

# Jyotishka Datta

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## CONTACT INFORMATION

Department of Statistics  
Virginia Tech  
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E-mail: [jyotishka@vt.edu](mailto:jyotishka@vt.edu)  
Webpage: <https://jyotishkadatta.wordpress.com/>  
Git: <https://github.com/DattaHub>

## RESEARCH INTERESTS

Bayesian methodology and theory, Statistical Computing, Sparse signal recovery, Global-local shrinkage priors, Changepoint detection, Default Bayes, Discrete data, High-dimensional data, Geospatial data, Compositional data. Applications in Cancer Genomics, Epidemiology, Neuroscience, Bioinformatics, Criminology and Ecology.

## PROFESSIONAL EXPERIENCE

2021 to present: Assistant Professor, [Department of Statistics, Virginia Polytechnic Institute and State University](#), Blacksburg.

2016 to 2020: Assistant Professor, [Department of Mathematical Sciences, University of Arkansas](#), Fayetteville.

2014 to 2016: Postdoctoral Associate. [Department of Statistical Science, Duke University](#), Durham, NC., and [Statistical and Applied Mathematical Sciences Institute](#), Durham, NC.

- **Postdoctoral advisors:** Prof. David B. Dunson (Statistical Science), and Prof. Sandeep S. Dave (Medicine), Duke University.
- **SAMSI Program:** Beyond Bioinformatics.

2008 - 2009: *Associate Manager*, Analytics, Credit Cards, Global Retail & Commercial Banking, India. [Barclays Bank, PLC](#), Mumbai, India.

## EDUCATION

2009 - 2014: Ph.D. in Statistics, [Purdue University](#), West Lafayette, IN.

- Dissertation Topic: "Some Theoretical and Methodological Aspects of Multiple Testing, Model Selection and Related Areas",
- **Ph.D. advisor:** Prof. Jayanta K. Ghosh and Prof. Michael Yu Zhu.

2003 - 2008: B.Stat and M. Stat, [Indian Statistical Institute](#), Kolkata, India.

- Dissertation: "Efficiency Versus Robustness - An Weighted Likelihood Equation Approach", Advisor: Prof. Ayanendranath Basu.

## AWARDS AND HONORS

- **Lay Nam Chang Dean's Discovery Fund**, Virginia Tech, 2022-23.
- **Robert and Sandra Connor Endowed Faculty Fellowship**, University of Arkansas, 2018-19. [News article](#).
- **William J. Studden Publication Award** for an outstanding publication in a mathematical statistics journal, 2013, Department of Statistics, Purdue University.
- **Honorable Mention Award for Best Theoretical Poster** at the O'Bayes 2013: The Tenth International Workshop on Objective Bayesian Statistics, December 15-19, Durham, USA.
- **Travel Awards:**
  - 19th IMS Meeting of New Researchers in Statistics and Probability, 2016
  - International Indian Statistical Association 2016 Conference
  - ASA-Kutner faculty poster session at the SRCOS 2016 Summer Research Conference
  - O-Bayes 2013 : The Tenth International Workshop on Objective Bayesian Statistics
- Award for Academic Excellence, Indian Statistical Institute, Kolkata, 2008.
- Ranked **8th** and **10th** in State Level Joint Entrance Examination in **Engineering** and **Medicine** (out of approximately two hundred thousand students), 2003.

## PUBLICATIONS

**My Google Scholar Profile:** <http://bit.ly/1OTdd9h>

ARTICLES UNDER  
REVIEW OR  
REVISION

- [1] **Datta, J.**, Banerjee S., and Dunson D. (202x), "Nonparametric Bayes multiresolution testing for massive-dimensional rare events".
- [2] **Datta, J.** and Polson N. (202x). "Inverse Probability Weighting: the Missing Link between Survey Sampling and Evidence Estimation". [pre-print](#).
- [3] **Datta, J.** and Polson N. (202x). "Quantile Importance Sampling". [pre-print](#).
- [4] Kundu, R.; **Datta, J.**; Ray, D.; Bhattacharyya, R.; Mishra, S.; Zimmermann, L.; Mukherjee, B. (2023) "Assessing Effects of Interventions on COVID-19 Mortality in South Asian Countries using Counterfactual-based Transmission Models".
- [5] Sagar K. N., Banerjee, S., **Datta, J.**, and Bhadra A. (202x), "Maximum a Posteriori Estimation in Graphical Models Using Local Linear Approximation", [pre-print](#).
- [6] Guha, N. and **Datta, J.** (202x), "Consistent Model Selection and Change Point Recovery for High-dimensional Changing Linear Regression". [pre-print](#).
- [7] Sagar K. N., Banerjee, S., **Datta, J.**, and Bhadra A. (202x), "Precision Matrix Estimation under Horseshoe-like Penalty". [pre-print](#). Winner (Sagar K.N.) International Biometric Society Eastern North American Region's (ENAR) Distinguished Student Paper Awards, ENAR 2022.
- [8] Bhadra, A., **Datta, J.**, Polson, N. G., Sokolov, V., Xu, J. (202x): "Merging Two Cultures: Deep and Statistical Learning". [pre-print](#).
- [9] Bhadra A., Sagar K. N., Banerjee, S., and **Datta, J.** (202x), "Graphical Evidence". [pre-print](#).

