxiv\]](#)
- (R9) Dasgupta S.\*, Zhao P., Ghosh P., **Pati D.**, Mallick B.K. (2023+) An approximate Bayesian approach to covariate dependent graphical modeling. [\[Arxiv\]](#)
- (R10) Chakraborty A.\*, Bhattacharya A., **Pati D.** (2023+) Robust probabilistic inference via a constrained transport metric. [\[Arxiv\]](#)
- (R11) Chakraborty A.\*, Bhattacharya A., **Pati D.** (2023+) Fair Clustering via Hierarchical Fair-Dirichlet Processes. [\[Arxiv\]](#)
- (R12) Bhattacharya A., **Pati D.**, Yang Y. (2023+) On the Convergence of Coordinate Ascent Variational Inference. [\[Arxiv\]](#)
- (R13) Jacob P.M., Patel L., Bhattacharya A., **Pati D.** (2023+) Memory Efficient And Minimax Distribution Estimation Under Wasserstein Distance Using Bayesian Histograms. [\[Arxiv\]](#)
- (R14) Jaiswal P.\*\*, Bhattacharya A., **Pati D.**, Mallick B.K. (2023+) Generalized Regret Analysis of Thompson Sampling using Fractional Posteriors. [\[Arxiv\]](#)

## PREPRINTS

---

- (P1) Wang L.\*, Tang Y.\*, Sinha D., **Pati D.**, Lipsitz S.R. (2018+) Bayesian Variable Selection for Skewed Heteroscedastic Response. [\[Arxiv\]](#) Winner of ENAR distinguished student paper award.
- (P2) Sabnis G.\*, **Pati D.**, Engelhardt B., Pillai N.S. (2018+) A divide and conquer strategy for high dimensional Bayesian factor models. [\[Arxiv\]](#)
- (P3) Dasgupta S.\*\*, Niu Y\*\*., Badrinath K.P., Kalathil D., **Pati D.**, Mallick B.K. (2021+) [\[Arxiv\]](#) Off-Policy Evaluation Using Information Borrowing and Context-Based Switching.

## INVITED BOOK CHAPTERS

---

- (BC1) Recent theoretical advances with the discrete spike-and-slab priors, contributed by Zhou S. & **Pati D.** in Bayesian Variable Selection, with Chapman & Hall/CRC.
- (BC2) Bayesian shape clustering, contributed by **Pati D.** in Nonparametric Bayesian Inference in Biostatistics and Bioinformatics, 57-76, edited by Mitra, R. and Müller, P., Springer-Verlag.

## OPEN SOURCE SOFTWARES

---

- (BC1) Helwig J.\*, Dasgupta S. \*\*, Zhao P.\*\*, Mallick B.K., **Pati D.** (2022+) covdepGE: Covariate Dependent Graph Estimation, <https://cran.r-project.org/web/packages/covdepGE/index.html>.
- (BC2) Refer to my github page <https://github.com/debdeeptamu>.

## FUNDING

---

### A Ongoing grants

- (G1) NSF-DMS 2413715, (PI: Debdeep Pati, co-PI: Anirban Bhattacharya), \$299,669, 07/01/2024 - 6/30/2027, Wasserstein guided nonparametric Bayes
- (G2) NTESS, LLC - National Technology & Engineering Solutions of Sandia, (PI: Debdeep Pati, co-PI: Anirban Bhattacharya), \$221,628, 05/01/2023 - 9/30/2024, Fast statistical learning of anomalous behavior on streaming data, Effort: Dr. Pati - 1 month (Year 1), 2 months (Year 2).

- (G3) NIH 1R21DE031879-01A1, (PI: Dipankar Bandyopadhyay, co-I : Debdeep Pati), \$174,115, 09/1/22-08/31/24, pragmatic risk index evaluating the elderly with comorbidity for oral health event times, Effort: Dr. Pati - 1 month
- (G4) NIH 1R01DE031134-01A1 (PI: Dipankar Bandyopadhyay, co-PI (MPI): Debdeep Pati), \$2,060,431, 09/1/22-08/31/26, Sex/Gender influences on periodontal disease and diabetes: A population science approach, with software, Effort: Dr. Pati - 1.5 months
- (G5) NSF-DMS 2210689, (PI: Anirban Bhattacharya, co-PI: Debdeep Pati), \$ 199, 338, (07/01/2022 - 06/30/2025), Collaborative Research: Theoretical and Algorithmic Foundations of Variational Bayesian Inference, Effort: Dr. Pati - 0.25, 0.75, 1 month.

