

# Ranjan Maitra

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## **Education:**

Ph.D.	1996	University of Washington, Seattle; Statistics
M. Stat.	1992	Indian Statistical Institute, Calcutta; Statistics
B. Stat. (Hons.)	1990	Indian Statistical Institute, Calcutta; Statistics

## **Research Interests:**

Analysis of Massive Datasets, Cluster Analysis, Data Mining, Data Science, Efficient Simulation Algorithms, Finite Mixture Models, functional Magnetic Resonance Imaging, Image Analysis, Non-destructive Evaluation Imaging Methods, Statistical Computing, Statistical Learning, Tomography.

## **Professional Experience:**

2011 – present	Professor, Department of Statistics, Iowa State University
2021 – 2023	Associate Chair for Research, Department of Statistics, Iowa State University
2003 – 2011	Associate Professor, Department of Statistics, Iowa State University
2003	Associate Professor, Department of Mathematics and Statistics, University of Maryland, Baltimore County
1997 – 2003	Assistant Professor, Department of Mathematics and Statistics, University of Maryland, Baltimore County
1996 – 1998	Research Scientist, Statistics and Data Mining Research, Bell Communications Research (Bellcore)

## **Honors Received:**

1. 2018: Appointed Standing Committee Member (2018-22), *Neural Basis of Psychopathology, Addictions and Sleep Disorders* Study Section, National Institutes of Health.
2. 2011: Elected Member, International Statistical Institute (ISI).
3. 2011: Elected Fellow, American Statistical Association (ASA).
4. 2010: Young Researcher Award, Methodology and Application, International Indian Statistical Association (IISA).
5. 2003: CAREER Award, National Science Foundation (NSF).
6. 1998: Best Contributed Paper “Clustering Massive Datasets” in Statistical Computing, American Statistical Association, Joint Statistical Meetings, Dallas, Texas, judged best of 80 submitted.
7. 1997: Nominated for Francois Erbsman award (*only statistician*) for young scientists under 35 years of age, Information Processing in Medical Imaging (IPMI) Meetings, Poultney, Vermont.
8. 1996: Student Paper Competition award for “Estimating Precision in Functional Images”, American Statistical Association, Joint Statistical Meetings, Chicago, Illinois, one of four selected out of 22 submitted.
9. 1996: Best Poster “Estimating the Variability in Reconstructed PET Images” in the Student Poster Session, Spring Pacific Northwest Statistical Meetings, Seattle, Washington.

10. 1995: Best Presented Paper “Estimating Variability in PET Reconstructions” in the Student Paper Competition, Western North American Region (WNAR) of the International Biometric Society, Joint WNAR/IMS Meetings, Stanford, California.
11. 1987-92: Excellent performance in degree program, Indian Statistical Institute, Calcutta, India.

## **Research Support and Fellowships**

### **External Support (Active and Past):**

- 2019-22 \$652,194 (total costs). Improved diagnosis of severe wind occurrence through machine learning, National Oceanic And Atmospheric Administration. *Co-Principal Investigator. (Principal Investigator: Gallus, W.)*
- 2019-21 \$681,683 (total costs). Physical and Statistical Models for Quantitative Examination of Physical Match Analysis Utilizing 3D Microscopy of Fracture Surfaces, National Institute of Justice. *Co-Principal Investigator. (Principal Investigator: Bastawros, A.)*
- 2016-18 \$495,341 (total costs). Quantitative Tools for Examination of Microscopic Fracture Surface Topology and Degradation for Physical Match Analysis of Evidence, National Institute of Justice. *Co-Principal Investigator. (Principal Investigator: Bastawros, A.)*
- 2013-17 \$380,466 (total costs). Statistical Methods for Improved Activation Detection in fMRI Studies, Research Grant, National Institutes of Health. *Principal Investigator. (scored 2<sup>nd</sup> percentile).*
- 2005-10 \$2,312,455 (total costs). Research and Training of Graduate (RTG) Students, National Science Foundation. *Senior Personnel. (Principal Investigator: Carriquiry, A.)*
- 2003-10 \$400,017 (total costs). CAREER Award, National Science Foundation. *Principal Investigator.*
- 2004-09 \$302,764 (total costs, ISU portion). Neuroimaging the Treatment and Recovery of Language, Research Grant, National Institutes of Health. *Principal Investigator, Sub-contract from Johns Hopkins University.*
- 2002-05 \$152,835 (total costs). TBD, Inter-Personnel Agreement, United States Environmental Protection Agency (EPA). *Principal Investigator.*
- 2003-04 \$8,050 (direct costs, UMBC portion). TDB, Research Grant, National Institutes of Health. *Principal Investigator, Sub-contract from University of Maryland Medical School.*
- 2001-02 \$39,965.04 (total costs). TBD, Inter-Personnel Agreement, United States Environmental Protection Agency (EPA). *Principal Investigator.*
- 2000-01 \$37,230.10 (total costs). TBD, Research Grant, Telcordia Technologies. *Principal Investigator.*
- 1999 \$13,867 (total costs). TBD, Research Grant, Telcordia Technologies. *Principal Investigator.*
- 1998 \$12,000 (direct costs, UMBC portion). TBD, Research Grant, National Science Foundation. *Principal Investigator, Sub-contract from Carnegie Mellon University.*

## **Other Research Collaborations and Professional Consulting Experience**

1. “Cerebral Processing and Human Somesthetic Perception.” *Agency: NIH Type: R01 NS39337. Principal Investigator: J. D. Greenspan. (2004–06)*
2. “Improved Sensitivity and Specificity for Detection of Prostrate Cancer.” *Agency: DOD Type: IDEA Grant W81XWh-04-1-0249. Principal Investigator: R. P. Gullapalli. (2005–06)*
3. “Effect of Age on Cortical Responses to Nociception.” *Agency: National Institute of Aging Type: R03 AG022223-01. Principal Investigator: R. P. Gullapalli. (2004–05)*

## **Publications (and Other Creative Efforts):**

(Note: Henceforth, student co-authors are denoted by “\*”.)