PUBLISHED OR  
ACCEPTED  
JOURNAL ARTICLES

- [10] Boss, J., **Datta, J.**, Wang, X., Park, S., Kang, J., Mukherjee, B. (2023), "Group Inverse-Gamma Gamma Shrinkage for Sparse Regression with Block-Correlated Predictors". *Bayesian Analysis*, **1(1)**, 1-30. [pre-print](#). Winner (Jonathan Boss), International Biometric Society Eastern North American Region's (ENAR) Distinguished Student Paper Awards, ENAR 2021.
- [11] Jelesko, J.; Thompson, K.; Magerkorth, N.; Verteramo, E.; Becker, H.; Flowers, J.; Sachs, J.; **Datta, J.**; Metzgar, J. (2023), "Poison Ivy (*Toxicodendron radicans*) Leaf Shape Variability: Why Plant Avoidance-By-Identification Recommendations Likely Do Not Substantially Reduce Poison Ivy Rash Incidence." *Plants, People, Planet.*, Accepted.
- [12] Ek, A., Drawve, G., Robinson, S., **Datta, J.** (2023), "Quantifying the Effect of Socio-Economic Predictors and the Built Environment on Mental Health Events in Little Rock, AR." *ISPRS International Journal of Geo-Information.*; **12(5)**: 205. [open-access](#).
- [13] Bhaduri, R., Kundu, R., Purkayastha, S., Kleinsasser, M., Beesley, L., Mukherjee, B. and **Datta, J.** (2022), "Extending the Susceptible-Exposed-Infected-Removed (SEIR) model to handle the false negative rate and symptom-based administration of COVID-19 diagnostic tests: *SEIR-fansy*" *Statistics in Medicine*. <https://doi.org/10.1002/sim.9357>.
- [14] Harris, C.; Drawve, G.; Thomas, S.; **Datta, J.**; Steinman (2022): "Innovative Data in Communities and Crime Research: An Example at the Intersection of Racial Segregation, Neighborhood Permeability, and Crime", 1-18, *Journal of Crime and Justice*.

- [15] Chaudhuri, J.; Biswas, S.; Gangopadhyay, G.; Biswas, T.; **Datta, J.**; Biswas, A.; Datta, A.; Mukherjee, A.; Bhattacharya, P.; Hazra, A. (2022). "Correlation of ATP7B gene mutations with clinical phenotype and radiological features in Indian Wilson Disease patients", **122 (1)**, 181-190, *Acta Neurologica Belgica*.
- [16] **Datta, J.**, and Mukherjee, B. (2021). "Discussion on "Regression Models for Understanding COVID-19 Epidemic Dynamics with Incomplete Data"", Invited discussion, *Journal of American Statistical Association*. 116 (536), 1583-1586.
- [17] Rezaeiahari, M.; Brown, C. C.; Ali, M. M.; **Datta, J.**; Tilford, J. M.; (2021) "Understanding Racial Disparities in Severe Maternal Morbidity Using Bayesian Network Analysis". *Accepted, PLoS One* ;16(10):e0259258. [URL](#).
- [18] Li, Y., **Datta, J.**, Craig, B.A., and Bhadra, A. (2021). "Joint mean–covariance estimation via the horseshoe". *Journal of Multivariate Analysis*. 183 (2021): 104716.[[preprint](#)].
- [19] Gu, X., Mukherjee, B., Das, S., **Datta, J.** (2021). "COVID-19 prediction in South Africa: Understanding the unascertained cases–the hidden part of the epidemiological iceberg". *Journal of Statistical Research*. (**Invited paper** for special issue to celebrate 50-year independence of Bangladesh). [preprint](#).
- [20] Deshwal, A., Phan, P., **Datta, J.**, Kannan, R., Suresh Kumar, T.K., "A Meta-Analysis of the Protein Components in the Rattlesnake Venom". *Toxins*, **13 (6)**, 372.
- [21] Steinman, H., Drawve, G., **Datta, J.**, Harris, C. T., and Thomas, S. A. (2021): "Risky Business: Examining the 80-20 Rule in Relation to a RTM Framework". (Criminal Justice Review), **46 (1)**, 20-39.
- [22] Bhadra, A., **Datta, J.**, Li, Y., and Polson, N. G.(2020). (\*alphabetical<sup>1</sup>), "Horseshoe Regularization for Machine Learning in Complex and Deep Models". <https://doi.org/10.1111/insr.12360>, *International Statistical Review*. [[preprint](#)].
- [23] Bhadra, A., **Datta, J.**, Polson, N. G., & Willard, B. T (2020), (\*alphabetical), "Global-local mixtures - A Unifying Framework". <https://doi.org/10.1007/s13171-019-00191-2>, *Sankhya A - J. K. Ghosh Memorial Issue*. [[blog article on the paper](#)]
- [24] Drawve, G., Harris, C., Thomas, S. A., **Datta, J.**, Cothren, J. (2020): "Current and New Frontiers: Exploring how Place Matters through Arkansas NIBRS Reporting Practices". (Crime & Delinquency), **67 (6-7)**, 941-969.
- [25] Bhadra, A., **Datta, J.**, Li, Y., and Polson, N. G. (2019), (\*alphabetical), "Prediction Risk for Global-Local Shrinkage Regression". **20 (78)**, 1-39, *Journal of Machine Learning Research*. [[full-text](#)].
- [26] Bhadra, A., **Datta, J.**, Polson, N. G., & Willard, B. T (2019), (\*alphabetical), "Lasso Meets Horseshoe - A Survey" **34(3)**, 405-427. *Statistical Science*. [[full-text](#)]
- [27] Bhadra, A., **Datta, J.**, Polson, N. G., & Willard, B. T (2019), (\*alphabetical), "Horseshoe Regularization for Feature Subset Selection". <https://doi.org/10.1007/s13571-019-00217-7>, *Sankhya B*. [[preprint](#)]
- [28] Bhadra, A., **Datta, J.**, Polson, N. G., & Willard, B. T (2017), (\*alphabetical) "The Horseshoe+ Estimator of Ultra-Sparse Signals", *Bayesian Analysis*. **12 (4)**, 1105-1131. [[full-text](#)]