## **B Completed Grants**

- (G6) NSF CCF 1934904 (PI: Bani Mallick, Senior Personnel: Debdeep Pati), \$1,416,522, 11/1/19-10/31/21, HDR Tripods: Texas A&M Research Institute for Interdisciplinary Foundations of DATA Science (TRIFECIDAS), Effort: Dr. Pati - 0%.
- (G7) NSF DMS - CDS&E-MSS PD 18-8069 (PI: Debdeep Pati, co-PI: Anirban Bhattacharya), \$279,330. 06/14/2019-06/30/2023, Enhanced statistical learning of physical systems exploiting non-standard constraints. Effort: Dr. Pati - Effort: Dr. Pati - 1, 2, 1 person-months.
- (G8) The College of Science Strategic Transformative Research Program (STRP) for FY2020B (PI: Debdeep Pati), \$53,640, 09/01/2020-08/31/2021, Understanding nuclear force using probabilistic machine learning.
- (G9) NSF DMS PD 18-1269 (PI: Debdeep Pati, co-PI: Anirban Bhattacharya), \$ 107,000, 08/14/2019-07/30/2022, Prior calibration and algorithmic guarantees under parameter restrictions. Effort: Dr. Pati - 0.1, 0.2, 0.2 person-months.
- (G10) Texas A&M Triads for Transformation 3rd round (PI: Debdeep Pati), \$32,000. 01/01/2020-12/31/2020, Probabilistic Machine Learning For Uncertainty Quantification Of Neutron Star Radius.
- (G11) General Motors (PI: Theodora Chaspari, Co-PI: Debdeep Pati), \$ 395,840, 09/01/21-05/31/22, Causes of Ghost Alarms in GM Paint Shops, Effort: Dr. Pati - \$177,260.
- (G12) NSF PD 08-1269 (PI: Debdeep Pati), \$127,059, 06/30/16-6/29/20, Collaborative proposal: Scalable Bayesian methods for complex data with optimality guarantees.
- (G13) Office of Naval Research (PI: Debdeep Pati), \$106,835, 7/1/14-6/30/17, Bayesian shrinkage priors for high-dimensional parametric and nonparametric models.
- (G14) FSU-FYAP (PI: Debdeep Pati), \$20,000, 5/10/13 - 8/1/13, Bayesian shrinkage in high-dimensions: new developments

## **INVITED TALKS**

- (T1) Parallel and sequential coordinate ascent in variational inference, Ecosta 2024, July 2024 (Virtual)
- (T2) Reconciling computational barriers and statistical guarantees in variational inference, WNAR / IMS / Graybill 2024 meeting, June 2024 (Virtual)
- (T3) Blocked Gibbs sampler for hierarchical Dirichlet Process, ICSA 2024, Nashville, Tennessee, June 2024
- (T4) Reconciling computational barriers and statistical guarantees in variational inference, Keynote Speaker, Probability and Statistics Day 2024, University of Maryland, Baltimore County, April 2024