### **Papers Published – Peer-Reviewed:**

1. Pazdernik, K. T.\* & Maitra, R. (2021). Estimating basis functions in massive fields under the spatial mixed effects model. *Statistical Analysis and Data Mining – The Data Science Journal*, 14:5:430–448. DOI: 10.1002/sam.11537.

2. Zhu, Y.\* , Dai, F.\* & Maitra, R. (2021). Fully three-dimensional radial visualization. *Journal of Computational and Graphical Statistics*, *Accepted*.  
(**This paper forms a part of Yifan Zhu's award-winning entry at the 2021 ASA Section on Statistical Computing and Graphics Student Paper Competition.**)
3. Dorman, K. S. & Maitra, R. (2021). An efficient  $k$ -modes algorithm for clustering categorical datasets. *Statistical Analysis and Data Mining - The ASA Data Science Journal*, *To Appear*. DOI: 10.1002/sam.11546.
4. Goren, E.\* & Maitra, R. (2021). Fast model-based clustering of partial records. *Stat*, DOI: 10.1002/sta4.416.
5. Almodóvar-Rivera, I. A.\* & Maitra, R. (2020). Kernel-estimated nonparametric overlap-based syncytial clustering. *Journal of Machine Learning Research*, 21:122:1–54.
6. Dai, F.\* , Dutta, S. & Maitra, R. (2020). A matrix-free likelihood method for exploratory factor analysis of high-dimensional gaussian data. *Journal of Computational and Graphical Statistics*, 29:3:675–680. DOI: 10.1080/10618600.2019.1704296.  
(**This paper won Fan Dai a 2020 ASA Section on Statistical Computing and Graphics Student Paper Competition award while a poster based on this manuscript won her a Best Student Poster award at the Second Midwest Statistical Machine Learning Colloquium in 2019.**)
7. Thompson, G. Z.\* , Maitra, R., Meeker, W. Q. & Bastawros, A. (2020). Classification with the matrix-variate- $t$  distribution. *Journal of Computational and Graphical Statistics*, 29:3:668–674. DOI: 10.1080/10618600.2019.1696208.
8. Maitra, R. (2019). Efficient bandwidth estimation in 2D filtered backprojection reconstruction. *IEEE Transactions on Image Processing*, 28:11:5610–5619. DOI: 10.1109/TIP.2019.2919428.
9. Almodóvar-Rivera, I. A.\* & Maitra, R. (2019). FAST adaptive smoothed thresholding for improved activation detection in low-signal fMRI. *IEEE Transactions on Medical Imaging*, 38:12:2821–2828. DOI: 10.1109/TMI.2019.2915052.  
(**An earlier version of this manuscript won Israel A. Almodóvar-Rivera a 2018 Student Paper Competition award from the ASA Section on Medical Devices and Diagnostics.**)
10. Berry, N.\* & Maitra, R. (2019). TIK-means: transformation-infused  $k$ -means clustering for skewed groups. *Statistical Analysis and Data Mining - The ASA Data Science Journal*, 12:3:223–233. DOI: 10.1002/sam.11416.
11. Adrian, D. W.\* , Maitra, R. & Rowe, D. B. (2018). Complex-valued time series modeling for improved activation detection in fMRI studies. *Annals of Applied Statistics*, 12:3:1451–1478. DOI: 10.1214/17-AOAS1117.
12. Chattopadhyay, S.\* & Maitra, R. (2018). Multivariate  $t$ -mixtures-model-based cluster analysis of BATSE catalogue establishes importance of all observed parameters, confirms five distinct ellipsoidal sub-populations of gamma ray bursts. *Monthly Notices of the Royal Astronomical Society*, 481:3:3196–3209. DOI: 10.1093/mnras/sty1940.
13. Lithio, A.\* & Maitra, R. (2018). An efficient  $k$ -means clustering algorithm for datasets with incomplete records. *Statistical Analysis and Data Mining - The ASA Data Science Journal*, 11:296–311. DOI: 10.1002/sam.11392.
14. Pazdernik, K. T.\* , Maitra, R., Nychka, D. & Sain, S. R. (2018). Reduced basis kriging for big spatial fields. *Sankhyā: The Indian Journal of Statistics, Series A*, 80:2:280–300. DOI: 10.1007/s13171-018-0129-7.  
(**An earlier version of this manuscript won Karl Pazdernik a 2012 Student Paper Competition award from the ASA Section on Statistical Computing.**)
15. Peterson, A. D.\* , Ghosh, A. P. & Maitra, R. (2018). Merging  $k$ -means with hierarchical clustering for identifying general-shaped groups. *Stat*, 7:1:e172. DOI: 10.1002/sta4.172.  
(**This paper was invited to be presented in a "Highlights of Stat" special topic-contributed session at the 2020 Joint Statistical Meetings (JSM)..**)
16. Chattopadhyay, S.\* & Maitra, R. (2017). Gaussian-mixture-model-based cluster analysis finds five kinds of gamma ray bursts in the BATSE catalog. *Monthly Notices of the Royal Astronomical Society*, 469:3:3374–3389. DOI: <https://doi.org/10.1093/mnras/stx1024>.
17. Ye, T.\* , Maitra, R., Meeker, W. Q. & Holland, S. D. (2017). A statistical framework for improved automatic flaw detection in nondestructive evaluation images. *Technometrics*, 59:2:247–261. DOI: 10.1080/00401706.2016.1153000.