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<sup>1</sup>(Articles co-authored with Prof. Polson have alphabetically ordered author-list.)

- [29] Reddy, A., Zhang, J., Davis, N. S., Moffitt, A. B., Love, C. L., Waldrop, A., . . . , **Datta, J.**, ... & Dave, S. S. (2017). Genetic and functional drivers of diffuse large B cell lymphoma. *Cell*, 171(2), 481-494. Featured on EurekAlert!, the newsletter from AAAS, [link](#).
- [30] Moffitt, A. B., Ondrejka, S. L., McKinney, M., Rempel, R. E., Goodlad, J. R., Teh, C. H., ... **Datta, J.**, ... & Dave, S. S. (2017). "Enteropathy-associated T cell lymphoma subtypes are characterized by loss of function of SETD2", *Journal of Experimental Medicine*, **214**(5), 1371-86.
- [31] McKinney, M., Moffitt, A. B., Gaulard, P., Travert, M., De Leval, L., Nicolae, A., ... , **Datta, J.**, ... & Davé, S. S. (2017) "The Genetic Basis of Hepatosplenic T Cell Lymphoma". *Cancer Discovery*, **CD-16-0330**.
- [32] **Datta, J.** and Dunson, D. B. (2016), "Bayesian inference on quasi-sparse count data", *Biometrika*, **103** (4): 971-983. [[full-text](#)]
- [33] Healy, J. A., Nugent, A., Rempel, R. E., Moffitt, A. B., Davis, N. S., Jiang, X., ... , **Datta, J.**, ... & Dave, S. S. (2016). "GNA13 loss in germinal center B cells leads to impaired apoptosis and GCB cell persistence and promotes lymphoma in vivo". *Blood*, **127**(22), 2723-2731.
- [34] Bhadra, A., **Datta, J.**, Polson, N. G., & Willard, B. T (2016), (\*alphabetical) "Default Bayesian analysis with global-local shrinkage priors", *Biometrika*, **103** (4): 955-969. [[full-text](#)]
- [35] Chaudhuri, Biswas, **Datta**, . . . , Chakarabrtty (2016). "Evaluation of malnutrition as a predictor of adverse outcomes in febrile neutropenia associated with pediatric hematological malignancies." *Journal of Paediatrics and Child Health*, **52** (7), 704-709.
- [36] Libohova, Z., Winzeler, H. E., Lee, B., Schoeneberger, P. J., Datta, J., and Owens, P. R. (2016). "Geomorphons: Landform and property predictions in a glacial moraine in Indiana landscapes". *Catena*, **142**, 66-76.
- [37] Parthasarathy, **Datta**, Torres, Hopkins, and Bartlett (2014). "Age-Related Changes in the Relationship Between Auditory Brainstem Responses and Envelope-Following Responses." *Journal of the Association for Research in Otolaryngology*. **15** (4), 649-661.
- [38] **Datta, J.**, and Ghosh, J. K. (2014), "Bootstrap – An Exploration." *Statistical Methodology*: **20**, 63-72.
- [39] **Datta, J.**, and Ghosh, J. K. (2013), "Asymptotic Properties of Bayes Risk for the Horseshoe Prior". *Bayesian Analysis* **8**(1), 111-132. [[full-text](#)].
- REFEREED BOOK CHAPTERS
- [40] Young, S., **Datta, J.**, Kar, B., Huang, X., Williamson, M., Tullis, J., and Cothren, J. (2021), "Challenges and limitations of geospatial data and analyses in the context of COVID-19". "*Human Dynamics in Smart Cities*", Springer.
- [41] **Datta, J.** and Ghosh, J. K. (2015), "In Search of Optimal Objective Priors for Model Selection and Estimation". In S. Upadhyay, U. Singh, D. Dey, & A. Loganathan (Eds.), *Current Trends in Bayesian Methodology with Applications*, 225-239. Chapman & Hall/CRC Press.
- [42] Dasgupta, R., Ghosh, J. K., Chakravarty, S., and **Datta, J.** (2015), "Some Remarks on Pseudo Panel Data". *Growth Curve and Structural Equation Modeling*, 25-34. Springer International.