- (T5) Robust probabilistic inference via a constrained transport metric, University of Michigan, Ann Arbor, Department of Biostatistics, March 2024
- (T6) Adaptive finite-element type decomposition of Gaussian random fields, CFE-CMStatistics, December, 2024 (Virtual)
- (T7) Evidence bounds in singular models: probabilistic and variational perspective, Algebraic Economics workshop, IMSI, University of Chicago, November 2023
- (T8) Reconciling computational barriers and statistical guarantees in variational inference, Department of Mathematics, University of Houston, October 2023
- (T9) Reconciling computational barriers and statistical guarantees in variational inference, Data Sciences and Operations (DSO) - USC Marshall, Los Angeles, CA, September 2023
- (T10) Adaptive finite-element type decomposition of Gaussian random fields, IISA 2023, Golden, CO, June 2023
- (T11) Robust probabilistic inference via a constrained transport metric, Virginia Commonwealth University, April 2023 (Virtual Seminar)
- (T12) Approximate Bayes inference with soft distributional constraint, Bayescomp2023, March 2023 (Virtual Seminar)
- (T13) Robust probabilistic inference via a constrained transport metric, IISA 2022, December 2022 (Virtual Seminar)
- (T14) An approximate Bayesian approach to covariate dependent graphical modeling, JSM 2022, August 2022, Washington DC
- (T15) An approximate Bayesian approach to covariate dependent graphical modeling, CM Statistics 2021, December 2021 (Virtual Seminar)
- (T16) Variational inference: recent theoretical developments, December 2021, University of Washington seminar series (Virtual Seminar)
- (T17) An approximate Bayesian approach to covariate dependent graphical modeling, September 2021, ICSA, 2021 (Virtual Seminar)
- (T18) Statistical and algorithmic convergence guarantees for tangent transforms, Joint Statistical meetings, May 2021, IISA, 2021 (Virtual Seminar)
- (T19) Variational inference: recent theoretical developments, Ohio State University, March 2021 (Virtual seminar)
- (T20) Variational inference: recent theoretical developments, Applied Probability and Risk Seminar Series, Columbia University, Feb 2021 (Virtual seminar)
- (T21) Variational inference: recent theoretical developments, University of Maryland, Baltimore County, Nov 2020 (Virtual seminar)
- (T22) Statistical and algorithmic convergence guarantees for tangent transforms, Joint Statistical meetings, August 2020.
- (T23) Computational Aspects of Variational Inference in Ising models, BayesComp 2020, Gainesville, USA (January 2020).
- (T24) Computational Aspects of Variational Inference in Ising models, IISA, Mumbai, India (December 2019).
- (T25) Nonparametric Bayes model selection, JSM 2019, Denver, Colorado (July 2019)

- (T26) Prior choice in constrained Bayesian inference, ISBA-EAC, Kobe, Japan (July 2019)
- (T27) Prior choice in constrained Bayesian inference, Banff International Research Station for Mathematical Innovation and Discovery, (April 2019)
- (T28) Coverage aspects of Gaussian processes with an application to particle Physics, Department of Statistics and Data Science, UT Austin, (October 2018)
- (T29) Real-time tumor tracking using a novel mixture of auto-regressive processes, Medical College of Wisconsin, (October 2018)
- (T30) Coverage aspects of Gaussian processes with an application to particle Physics, Ecosta 2018, Hong Kong, (June 2018)
- (T31) Coverage aspects of Gaussian processes with an application to particle Physics, IISA 2018, Hyderabad, India (December 2017)
- (T32) Bayesian community detection and goodness of fit tests in network models, ERCIM 2018, London (December 2017)
- (T33) Bayesian community detection and goodness of fit tests in network models, 11th workshop on Bayesian nonparametrics, Paris, France (June 2017)
- (T34) Bayesian community detection and goodness of fit tests in network models, Texas A&M University, Texas (December 2016)
- (T35) Bayes theory and methods for large networks, Latent variables 2016 Conference, University of South Carolina (October 2016)
- (T36) Bayesian community detection and goodness of fit tests in network models, Department of Statistics, University of South Carolina (September 2016)
- (T37) Bayes theory and methods for large networks, Institute of Mathematical Statistics Asia Pacific Rim Meeting (4th IMS-APRM), Hong Kong (June 2016)
- (T38) Bayes theory and methods for large networks, SRCOS 2016 Summer Research Conference, Arkansas (June 2016)
- (T39) Bayes theory and methods for large networks, Bayesian Statistics Seminar, NCSU, Raleigh, NC (March 2016)
- (T40) Bayesian shape clustering, IISA 2015, Pune, India (December 2015)
- (T41) Bayes theory and methods for large networks, IASC-ARS 2015, Singapore (December 2015)
- (T42) Default variable selection using shrinkage priors, JSM 2015, Seattle, WA (August 2015)
- (T43) Real-time tumor tracking using a novel mixture of auto-regressive processes, WSC 2015, Rio de Janeiro, Brazil (July 2015)
- (T44) Bayesian shrinkage in high-dimensions, University of California, Berkeley, CA (February 2015)
- (T45) Bayesian multi-scale modeling of closed curves in point clouds, JSM 2014 (August 2014)
- (T46) Nonparametric Bayes clustering of functional data, ISBA 2014, Cancun, Mexico (July 2014)
- (T47) Bayesian shrinkage in high-dimensions, IISA 2014, Riverside, California (July 2014)
- (T48) Bayesian partial linear model for skewed longitudinal data, KISS/ ICSA 2014, Portland, OR (June 2014)
- (T49) Bayesian shrinkage in high-dimensions, ISBIS/ SLDM 2014, Durham, NC (June 2014)