18. Adrian, D. W.\* , Maitra, R. & Rowe, D. B. (2013). Ricean over Gaussian modeling in magnitude fMRI analysis – added complexity with negligible practical benefits. *Stat*, 2:303–316. DOI: [10.1002/sta4.34](https://doi.org/10.1002/sta4.34).
19. Maitra, R. (2013). On the expectation-maximization algorithm for Rice-Rayleigh mixtures with application to estimating the noise parameter in magnitude MR datasets. *Sankhyā: The Indian Journal of Statistics, Series B*, 75:2:293–318. DOI: <http://dx.doi.org/10.1007/s13571-012-0055-y>.
20. Maitra, R., Melnykov, V.\* & Lahiri, S. N. (2012). Bootstrapping for significance of compact clusters in multi-dimensional datasets. *Journal of the American Statistical Association*, 107:497:378–392.
21. Melnykov, V.\* , Chen, W.-C.\* & Maitra, R. (2012). MIXSIM: an R package for simulating data to study performance of finite mixture modeling and clustering algorithms. *Journal of Statistical Software*, 51:12:1–25. DOI: [10.18637/jss.v051.i12](https://doi.org/10.18637/jss.v051.i12).
22. Bhattacharya, S. & Maitra, R. (2011). A nonstationary nonparametric Bayesian approach to dynamically modeling effective connectivity in functional magnetic resonance imaging experiments. *Annals of Applied Statistics*, 5:2B:1183–1206. DOI: [10.1214/11-AOAS470](https://doi.org/10.1214/11-AOAS470).
23. Chen, W.-C.\* & Maitra, R. (2011). Model-based clustering of regression time series data via APECM – an AECM algorithm sung to an even faster beat. *Statistical Analysis and Data Mining – The ASA Data Science Journal*, 4:567–78. DOI: [10.1002/sam.10143](https://doi.org/10.1002/sam.10143).  
**(This paper won Wei-Chen Chen a 2011 Student Paper Competition award from the ASA Section on Statistical Learning and Data Mining.)**
24. Melnykov, V.\* & Maitra, R. (2011). CARP: software for fishing out good clustering algorithms. *Journal of Machine Learning Research*, 12:31–35.
25. Melnykov, V.\* , Maitra, R. & Nettleton, D. (2011). Accounting for spot matching uncertainty in the analysis of proteomics data from two-dimensional gel electrophoresis. *Sankhyā: The Indian Journal of Statistics, Series = B*, 73:1:123–143. DOI: [10.1007/s13571-011-0016-x](https://doi.org/10.1007/s13571-011-0016-x).
26. Maitra, R. (2010). A re-defined and generalized percent-overlap-of-activation measure for studies of fMRI reproducibility and its use in identifying outlier activation maps. *Neuroimage*, 50:1:124–135. DOI: [10.1016/j.neuroimage.2009.11.070](https://doi.org/10.1016/j.neuroimage.2009.11.070).
27. Maitra, R. & Melnykov, V.\* (2010). Simulating data to study performance of finite mixture modeling and model-based clustering algorithms. *Journal of Computational and Graphical Statistics*, 19:2:354–376.
28. Maitra, R. & Ramler, I. P.\* (2010). A  $k$ -mean-directions algorithm for efficient clustering of data on a sphere. *Journal of Computational and Graphical Statistics*, 19:2:377–396.
29. Maitra, R. & Riddles, J. J.\* (2010). Synthetic magnetic resonance imaging revisited. *IEEE Transactions on Medical Imaging*, 29:3:895–902.
30. Melnykov, V.\* & Maitra, R. (2010). Finite mixture models and model-based clustering. *Statistics Surveys*, 4:80–116. DOI: [10.1214/09-SS053](https://doi.org/10.1214/09-SS053).
31. Maitra, R. (2009). Assessing certainty of activation or inactivation in test-retest fMRI studies. *Neuroimage*, 47:1:88–97. DOI: [10.1016/j.neuroimage.2009.03.073](https://doi.org/10.1016/j.neuroimage.2009.03.073).
32. Maitra, R. (2009). Initializing optimization partitioning algorithms. *ACM/IEEE Transactions on Computational Biology and Bioinformatics*, 6:1:144–157. DOI: [10.1109/TCBB.2007.70244](https://doi.org/10.1109/TCBB.2007.70244).
33. Maitra, R. & Faden, D.\* (2009). Noise estimation in magnitude MR datasets. *IEEE Transactions on Medical Imaging*, 28:10:1615–1622. DOI: [10.1109/TMI.2009.2024415](https://doi.org/10.1109/TMI.2009.2024415).
34. Maitra, R. & Ramler, I. P.\* (2009). Clustering in the presence of scatter. *Biometrics*, 65:341–352.
35. Ellis, N. & Maitra, R. (2007). Multivariate Gaussian simulation outside arbitrary confidence ellipsoids. *Journal of Computational and Graphical Statistics*, 16:3:692–708.