- PEER-REVIEWED CONFERENCE PROCEEDINGS
- [43] Chakraborty, Verma, Sahoo, and **Datta, J.** (2020), "FairMixRep: Self-supervised Robust Representation Learning for Heterogeneous Data with Fairness constraints", IEEE International Conference on Data Mining Workshop (ICDMW). 2020. [preprint](#).
- [44] LeBow V., Bernhardt-Barry, M. L., and **Datta, J.** (2018), "Improving Spatial Visualization Abilities Using 3D Printed Blocks". 2018 ASEE Annual Conference & Exposition, Salt Lake City, Utah. [full-text](#).
- OTHER PUBLICATIONS
- [45] **Datta, J.** and Drawve, G., "Does Machine Learning Reduce Racial Disparities in Policing?", IISA Newsletter, December, 2016.
- [46] **Datta, J.** and Ghosh, J.K., "Optimal Objective Priors for Linear Models", Indian Bayesian Society Newsletter, Vol XI, No. 1, May, 2014.
- MANUSCRIPTS IN PREPARATION
- [47] **Datta, J.**, Heiner, M., Ovaskainen, O. and Dunson, D.B. (202x), "Sparse generalized Dirichlet distributions for high-dimensional probabilities".
- [48] Sengupta, S., **Datta, J.**, Chen, Y. (202x), "Proximity Block-models for Network Data".
- [49] **Datta, J.**, Shi, P. and Bandopadhyay, D. (202x), "Shrinkage and Selection for Compositional Data".
- [50] Guha, N. and Datta, J. (202x), "A Random Projection Based Technique for Change Point Estimation in Ultra-high Dimension"

## FUNDING

### External

- Predict Align Prevent: Developing a spatial child maltreatment risk machine learning model for the State of Texas ("Geographic Location"), Award amount: USD 44,694. PI: Jyotishka Datta. (with University of Arkansas, Upbring Inc. and Texas DFPS.)
- Collaboration with VA's FAACT Project to inform Real-world Research and Translation (08-01-2022 - 10-31-2022), Funder Name: Qlarion, Award Amount: USD 23,332. PI: Alexandra Hanlon, Virginia Tech, CBHDS.
- *NSF-DMS-Statistics*, "New Directions in Bayesian Change-point Analysis", co-PI: Jyotishka Datta, PI: Nilabja Guha. Total award: \$139,984.00, Sub-award to VT: \$43,891. 08/15/2020 - 08/15/2023. ([link to abstract](#)).
- *NSF-DMS-Statistics*, "Spring Lecture Series 2019-2020", co-PI, Jyotishka Datta, Avishek Chakraborty (co-PI) and PI: Giovanni Petris (\$ 9,956.00). 04/01/2019 - 03/31/2022.
- *Arkansas Children's Trust Fund*, "Child Maltreatment in Little Rock: Aligning Services with Risk", co-PI, October 2019, partnership with Predict, Align, Prevent. (\$20,000).
- *Arkansas Children's Trust Fund*, "Child Maltreatment Pilot Project in Little Rock, Arkansas.", co-PI, January 2019. partnership with Predict, Align, Prevent. (\$27,000).
- *NSF Postdoctoral Fellowship*, Statistical and Applied Mathematical Sciences Institute, 2015-2016.

### Internal

- **Virginia Tech:** Lay Nam Chang **Dean's discovery fund**. 2022. [\$10,000 (College of Science) + \$5,592 (Statistics) = \$15,592].
- **University of Arkansas: Robert and Sandra Connor Endowed Faculty Fellowship**, 2018-19. (\$5,000)
- **University of Arkansas: Datta, J.** and Bernhardt-Barry, M. L., "Predicting Soil Type from Non-destructive Geophysical Data", December 2018, Provost's Collaborative Research Grant (\$2,200).
- **University of Arkansas: Datta, J.**, Drawve, G., Harris, C., and Thomas, S. (\*alphabetical). November 2017. "Participant Field Training with Little Rock Police Department." Provost's Collaborative Research Grant (\$ 2,000).