- (T50) Bayesian shape clustering, Texas A&M University, College Station, Texas (March 2014)
- (T51) Real-time tumor tracking using a novel mixture of auto-regressive processes, Purdue University, West Lafayette, Indianapolis (February 2014)
- (T52) Nonparametric Bayes clustering of functional data, FSU Computer Science Dept, Tallahassee, Florida (November 2013)
- (T53) On shrinkage priors in high dimensions, JSM 2013, Montreal, Canada (August 2013)
- (T54) Posterior contraction in sparse Bayesian factor models for massive covariance matrices, ISBA Regional Meeting, Varanasi, India (January 2013)
- (T55) On shrinkage priors favoring sparsity in high dimensions, Fox School of Business, Temple University, Friday Seminar, Philadelphia (October 2012)
- (T56) Bayesian fitting of closed surfaces through tensor products, Joint Statistical Meetings, San Diego (August 2012)
- (T57) Nonparametric Bayesian learning of low dimensional structure in higher dimensional data, Wharton Statistics Seminar, Pennsylvania (March 2012)
- (T58) Nonparametric Bayesian learning of low dimensional structure in higher dimensional data, FSU Statistics Colloquium, Florida (February 2012)
- (T59) Nonparametric Bayesian learning of low dimensional structure in higher dimensional data, Data Seminar, Duke University, Durham (January 2012)
- (T60) Nonparametric Bayesian learning of low dimensional structure in higher dimensional data, UChicago Statistics Colloquium, Chicago (January 2012)
- (T61) Nonparametric Bayesian learning of low dimensional structure in higher dimensional data, UFlorida Statistics Seminar, Florida (January 2012)
- (T62) Bayesian closed surface fitting through tensor products, IISA Conference on Probability, Statistics, and Data Analysis, NCSU, Raleigh (April 2011)
- (T63) Posterior consistency in conditional distribution estimation, Session on Bayesian nonparametrics, 3rd ERCIM WG Conference on Computing & Statistics, London (December 2010)
- (T64) Nonparametric Bayes mean regression and conditional density estimation: theory & some applications, Carlo Alberto Stochastics Workshop, Moncalieri, Italy (June 2010)

## **TEACHING EXPERIENCE**

---

- Introductory Probability I, STA4442/5440, FSU, Fall 2012, Fall 2013
- Fundamentals of Biostatistics, STA5172, FSU, Spring 2013, Spring 2014
- Nonparametric Bayes methods, STA5934, FSU, Fall 2014, Fall 2016
- Statistical Inference, STA5327, FSU, Spring 2015, Spring 2016
- Advanced Probability and Inference II, STA6448, FSU, Spring 2016
- Principles of Statistics I, STA211, TAMU, Fall 2017
- Statistical Methodology I, STA613, TAMU, Spring 2018, Spring 2019, Spring 2020, Spring 2021, Spring 2022
- Advanced Statistical Computation, STA605, TAMU, Fall 2018, Fall 2020, Fall 2021, Fall 2022
- Contraction theory for posterior distributions and their variational approximations, STAT 689 (Spring 2019, 1 credit course, co-taught with Dr. Anirban Bhattacharya)
- Advanced algorithms in Bayesian computing, STAT 695 (Fall 2019, 1 credit course)
- Undergraduate Bayesian Statistics, STAT 438 (Spring 2020, Spring 2021)
- Undergraduate Mathematical Statistics II, STAT 415 (Spring 2023)