36. Moulton, E. A.\*, Keaser, M. L., Gullapalli, R. P., Maitra, R. & Greenspan, J. D. (2006). Sex differences in the cerebral BOLD signal response to painful heat stimuli. *American Journal of Physiology: Regulatory, Integrative and Comparative Physiology*, 291:257–67.
37. Gullapalli, R. P., Maitra, R., Roys, S. R., Greenspan, J. D., Smith, G. & Alon, G. (2005). Reliability estimation of grouped functional imaging data using penalized maximum likelihood. *Magnetic Resonance in Medicine*, 53:1126–1134.
38. Maitra, R., Ross, P. N., Sinha, B. K., Lee, J. & Herczeg, S. (2003). On some aspects of data integration techniques with applications. *East-West Journal of Mathematics, Computational Mathematics and Modelling*: CMM:241–256.
39. Maitra, R. (2002). A statistical perspective on data mining. *Journal of the Indian Society for Probability and Statistics*, 6:28–77.
40. Maitra, R., Roys, S. R. & Gullapalli, R. P. (2002). Test-retest reliability estimation of fMRI data. *Magnetic Resonance in Medicine*, 48:62–70.
41. Maitra, R. (2001). Clustering massive datasets with applications in software metrics and tomography. *Technometrics*, 43:3:336–46.  
**(An earlier version of this paper won the ASA Section on Statistical Computing's Best Contributed Paper award at the 1998 Joint Statistical Meetings.)**
42. Maitra, R. & Dalal, S. R. (2001). Pay-phones, parking-meters, vending machines and Bayesian prediction of fill-times. *Journal of the American Statistical Association*, 96:454:476–87.
43. Maitra, R. (1998). An approximate bootstrap technique for variance estimation in parametric images. *Medical Image Analysis*, 2:4:379–82.
44. Maitra, R. & O'Sullivan, F. (1998). Variability assessment in positron emission tomography and related generalized deconvolution models. *Journal of the American Statistical Association*, 93:444:1340–55.  
**(Presentations based on this paper won Ranjan Maitra the Best Presented Paper award at the Student Paper Competition of the 1995 Joint WVAR/IMS Meetings, and separately, a Best Poster award at the Student Paper Competition of the 1996 Spring Pacific Northwest Statistical Meetings.)**
45. SenGupta, A. & Maitra, R. (1998). On best equivariance and admissibility of simultaneous MLE for mean direction vectors of several Langevin distributions. *Annals of the Institute of Statistical Mathematics*, 50:4:715–27.
46. Maitra, R. (1997). Estimating precision in functional images. *Journal of Computational and Graphical Statistics*, 6:132–42.  
**(This paper won a 1996 Student Paper competition award from the ASA Section on Statistical Computing.)**

#### **Invited Discussions:**

1. Dorman, K. S. & Maitra, R. (2016). Comment on “Statistical modelling of citation exchange between statistics journals” by Cristiano Varin, Manuela Cattelan and David Firth. *Journal of the Royal Statistical Society, Series A*, 179:1:46–47.
2. Maitra, R. & Gullapalli, R. P. (2000). Comment on “A Bayesian time-course model for functional magnetic resonance imaging data” by Chris Genovese. *Journal of the American Statistical Association*, 95:451:707–708.

#### **Peer-Reviewed Book Chapter:**

1. Nusser, S. M., Intille, S. S. & Maitra, R. (2005). The future of intensive longitudinal measurement and analysis. In Walls, T. A. & Schafer, J. S. (Eds.), *Models for Intensive Longitudinal Data* (pp. 254–277). New York: Oxford University Press.

**Peer-Reviewed Conference Proceedings:**

1. Chen, W.-C.\* & Maitra, R. (2016). A novel model-based segmentation approach for improved activation detection in fMRI studies. In *Proceedings of the 24th International Society of Magnetic Resonance in Medicine*. Singapore.
2. Roys, S. R., Maitra, R., Greenspan, J. D. & Gullapalli, R. P. (2002). Group analysis of fMRI data using penalized maximum likelihood method. In *Proceedings of the 10th International Society of Magnetic Resonance in Medicine* (pp. 1428). Honolulu, Hawaii.
3. Lefkowitz, D., Read, K., Maitra, R. & Gullapalli, R. P. (2002). Intra-subject and inter-subject variability of SVS vs CSI spectra from spatially matched voxels. In *Proceedings of the 10th International Society of Magnetic Resonance in Medicine* (pp. 2509). Honolulu, Hawaii.
4. Maitra, R., Roys, S. R., Greenspan, J. D. & Gullapalli, R. P. (2001). Resampling methods to test reliability of motion-corrected fMRI data. In *Proceedings of the 9th International Society of Magnetic Resonance in Medicine* (pp. 1202). Glasgow, Scotland.
5. Roys, S. R., Maitra, R. & Gullapalli, R. P. (2001). Comprehensive approach to estimating test-retest reliability in fMRI. In *Proceedings of the 9th International Society of Magnetic Resonance in Medicine* (pp. 1718). Glasgow, Scotland.
6. Maitra, R. & Besag, J. E. (1998). Bayesian reconstruction in synthetic Magnetic Resonance Imaging. In Mohammad-Djafari, A. (Eds.), *Bayesian Inference in Inverse Problems. Proceedings of the Society of Photo-Optical Instrumentation Engineers (SPIE 1998) Meetings: Vol. 3459*. (pp. 39-47). San Diego, California.
7. Maitra, R. (1997). Synthetic resampling methods for variance estimation in parametric images. In *Springer-Verlag Lecture Notes in Computer Science Series: Information Processing in Medical Imaging: Vol. 1230*. (pp. 271-84). Poultney, Vermont.
8. Maitra, R. & O'Sullivan, F. (1996). Estimating the variability in functional images using a synthetic resampling approach. In *1996 IEEE Nuclear Science Symposium and Medical Imaging Conference Record: Vol. 3*. (pp. 1867-71). Anaheim, California.
9. Maitra, R. & O'Sullivan, F. (1995). Estimating the variability of reconstructed PET data: a technique based on approximating the reconstruction filter by a sum of Gaussian kernels. In *1995 IEEE Nuclear Science Symposium and Medical Imaging Conference Record: Vol. 3*. (pp. 1411-14). San Francisco, California.