- **University of Arkansas: Datta, J., M. A. Abba\*** (\*graduate student). November 2016. "Multiresolution Nonparametric Bayesian Hotspot Detection." Provost's Collaborative Research Grant (\$2,000).
- **Purdue University Summer Research Grant**, Department of Statistics, Purdue University, **2011-2013**.

INVITED TALKS

\* : Virtual presentation. Acronyms: IISA: International Indian Statistical Association, ICSA: International Chinese Statistical Association, JSM: Joint Statistical Meeting, ISBA: International Society of Bayesian Analysis, ENAR: Eastern North American Region. International Biometric Society.

- [1] August 8, 2023: Joint Statistical Meeting (JSM), Toronto, Canada.
- [2] August 2, 2023: Econometrics and Statistics (EcoSta) 2023, Tokyo, Japan.
- [3] June 6, 2023: New England Statistical Society (NESS) Symposium, Boston, MA.
- [4] June 2, 2023. Society of Industrial and Applied Mathematicians (SIAM) Conference on Optimization (OP23), Seattle, WA,
- [5] December 26, 2022: IISA International Conference on Statistics at IISc Bangalore, India.
- [6] December 2, 2022: INFORMS student Colloquium, Department of Industrial Engineering, Virginia Tech.
- [7] October 7, 2022: Departmental Colloquium, Department of Mathematics and Statistics, University of Maryland Baltimore County.
- [8] September 29, 2022, Departmental Colloquium, Department of Statistics, University of Georgia.
- [9] September 22, 2022, Departmental Colloquium, Department of Statistics, University of Florida.
- [10] August 11, 2022. Joint Statistical Meeting, 2022, Session title: "Bayesian penalized likelihood methods for Gaussian graphical models". Washington, DC.
- [11] July 8-9, 2022, 6th EAC-ISBA (Eastern Asia Chapter) Conference.
- [12] May 4, 2022: UP-STAT 2022 Conference in Biostatistics, at University at Buffalo.
- [13] April 4, 2022: B3D (Biostatistics - Biomedical Informatics - Big Data) Seminar Series, Department of Biostatistics at the Harvard T.H. Chan School of Public Health.
- [14] February 2, 2022: Departmental Colloquium. Department of Statistics, University of Connecticut.
- [15] December 20, 2021. CMStatistics 2021. Virtual. Invited Session: EO402: Bayesian methods in structured data and high-dimensional problems.
- [16] October 27, 2021: Applied Statistics Workshop. University of Tokyo (Virtual).
- [17] September 14, 2021: Invited Session, ICSA 2021: Invited Session 82: Flexible and efficient Bayesian methods for complex data modeling.
- [18] September 8, 2021: International Indian Statistical Association Statistics and Data Science Innovations Series Webinar.
- [19] June 29-July 3, 2021: Invited Session, ISBA 2020 World Meeting at Kunming, China. Virtual.

- [20] April 29, 2021: Richard F. Barry Seminar, Department of Mathematics and Statistics, Old Dominion University.
- [21] December 11-13, 2020 (forthcoming): Invited Session ,“Bayesian Shrinkage for Continuous & Discrete Data– a Tale of Two Cities”, ICSA Applied Statistics Symposium 2020. Houston, TX. (Virtual)
- [22] September 10, 2020: Departmental Colloquia: Department of Statistics and Actuarial Science, The University of Iowa. “New Directions in Bayesian Shrinkage for Structured Data”.
- [23] August 1-6, 2020: Invited Session (Bayesian methods in structured data and high dimensional problem: some recent advances), Joint Statistical Meeting at Philadelphia, PA. (Virtual)
- [24] March 2020: Invited session “Innovative Statistical Approaches for High-Dimensional Omic and Microbiomic Data”, Title: “Sparse Generalized Dirichlet Distributions for Microbiome Compositional Data”,in ENAR 2020, Nashville, Tennessee. (Virtual)
- [25] December 2019: Invited Session “Bayesian Modeling and Computation”, Title: ‘Bayesian Shrinkage for Continuous & Discrete Data – a Tale of Two Cities” in IISA 2019 Conference, Mumbai, India.
- [26] August 2019: Special Invited Session in Memory of Prof. J.K. Ghosh, Title: “Bayesian Sparse Signal Recovery: Gaussian Models and Beyond”, in Joint Statistical Meeting, Denver, Colorado.
- [27] August 2019: Invited Talk (Innovative Approaches for High-dimensional Omics and Neuroimaging Data) in Joint Statistical Meeting, Denver, Colorado.
- [28] May 2019: Invited Talk, “Bayesian Shrinkage for Continuous & Discrete Data– a Tale of Two Cities”, Department of Biostatistics, University of Michigan, Ann Arbor.
- [29] January 2019: Invited Session (Multiple Testing) in Young Statisticians’ Meet: Data Science in Action: January 4-5, 2019, Indian Statistical Institute, Kolkata, India.
- [30] December 2018: Plenary Session in 10th International Calcutta Triennial Symposium, December 27-30, 2018, Kolkata, India.
- [31] April 2018, “Bayesian Sparse Signal Recovery: Horseshoe Regularization”, Departmental Statistics Colloquium, Florida State University.
- [32] December 2017: “Horseshoe Regularization for Feature Subset Selection”, 2017, IISA International Conference on Statistics at Hyderabad, India.
- [33] December 2017: “Horseshoe Regularization for Feature Subset Selection”, ERCIM WG Meeting, CMStatistics 2017 Conference at London, UK.
- [34] August 2017: “Detecting rare mutational hotspots by multiscale BNP method”, Joint Statistical Meeting, Baltimore, Maryland.
- [35] January 2017: “Sparse signal recovery and default Bayesian analysis using global-local shrinkage priors”, Applied Statistics Unit, Indian Statistical Institute, Kolkata.
- [36] August, 2016: “Default Bayesian analysis for global-local shrinkage priors”, IISA Conference, Corvallis, Oregon.
- [37] August 2016: “Shrinkage Priors for High-Dimensional Sparse Poisson Means”, Joint Statistical Meeting, Chicago, Illinois.