## MENTORING

---

### A PhD student advising

#### A.1 Florida State University

- Yuanyuan Tang, PhD, Florida State University, (Senior Biostatistician at Elli Lilly; Graduated Summer 2013), jointly co-advised with Dr. Debajyoti Sinha. Winner of R.A. Bradley Award for best dissertation in the department of statistics in 2013.
- Gautam Sabnis, Florida State University, (Biostatistician at the Jackson Laboratory, Maine; Graduated Summer 2017)
- Junxian Geng, Florida State University, (Biostatistician at Boehringer Ingelheim; Graduated Summer 2017), co-advised with Dr. Elizabeth Slate. Winner of R.A. Bradley Award for best dissertation in the department of statistics in 2017.
- Hanning Li, Florida State University, (Data Scientist at SnapChat; Graduated Fall 2017).
- Kumaresh Dhara, Florida State University, co-advised with Dr. Debajyoti Sinha. (Mathematical Statistician, FDA Graduated Summer 2018)
- Sutanoy Dasgupta, Florida State University, (2014 - 2019), co-advised with Dr. Anuj Srivastava. (Visiting Assistant Professor at Texas A&M University, Graduated Summer 2019).

#### A.2 Texas A&M University

- Sean Plummer, Texas A&M University, (2017 - 2021), (Assistant Professor, University of Arkansas, Fayetteville, Graduated Summer 2021).
- Yabo Niu, Texas A&M University, (2017 - 2019), co-advised with Dr. Bani Mallick. (Assistant Professor, University of Houston, Graduated Summer 2019)
- Shuang Zhou, Texas A&M University, (2016 - 2020), co-advised with Dr. Anirban Bhattacharya. (Assistant Professor at Arizona State University, Graduated Summer 2020).
- Satwik Acharya, Texas A&M University, (2017 - 2020), co-advised with Dr. Anirban Bhattacharya. (Postdoctoral Fellow at University of Michigan, Graduated Summer 2020)
- Biraj Subhra Guha, Texas A&M University, (2017 - 2021), co-advised with Dr. Anirban Bhattacharya, (Postdoctoral fellow at University of Rochester and University of North Carolina, Chapel Hill).
- Daniel Zilbur, Texas A&M University, (2018 - 2021), co-advised with Dr. Matthias Katzfuss, (Postdoctoral fellow at NIH).
- MuhammadReza Armandpour, Texas A&M University, (2018 - 2022), co-advised with Dr. Jianhua Huang, (Senior Machine Learning Scientist at Apple).
- Eric Chuu, Texas A&M University, (2018 - 2022), co-advised with Dr. Anirban Bhattacharya, (Data Scientist at Quantifind).
- Patrick Ding, Texas A&M University, (2018 - 2022), (Data Scientist at Microsoft).
- Indrajit Ghosh, Texas A&M University, (2017 - 2022), co-advised with Dr. Anirban Bhattacharya, (Biostatistician at Eli Lilly).
- Abhisek Chakraborty, Texas A&M University, (2020 - present), co-advised with Dr. Anirban Bhattacharya.
- Snigdha Das, Texas A&M University, (2021 - present).

- Niladri Kal, Texas A&M University, (2022 - present), co-advised with Dr. Rajarshi Guhaniyogi.
- Sakul Mahat, Texas A&M University, (2023 - present), co-advised with Dr. Anirban Bhattacharya.

## **B Postdoc advising**

- Prasenjit Ghosh, (2018-2020), Instructional Assistant Professor, TAMU.
- Sutanoy Dasgupta, (2019-2021), Visiting Assistant Professor, TAMU.
- Peng Zhao, (2020 - 2023), Assistant Professor, University of Delaware.
- Prateek Jaiswal (2021 - 2024), Clinical Assistant Professor, Purdue University.
- Qingyang (Kevin) Liu (2023 - Present)

## **C Membership in Masters Thesis committee**

- Charles Martin, MS, Texas A&M University (graduated 2019)
- Novin Ghaffari, University of Texas at Austin (Statistics and Data Sciences), (graduated 2019)