**Peer-Reviewed Abstracts/Extended Summaries:**

1. Efficient bandwidth estimation in clinical positron emission tomography image reconstruction. *2014 IEEE Medical Imaging Conference*. Seattle, Washington, November, 2014.
2. Test-retest study of variability in diffusion parameters in brain regions. *Proceedings of the 11th Annual Human Brain Mapping Meeting*. Toronto, Canada, June, 2005.

**Books and Monographs:**

1. Maitra, R., Sinha, B. K., Ross, N. P., Lee, J. & Herczeg, S. (2003). Combining environmental indicators. Monograph on Series in Statistical Methodology, Office of Environmental Information, United States Environmental Protection Agency, Washington DC. (*Refereed monograph*.)

**Book Reviews:**

1. Dai, F.\* & Maitra, R. (2020). Review of "Practical Text Analytics: Maximizing the value of text data" by Murugan Anandarajan, Chelsey Hill, and Thomas Nolan (Springer). *Technometrics*, 62:2:285-286.
2. Maitra, R. (2011). Review of "The statistical analysis of functional MRI data" by Nicole A. Lazar (Springer). *Technometrics*, 53:2:211-212.

3. Maitra, R. (2008). Review of “Directional Statistics” by Kanti V. Mardia and Peter E. Jupp (Academic Press). *Technometrics*, 50:4:546–7.
4. Maitra, R. (2007). Review of “Independent Component Analysis: a tutorial introduction” by James V. Stone (MIT Press). *Technometrics*, 49:3:358–9.
5. Maitra, R. (2005). Review of “Statistical Computing for the Social Scientist” by Micah Altman, Jeff Gill, Michael P. McDonald (John Wiley). *Technometrics*, 47:2:241–2.
6. Maitra, R. & Mathew, T. (2000). Review of “Analysis of Variance in Statistical Image Processing” by Ludwik Kurz and M. Hafed Benteftifa (Cambridge University Press). *Technometrics*, 42:2:212–3.

### **Creative Achievements:**

1. **BootClust**: C package for bootstrapping for significance in clustering. (Joint with Melnykov, V.\*, available at <http://www.mloss.org>)
2. **SynClustR**: R package for Kernel-Based Nonparametric Syncytial Clustering. (Joint with Almodóvar-Rivera, I.\*, available at <http://www.github.com/ialmodovar/RKNOBSynC>)
3. **RFASTfMRI**: R package for FAST Adaptive Smoothed Thresholding in fMRI. (Joint with Almodóvar-Rivera, I.\*, available at <https://www.github.com/ialmodovar/RFASTfMRI>)
4. **Radviz3d**: R package for Three-dimensional Radial Visualization. (Joint with Zhu, Y.\*, Dai, F.\* & Maitra, R., available at <https://github.com/fanne-stat/radviz3d>)
5. **km-means**: C package for  $k$ -means clustering for datasets with incomplete records. (Joint with Lithio, A.\*, available at <http://www.github.com/maitra/kmmeans>)
6. **catsim**: R package for calculating a structural similarity metric for categorical images. (Joint with Thompson, G. Z.\*, available at <http://www.R-project.org>)
7. **fad**: R package for Exploratory Factor Analysis of High-Dimensional Gaussian Data. (Joint with Dai, F.\* & Dutta, S., available at <https://www.github.com/somakd/fad>)
8. **MixMatrix**: R package for simulating, classification and clustering of Matrix- $t$ -variate populations. (Joint with Thompson, G. Z.\*, available at <http://www.R-project.org>)
9. **TiKmeans**: R package for Transformation-Infused  $k$ -means Clustering. (Joint with Berry, N. S.\*, available at <https://www.github.com/berry/TiKmeans>)
10. **MixtClust**: R package for Robust  $t$ -mixture model-based clustering for complete and incomplete data. (Joint with Goren, E. M.\*, available at <http://www.github.com/emilygoren/MixtClust>)
11. **kclips**: C package for  $k$ -means Clustering in the Presence of Scatter. (Joint with Ramler, I. P.\*, available at <http://www.github.com/maitra/kclips>)
12. **MixfMRI**: R package for Model-based Activation in fMRI. (Joint with Chen, W.-C.\*, available at [www.R-project.org](http://www.R-project.org))
13. **CARP**: The Clustering Algorithms Referee Package. (Joint with Melnykov, V.\*, available at <http://www.mloss.org>)
14. **fastICA**: C package for basic Independent Component Analysis. (Available at <http://www.mloss.org>)
15. **MixSim**: R package to Simulate from Finite Mixture Models. (Joint with Melnykov, V.\* & Chen, W.-C.\*, available at <http://www.R-project.org>)
16. **EMCluster**: R package for inference on Finite Mixture Models. (Joint with Chen, W.-C.\* & Melnykov, V.\*, available at <http://www.R-project.org>)
17. **MixedRice**: C package for EM estimation of Rice mixtures. (Available at <http://www.mloss.org>)