- [38] February, 2016: "Shrinkage Priors for High-Dimensional Sparse Poisson Means" (STAT 701 Talk): Duke University.
- [39] December, 2015 - January, 2016: "Sparse Signal Recovery for Discrete & Continuous Data" (Job Talk): Binghamton University, University of Arkansas at Fayetteville, and Clemson University.
- [40] May, 2015: "Multiscale Bayesian cluster detection and testing for whole genome sequencing studies", Transition workshop for "Beyond Bioinformatics", SAMSI, North Carolina.
- [41] August, 2014: "Sparse and Ultra-Sparse Signal Recovery: The Horseshoe and The Horseshoe+Prior", Department of Statistical Science, Duke University.
- [42] January, 2014: "Shrinkage priors for multiple testing and model selection", University of Texas - M. D. Anderson Cancer Center, Houston, TX.
- [43] November, 2013: "In Search of Optimal Objective Priors for Model Selection and Estimation", Mathematical Statistics Seminar, Purdue University.
- [44] May, 2013: "Two-groups and One-Group Models for Multiple Testing", National Institute of Biomedical Genomics, Kalyani, India.

OUTREACH  
ACTIVITIES

- [1] October 21, 2022: Mu-Sigma-Rho Student Seminar at Department of Statistics, Virginia Tech - 'Overview of Bayesian Shrinkage'.
- [2] October 20, 2022: Invited Guest Lecture at Radford City High School - 'Famous Wins and Failures in Statistics'.
- [3] February 5, 2022: Invited Special Lecture as part of India @75 - 'My Statistics - My Story' - Lecture Series at NMIMS University, [Sunandan Divatia School of Science](https://www.nmims.edu/).
- [4] "Understanding Vaccine Efficacy and Effectiveness: A Statistician's Perspective" for the University of Arkansas Honors College course "Vaccine" in May 2021. The video and the slides are available at: <https://scholarworks.uark.edu/hnrcvac/7/> and on youtube: <https://www.youtube.com/watch?v=Jrqv59iyLUE>

CONTRIBUTED  
TALKS AND  
POSTERS

- [1] September, 2016: "Sparse Signal Recovery for Discrete & Continuous Data" and "Detecting rare mutational hotspots by multiscale BNP method", Departmental seminar, University of Arkansas, Fayetteville.
- [2] September, 2015: "Shrinkage Priors for High-Dimensional Sparse Poisson Means", *Poster presentation*, John W. Tukey 100<sup>th</sup> Birthday Celebration at Princeton University.
- [3] September, 2015: "Shrinkage Priors for Sparse High-Dimensional Discrete or Continuous Data". *Talk*, SAMSI postdoc seminar.
- [4] July, 2015: "Bayesian Cluster Detection for Rare Variants", *Poster Presentation*, SAHD (Sensing and Analysis of High Dimensional Data Workshop), Duke University, Durham, NC.
- [5] June, 2015: "Multiscale Bayesian cluster detection and testing for whole genome sequencing studies", *Poster presentation*, SRCOS (Southern Research Conference), Carolina Beach, NC.
- [6] May, 2015: "Multiresolution nonparametric Bayesian cluster detection and association testing for whole genome sequencing studies", *Poster presentation*, CCPS (Cancer Control and Population Sciences Fair), Duke University, NC.