## **D Undergraduate student mentoring**

- Carlos Johnson, Texas A&M University (summer 2020)
- Corina Ramont, Texas A&M University (Fall 2022)
- Ethan McDonald, Texas A&M University (Fall 2022)
- Irene Jun, Clairemont McKenna College (Summer 2023, Biomedical Informatics and Behavioral Sciences (BIBS) Summer Research Program)
- Noah Joseph, Texas A&M University (Summer 2023, Biomedical Informatics and Behavioral Sciences (BIBS) Summer Research Program)

## **E Doctoral Dissertation committee**

### **E.1 Florida State University**

- Felicia Williams, PhD, Florida State University (graduated 2013)
- Michael Rosenthal, PhD, Florida State University (graduated 2014)
- Zhengwu Zhang, PhD, Florida State University (graduated 2015)
- Danisha Baker, Florida State University, (graduated 2017)
- Mark Orndorff, Florida State University, (2015 - 2017)
- Ruite Guo, Florida State University, (graduated 2017)
- Cherry Gupta, Florida State University, (graduated 2016)
- Garret Vo, Florida State University (Industrial Engineering), (2014 - 2017)
- Kangwei Xing, Florida State University (Math), (2015 - 2017)
- Xin Li, Florida State University (Industrial Engineering), (2015 - 2017)

## **E.2 Texas A&M University**

- Jingjie Zhang, Texas A&M University (Statistics), (2017 - 2020)
- Sandipan Pramanik, Texas A&M University (Statistics), (2018 -)
- Pallavi Ray, Texas A&M University (Statistics), (2018 -)
- Naveed Merchant, Texas A&M University (Statistics), (2019 -)
- Zhao Tang Luo, Texas A&M University (Statistics), (2019 -)
- Honggang Wang, Texas A&M University (Statistics), (2019 -)
- James Dole, Texas A&M University (Statistics), (2019 -)
- Fei Ding, Texas A&M University (Statistics), (2019 -)
- Brittany Alexander, Texas A&M University (Statistics), (2020 -)
- Shuya Yu, Texas A&M University (Math), (2019 -)
- Vamsi Amalladinne, Texas A&M University (ECE), (2020 -)
- Felix Jimenez, Texas A&M University (Statistics), (2022 -)
- Issac Ray, Texas A&M University (Statistics), (2022 -)
- Cameron Parker, Texas A&M University (Physics), (2022 -)
- Donald Turner, Texas A&M University (Statistics), (2022 -)
- Xingchi Li, Texas A&M University (Statistics), (2022 -)
- Changwoo Lee, Texas A&M University (Statistics), (2022 -)
- Bowen Lei, Texas A&M University (Statistics), (2022 -)
- Honggang Wang, Texas A&M University (Statistics), (2022 -)
- Jiangyuan Li, Texas A&M University (Statistics), (2022 -)
- Jiyoung Park, Texas A&M University (Statistics), (2022 -)
- Shurui Gui, Texas A&M University (CECN), (2023 -)

## **DEPARTMENTAL / COLLEGE COMMITTEE SERVICE**

---

### **A Departmental committee**

- Colloquium chair for FSU Statistics, 2013-2014
- Promotion & Tenure Committee, TAMU Statistics, 2017 - 2020; 2023 - present
- Graduate Program Committee, TAMU Statistics, 2018 - present
- Ph.D. Student Evaluation Committee, TAMU Statistics, 2018 - present
- Parzen Graduate Research Fellowship Committee, TAMU Statistics, 2018
- Raymond Carroll Young Investigator award committee, TAMU Statistics, 2019
- Member of SETCASA student paper award committee, TAMU Statistics, 2019
- Graduate student recruiting committee, 2019



- Head Search Committee, TAMU Statistics, 2019.
- Member of TAMU-RUC program Advisory Board, 2019 - present
- Faculty Search Committee, TAMU, 2020-2021.
- Chair of Search Committee, Faculty investment hire, TAMU, 2019-2020
- Director of PhD program, TAMU, 2021-

## **B College committee**

- Member of Executive committee of Foundations of Interdisciplinary Data Science Institute (FIDS), TAMU, 2019 - present
- At large representative for College of Science Faculty Advisory Council, TAMU, 2019 - 2021 (March)