## **Conference/Poster Presentations:**

### **Invited/Juried:**

1. Kernel nonparametric overlap-based syncytial clustering. *Joint Statistical Meetings*. Philadelphia, Pennsylvania, August, 2020. (Topic-contributed session on "Highlights of Stat")
2. Kernel nonparametric overlap-based syncytial clustering. *23rd International Conference on Computational Statistics (COMPSTAT2018)*. Iasi, Romania, August, 2018.
3. Fracture mechanics-based quantitative matching of evidence fragments: statistical framework. *2018 Impression, Pattern and Trace Evidence Symposium*. Arlington, Virginia, January, 2018.
4. Fracture-mechanics-based quantitative matching of evidence fragments. *International Symposium on Forensic Science Error Management*. Gaithersburg, Maryland, July, 2017.
5. Diagnostics in finite mixture models and model-based clustering. *22nd International Conference on Computational Statistics (COMPSTAT2016)*. Oviedo, Spain, August, 2016.
6. A novel model-based segmentation approach for improved activation detection in fmri studies. *2016 Annual Meetings of the International Society of Magnetic Resonance in Medicine and Exhibition*. Singapore, May, 2016. (Juried poster presentation)
7. A practical model-based segmentation approach to improved activation detection in fMRI studies. *International Indian Statistical Association Joint Meetings*. Pune, India, December, 2015.
8. Diagnostics in finite mixture models and model-based clustering. *Twenty-second Workshop on Model-based Clustering*. Seattle, Washington, July, 2015. (Invited Long Talk)
9. Efficient bandwidth estimation in clinical positron emission tomography reconstruction. *IEEE Medical Imaging Conference (MIC)*. Seattle, Washington, November, 2014. (Juried poster presentation)
10. Practical segmentation-based activation detection in functional MR imaging. *21st International Conference on Computational Statistics (COMPSTAT2014), 5th IASC World Conference*. Geneva, Switzerland, August, 2014.
11. Clustering mutual funds for a balanced investment portfolio. *3rd IIMA International Conference on Advanced Data Analysis, Business Analytics and Intelligence (ICADABAI-2013)*. Ahmedabad, India, April, 2013.
12. Bootstrapping for significance in clustering. *Conference on Contemporary Issues and Applications of Statistics (CIAS-2012)*. Kolkata, India, January, 2012.
13. Bootstrapping for significance in clustering. *XXXI Annual Convention of the Indian Society for Probability and Statistics and International Conference on Statistics, Probability and Related Areas*. Cochin, India, December, 2011.
14. Assessing significance in finite mixture models and model-based clustering. *Eighteenth Workshop on Model-based Clustering*. Grenoble, France, July, 2010. (Invited Long Talk)
15. Bootstrapping for significance in multi-dimensional compact clustering models. *Conference on Resampling Methods and High-dimensional Data*. College Station, Texas, March, 2010. (Invited session on Resampling Methods)
16. Bootstrapping for significance in multi-dimensional compact clustering models. *International Indian Statistical Association Joint Meetings*. Vishakhapatnam, India, January, 2010. (Invited session on Resampling Methods)
17. Generating Gaussian mixtures with specified overlap. *Fourteenth Workshop on Model-based Clustering*. Seattle, Washington, July, 2008. (Invited short talk)
18. Clustering in the presence of scatter. *ICSPRAR-2008: International Conference on Statistical Paradigms: Recent Advances and Reconciliations*. Kolkata, India, January, 2008. (Invited Session on High-dimensional Data Analysis)
19. A GCV approach to bandwidth selection in positron emission tomography image reconstruction. *Joint Statistical Meetings*. Salt Lake City, Utah, August, 2007. (Invited Session on Advances in Contemporary Nonparametric Methods)