- [7] May, 2015: "Multiresolution nonparametric Bayesian cluster detection and association testing for whole genome sequencing studies with applications in COVID", *Poster presentation*, The Biology of Genomes Meeting, Cold Spring Harbor Lab, NY.
- [8] September, 2014: "Ultra-Sparse Signal Recovery through the Horseshoe+ Prior", *Talk*, SAMSI.
- [9] December, 2013: "In Search of Optimal Objective Priors for Model Selection and Estimation", *Poster presentation*, O-Bayes 2013, Duke University.
- [10] March, 2013: "Two-groups and One-Group Models for Multiple Testing", *Talk*, Machine Learning Seminar, Department of Computer Science, Purdue University.
- [11] October, 2012: "Asymptotic properties of Bayes risk for the Horseshoe prior", *Talk*, Graduate Student Organization Seminar, Department of Statistics, Purdue University.

## MENTORING

### Graduate Students

#### Virginia Tech, Committee Members

- Jie Min (PhD, Statistics).
- Christopher Grubbs (PhD, Statistics, Graduated August 2023.).
- Mohammed Ba-Aoum, (PhD, Industrial and System Engineering)
- Mohammed Al rezq, (PhD, Industrial and System Engineering)
- Katia Tarkhan (MS, DAAS).
- David Edwards (MS, Statistics).
- Eric Larsson (MS, Statistics).

#### University of Arkansas

- Primary Advisor (MS): Ek Alfieri, Apu Chandra Das, Mohamed Abdelkader Abba, Josh Price, Kai Cui.
- Committee Member (MS): Nana Amma Asamoah, April Walker, Md Abul Hayat, Hanna Steinman (Criminology), Sho-Hsien Su, Waltram Ravelombola, Anne Lin, Ji Li, Michael Ellis, James Willbanks, Ruizhe Yin, Shanshan Zhang, Mahboubeh Madadi, Gina Riggio (Cell and Molecular Biology Program).
- Committee Member (PhD):
  1. Ghadeer Mahdi, Department of Mathematical Sciences. (Chair: Dr. Avishek Chakraborty)
  2. Sarah Jones, Food Science. (Chair: Dr. Kristen Gibson)
  3. Thomas Yeargin, Food Science (Chair: Dr. Kristen Gibson)

### Undergraduate Students

#### University of Arkansas

- Honors Thesis Advisor: Kelvin Feng.
- Honors Thesis Committee: Vanessa Lebow, Winson Chee, Dhruva Dasgupta, Christopher Peterson.
- Academic Advising (Math): Jodi Mitchell, Bruce Dunning, Alex Coleman, Rosario Dispensa, Kaylee Henry, David O'Hearn, Lauren Pearce.

## TEACHING EXPERIENCE

- Spring 2021 - now, Department of Statistics, **Virginia Tech**.
  - CMDA 2006. Integrated Quantitative Science (Statistics part).
  - CMDA 2014. Data Matter. Undergraduate course on exploring different kinds of data (numerical, qualitative, text and image).

- STAT 5525. Data Analytics. Graduate course on different tools and techniques for drawing meaningful inference from data, with a comprehensive review of popular Statistics/ML methods.
- CMDA 4654: Intermediate Data Analytics and ML: Undergraduate course on popular tools for analyzing data and modern Statistical and ML methods.
- Fall 2016 - 2020, Department of Mathematical Sciences, **University of Arkansas**. Teaching duties: 2 + 1 courses for first two years, then 2 + 2 courses third year onward.
  - STAT 5443 (Computational Statistics): Spring 2017, 2018 and 2019. Advanced Graduate course. Syllabus: <http://dattahub.github.io/stat5443/syllabus.html>.
  - STAT 4033, (Nonparametric Statistics). Fall 2016, 2017, 2018, 2019. Audience: Undergraduate and Graduate students from quantitative disciplines. Syllabus: <http://dattahub.github.io/stat4033/list.html>.
  - STAT 3013 (Introduction to Probability): Fall 2017, 2018, 2019, Spring 2017, 2018, 2019. Undergraduate Course. Apps: [Central Limit Theorem](#) and [Glivenko-Cantelli Lemma](#)
- Summer 2014, Department of Statistics, **Purdue University**.
  - Stat 301, Introduction to Statistics, Course Coordinator: Meghan Tooman.
  - Responsibilities: Designing and holding recitations and lab sessions for using SPSS for undergraduate students, grading homework, lab exercises, and midterm and final exams.
- Spring 2011-Spring 2013, Department of Statistics, **Purdue University**.
  - Stat 598Z, Introduction to Computing for Statisticians , Instructor: Prof. S. V. N. Vishwanathan.
  - Stat 598G, Introduction to Computational Statistics, Instructor: Prof. Sergey Kirshner.
  - Responsibilities: Holding lab sessions for teaching Statistics using SPSS to small groups of undergraduate students, grading homework, lab exercises, and midterm tests.
  - Lab Website: <https://learning.cs.purdue.edu/courses/sp2013/598z/lab>.
  - Stat 301, Introduction to Statistics, Course Coordinator: Ellen Gundlach.
  - Stat 113, Statistics for Society, Course Coordinator: Prof. John Deely.
  - Responsibilities: Teaching recitation sessions for undergraduate students, holding office hours, grading homework, lab exercises, and the midterm.
- Fall 2010, Department of Computer Science, Purdue University.
  - CS 471, Artificial Intelligence, Instructor: Prof. Alan Qi.
  - Responsibilities: Teaching recitation sessions for undergraduate students (groups of 20), holding office hours, grading homeworks, lab exercises, and the midterm.