## **PROFESSIONAL ACTIVITIES**

---

### **A Editorial Service**

- Associate Editor of *Journal of Computational and Graphical Statistics*, (Aug 2024 - present)
- Associate Editor (Action Editor) of *Journal of Machine Learning Research*, (Dec 2021 - present)
- Topic Editor of *Entropy*, (April 2021 - present)
- Associate Editor of *Sankhya, Series A* (Mathematical Statistics and Probability) (December 2015 - present)

### **B Referee service**

- Reviewer for *Journal of the American Statistical Association*, *Biometrika*, *Journal of the Royal Statistical Society, Series B*, *The Annals of Statistics*, *Bernoulli*, *The Annals of Applied Statistics*, *Journal of Econometrics*, *Bayesian Analysis*, *Journal of Machine Learning Research*, *Journal of Statistical Planning and Inference*, *Journal of Nonparametric Statistics*, *Electronic Journal of Statistics*, *Biometrics*, *Metrika*, *IEEE Transactions in Signal processing*.
- Invited Reviewer of AISTATS 2014, AISTATS 2015, NIPS 2015, NeurIPS 2019
- Invited Reviewer of Mathematical Reviews

### **C Reviewer / committee member of national student paper competitions and other awards**

- Reviewer for SBSS Student paper competition, 2015, 2019, 2021
- Reviewer for IISA Student paper competition, 2021
- Savage Award Committee (Theory and Methods Section), 2021
- IISA Young Researcher Award Committee (Theory and Methods Section), 2021, 2022, 2023

### **D Adhoc grant panel member**

Army research Office & NSF proposals

## **E Chairing sessions / Discussant / Program committee member at conferences**

- Session chair at JSM 2012 on *Topics in Bayesian Statistics*
- Invited Discussant for ISBIS / SLDM 2014, Durham, NC (June 2014)
- Invited Discussant at OBayes 2017, Austin, TX.
- Scientific Program Committee member, Ecosta 2019, June 25-29, 2019, Taiwan.
- Scientific Program Committee member, EAC-ISBA conference 2023, Qingdao University, China.
- Scientific Program Committee member, “Basu-Bahadur Conference”, April 19-21, Florida State University, Tallahassee, Florida.
- Co-chair of Local Organizing committee, “Bayes Comp 2027”, TBA, Texas A&M University, College Station.
- IISA Representative in JSM 2025 Scientific program Committee.

## **F Organizing sessions / workshops at conferences**

- “Bayesian asymptotics in big models” Invited Session, JSM 2013
- Invited session in ISBIS/SLDM Meeting on June 9-11, 2014
- “High-dimensional inference: classical and Bayesian perspectives”, Invited Session, IISA 2014, Colombo, Sri Lanka, December, 2014.
- “Modern advancements in longitudinal data analysis” Invited Session, ISI World Statistics Congresses at Rio de Janeiro, Brazil from 26-31 July 2015.
- Invited Session in ICSA 2016, Atlanta on June 12-15, 2016, Atlanta
- “Bayesian methods for complex data” Invited Session, IISA 2018, Gainesville, FL.
- “Theoretical advances in variational inference”, Ecosta 2019, June 25-29, 2019, Taiwan.
- “Bayesian data integration of complex objects”, CFE 2020, Virtual conference.
- “Algebraic and geometric methods in inference”, JSM 2023, Toronto.
- “Bayesian statistics and statistical learning: new directions in algebraic statistics”, Dec 11-16, IMSI 2023 Workshop.
- “Efficient Approximate Bayesian Inference”, Banff International Research Station, March 9-14, 2025

## **TECHNICAL SKILLS**

---

**MATLAB** experience: statistics, linear algebra and nonlinear numerical methods

**MATLAB** toolboxes: statistics, neural network, signal processing

**R** toolboxes: mcmc, coda, spbayes, tgp, bart

Programming: C, C++

Applications:  $\text{\TeX}$ ,  $\text{\LaTeX}$ ,  $\text{\BibTeX}$ , Microsoft Office, and other common productivity packages for Windows, OS X, and Linux platforms

Operating Systems: MAC-OSX, Microsoft Windows XP/2000, Linux, Solaris, and other UNIX variants