20. Model-based clustering of constrained spherical data: finding patterns in gene expression time-course sequences. *Thirteenth Workshop on Model-based Clustering*. Dublin, Ireland, July, 2007. (Invited short talk)
21. Clustering massive datasets from arbitrary Gaussian mixtures. *Indian International Statistical Association Joint Meetings*. Cochin, India, January, 2007. (Special Invited Presentation on Data Mining)
22. Classification methods for directional data. *International Statistics Conference, 2005*. Kuala Lumpur, Malaysia, December, 2005.
23. A statistical perspective on data mining. *Workshop on Data Mining and Bioinformatics. Organized by the International Indian Statistical Association and the Department of Statistics, University of Kalyani*. Kalyani, India, May, 2004.
24. Reliability assessment in fMRI studies: a test-retest estimation approach. *International Conference on Emerging Strategies for improving Productivity, Quality and Reliability*. Kolkata, India, December, 2003.
25. Indexing data quality indicators: a multiple-criteria decision-making approach. *TIES 2002. The International Environmetrics Society Meetings*. Genova, Italy, June, 2002.
26. Group analysis of fMRI data using penalized maximum likelihood method. *10th Annual Meetings of the International Society of Magnetic Resonance in Medicine*. Honolulu, Hawaii, May, 2002. (Juried poster presentation)
27. Intra-subject and inter-subject variability of SVS vs CSI spectra from spatially matched voxels. *10th Annual Meetings of the International Society of Magnetic Resonance in Medicine*. Honolulu, Hawaii, May, 2002. (Juried poster presentation)
28. Resampling methods to test reliability of motion-corrected fMRI data. *2001 Joint Annual Meetings of the International Society of Magnetic Resonance in Medicine and the European Society for Magnetic Resonance in Biology*, Glasgow. Glasgow, Scotland, April, 2001. (Juried poster presentation)
29. A comprehensive approach to estimating test-retest reliability in fMRI. *2001 Joint Annual Meetings of the International Society of Magnetic Resonance in Medicine and the European Society for Magnetic Resonance in Biology*. Glasgow, Scotland, April, 2001. (Juried poster presentation)
30. Comment on “a Bayesian time-course model for functional magnetic resonance imaging data” by Chris Genovese. *2000 Joint Statistical Meetings*. Indianapolis, Indiana, August, 2000. (Invited discussant)
31. Optimal fill-time prediction of coin boxes. *1999 Fall Meetings, INFORMS*. Philadelphia, Pennsylvania, November, 1999. (Invited session on Models in Telecom Services Management)
32. Making PET movies. *1999 Joint Statistical Meetings*. Baltimore, Maryland, August, 1999. (Invited session on Recent Advances in Medical Imaging)
33. Bayesian reconstruction in synthetic magnetic resonance imaging. *1999 Chesapeake Bay Chapter Meeting, American Statistical Association*. Aberdeen, Maryland, April, 1999. (Invited keynote presentation)
34. Variability assessment in PET reconstructions. *1999 Workshop on Shape and Image Analysis*. Calcutta, India, January, 1999.
35. Bayesian reconstruction in synthetic magnetic resonance imaging. *1998 Meetings of the Society of Photo-Optical Instrumentation Engineers*. San Diego, California, July, 1998. (Invited session on Bayesian Inference in Inverse Problems)
36. Variance estimation in functional images. *1998 Workshop on Image Analysis*. Montreal, Canada, April, 1998.
37. Synthetic resampling methods for variance estimation in parametric images. *15th International Conference on Information Processing in Medical Imaging*. Poultney, Vermont, June, 1997. (Juried presentation)
38. Synthetic resampling methods for variability estimation in functional images. *29th Symposium on the Interface: Computing Science and Statistics*. Houston. Texas, April, 1997. (Invited Session on Imaging)

39. Estimating variability in functional images using a synthetic resampling approach. *1996 IEEE Nuclear Science Symposium and Medical Imaging Conference*. Anaheim, California, October, 1996. (Juried poster presentation)
40. Estimating precision in functional images. *1996 Joint Statistical Meetings*. Chicago, Illinois, August, 1996. (Juried special contributed paper presentation)
41. Estimating the variability of reconstructed PET data: a technique based on approximating the reconstruction filter by a sum of Gaussian kernels. *1995 IEEE Nuclear Science Symposium and Medical Imaging Conference*. San Francisco, California, October, 1995. (Juried poster presentation)

### **Contributed/Non-juried:**

1. Fast spatial inference in the homogeneous ising model. *Joint Statistical Meetings*. Denver, Colorado, July, 2019.
2. FAST adaptive smoothed thresholding for activation detection in low-signal fMRI. *Joint Statistical Meetings*. Baltimore, Maryland, August, 2017.
3. Improving  $k$ -means color quantization of images via operations in different color spaces. *Joint Statistical Meetings*. Chicago, Illinois, August, 2016.
4. Improved activation detection in fMRI. *2015 Joint Statistical Meetings*. Seattle, Washington, August, 2015. (Topic-contributed session on Recent Advances in Neuroimaging Data Analysis)
5. Practical model-based segmentation for activation detection in functional MRI. *Joint Statistical Meetings*. Boston, Massachusetts, August, 2014. (Topic-contributed session on Mixture Models and Its Applications)
6. Invited discussant, session on functional data and registration. *Joint Statistical Meetings*. San Diego, CA, August, 2013. (Topic-contributed session.)
7. Finite mixture models in magnetic resonance imaging. *Joint Statistical Meetings*. Miami, Florida, August, 2011. (Topic-contributed session on Mixture Models and Its Applications)
8. Assessing significance in finite mixture models. *Joint Statistical Meetings*. Vancouver, British Columbia, August, 2010. (Topic-contributed session on Mixture Models and Clustering)
9. Assessing significance in finite mixture models and model-based clustering. *4th Annual Probability and Statistics Day and Silver Jubilee of UMBC Graduate Program in Statistics Conference*. Baltimore, Maryland, April, 2010.
10. Bootstrapping for significance in multi-dimensional compact clustering models. *Joint Statistical Meetings*. Washington, D.C, August, 2009.
11. Estimating significant clusters in model-based clustering. *2008 Joint Statistical Meetings*. Denver, Colorado, August, 2008.
12. GCV estimation of bandwidth in positron emission tomography reconstruction. *International Conference on Multivariate Statistical Methods in the 21st Century: The Legacy of Professor S.N.Roy. Platinum Jubilee Celebrations of the Indian Statistical Institute*. Kolkata, India, December, 2006. (Invited Presentation on Brain Imaging)
13. Initializing optimization partitioning algorithms. *2006 Joint Statistical Meetings*. Seattle, Washington, August, 2006.
14. Grouping mutual funds on the basis of performance. *2005 Joint Statistical Meetings*. Minneapolis, Minnesota, August, 2005.
15. Clustering massive datasets from arbitrary Gaussian mixtures. *55th Session of the International Statistical Institute*. Sydney, Australia, April, 2005.
16. Indexing environmental quality indicators: a multiple criteria decision-making approach. *Statistics in Public Resources and Utilities, and in Care of the Environment (SPRUCE) VI*. Lund, Sweden, June, 2003. (Session on Air Quality and Indicators)