CORPORATE  
INTERNSHIP  
EXPERIENCE

[Systat Softwares Asia Pacific Ltd.](#), Bangalore, India.

*Summer Intern*

**May 2005 to July 2005**

- Supervisor: Dr. T. Krishnan.
- Worked on Markov Chain Monte Carlo Methods Using SYSTAT 11 and implementation of Transformed Density Rejection Algorithm.

SOFTWARE SKILLS

- Languages: R, MATLAB, PYTHON, STAN, C.
- Statistical softwares: SPSS, SAS, JMP, STATA, MINITAB.

PROFESSIONAL  
SERVICE

- Co-organized (as the local organizing committee) the **Pushing the Boundary of Data Science through Statistical Modeling and Inference**, a conference in honor of the 70th birthday of Prof. Dipak K. Dey at Blacksburg, VA [Link](#).
- Co-organized and hosted the IISA Data Science and Statistics Innovation Webinar Series.
- Co-organized the **Spring Lecture Series** 2019 and 2020, Department of Mathematical Sciences at the University of Arkansas. [link to SLS webpage](#).
  - Spring Lecture Series 2019: Principal Speaker: Mike West, Conference theme: "Bayesian Analysis for Multivariate Dynamic Systems: Decouple/Recouple Concept and Strategies". April 18-20, 2019.
  - Spring Lecture Series 2020: Principal Speaker: Igor Prünster, Conference theme: "Discrete Random Structure in Bayesian Nonparametrics", November 10-13, 2020.
- Served as a reviewer for the following journals: Journal of Royal Statistical Society (B), Annals of Applied Statistics, Biometrika, Journal of American Statistical Association (Theory and Methods + Application and Case Studies), Journal of Multivariate Analysis; Statistica Sinica, Bayesian Analysis, Bernoulli, Electronic Journal of Statistics, Operation Research, Computational Statistics, Sankhya Series A and B, Entropy, Statistics in Medicine, Journal of Statistical Computation and Simulation, PLoS One.  
**Machine Learning Conferences:** NIPS, ICML, AISTats.
- Served as an ad-hoc proposal reviewer for National Science Foundation (2017).
- Organized the following invited or topic-contributed sessions:
  - *Recent Advances in Bayesian Methods for Complex Structured Data* sponsored by SBSS and IISA at Joint Statistical Meeting 2023, Toronto, CA, 2023.
  - *Bayesian Methods for High-Dimensional Data with Low-Dimensional Structures* for the 36th New England Statistics Symposium 2023, Boston, MA.
  - *Recent theoretical and methodological advances in high-dimensional inference* for IISA 2022, Bangalore, India.
  - *Recent Advances in Bayesian Structure Learning* sponsored by the Section on Bayesian Statistical Science (SBSS) at Joint Statistical Meeting, Denver, CO, 2019.
  - *Scalable Bayesian Inference for structured high-dimensional data*, International Indian Statistical Association Conference (IISA), 2018, Gainesville, Florida.
  - *Recent Advances in Bayesian Methodology and Computation for Ultra-High Dimensional Data* sponsored by the Section on Bayesian Statistical Science (SBSS) at Joint Statistical Meeting, Chicgo, IL, 2016.
- Served as a chair for the invited paper session on "High-dimensional Bayesian statistics: spike-and-slab and global-local shrinkage" at Joint Statistical Meeting, 2016.
- Served as a chair for the invited paper session on "Bayesian Model Selection" at Joint Statistical Meeting 2017. Baltimore, MD.
- Served as a chair for the invited paper session on "Modeling Dependence in Large Systems" at IISA 2017 Annual Conference. Hyderabad, India.
- Co-founded the [University of Arkansas R group](#) with Dr. Grant Drawve for faculty/staff/students.
- **Committee Service:**
  - <https://www.intindstat.org/iisa/executiveboard> and <https://www.intindstat.org/iisa/newsletter-committee>, International Indian Statistical Association (IISA) (2017-2020);
  - Student poster competition committee, IISA Meeting 2017, Hyderabad, India.

MORE  
INFORMATION

More information can be found at <https://jyotishkadatta.wordpress.com/>.