17. Clustering massive datasets from arbitrary Gaussian mixtures. *2002 Joint Statistical Meetings*. New York, New York, August, 2002.
18. Robust aggregated multiple partitioning: RAMPing up the  $k$ -means algorithm. *2001 Joint Statistical Meetings*. Atlanta, Georgia, August, 2001.
19. Data mining tutorial. *EPA 2001 Statistics Workshop*. Philadelphia, Pennsylvania, May, 2001.
20. Clustering massive datasets. *1998 Joint Statistical Meetings*. Dallas, Texas, August, 1998.
21. Synthetic resampling methods for variance estimation in parametric images. *1997 Mid-Atlantic Probability and Statistics Day*. Baltimore, Maryland, October, 1997.
22. Estimating the variability of reconstructed PET data. *1996 Spring Meetings, Pacific North West Statistics Meetings*. Seattle, Washington, April, 1996. (Poster presentation)
23. Estimating variability in PET reconstructions. *1995 Joint WNA/IMS Meetings*. Palo Alto, California, June, 1995.

### **Other Professional Presentations (all Invited):**

1. Kernel nonparametric overlap-based syncytial clustering. *Statistics Colloquium*. University of Iowa, Iowa City, Iowa, October, 2019.
2. Kernel nonparametric overlap-based syncytial clustering. *Statistics Colloquium*. Iowa State University, Iowa City, Iowa, October, 2019.
3. Kernel nonparametric overlap-based syncytial clustering. *Statistics Seminar*. McGill University, Montreal, Quebec, April, 2018.
4. FAST adaptive smoothed thresholding for improved activation detection in low-signal fMRI. *Department of Statistics Colloquium*. Iowa State University, Ames, Iowa, February, 2017.
5. Improved activation detection in single-subject fMRI studies. *Big Data Seminar Series*. Iowa State University, Ames, Iowa, November, 2016.
6. Efficient  $k$ -means semi-supervised clustering for massive datasets. *Department of Statistics Colloquium*. National University of Singapore, Singapore, May, 2016.
7. Assessing significance in clustering with effortless application to massive datasets. *Department of Statistics Colloquium*. Oregon State University, Corvallis, Oregon, March, 2015.
8. Accounting for scatter in clustering. *College Colloquium, Culverhouse College of Business*. University of Alabama, Tuscaloosa, Alabama, December, 2013.
9. A GCV approach to bandwidth selection in positron emission tomography reconstruction. *Statistics Colloquium, Département de mathématiques et de statistique*. Université de Montréal, Montreal, Canada, November, 2013.
10. Assessing significance in clustering. *Biostatistics Department Colloquium*. Columbia University, New York, New York, October, 2013.
11. A GCV approach to bandwidth selection in positron emission tomography reconstruction. *PET Working Group Seminar*. Columbia University, New York, New York, October, 2013.
12. Assessing significance in finite mixture models. *Bayesian and Inter-disciplinary Research Unit colloquium*. Indian Statistical Institute, Kolkata, India, April, 2013.
13. Assessing significance in clustering. *College Colloquium*. College of Science and Mathematics, North Dakota State University, , November, 2010.
14. Assessing significance in clustering. *Statistics Colloquium*. Department of Statistics, North Carolina State University, , November, 2010.

15. Assessing significance in clustering. *Statistics Colloquium*. Department of Statistics, Iowa State University, , October, 2010.
16. Assessing significance in model-based clustering with application to studies of population genetic structure. *Statistics Seminar Series, Statistical Center for HIV/AIDS Research & Prevention (SCHARP)*. Vaccines & Infectious Diseases Institute (VIDI), Fred Hutchinson Cancer Research Center, Seattle, Washington, March, 2010.
17. Assessing significance in finite mixture models. *Statistics Colloquium*. Fox School of Business, Temple University, Philadelphia, Pennsylvania, October, 2008.
18. Assessing significance in finite mixture models. *Statistics Colloquium of McGill University, University of Montreal, Concordia University, University of Quebec at Montreal*. Concordia University, Montreal, Canada, October, 2008.
19. Clustering in the presence of scatter. *Department of Statistics Colloquium*. Texas A&M University, College Station, Texas, November, 2007.
20. GCV estimation of bandwidth in positron emission tomography reconstruction. *Department of Statistics and Statistical Laboratory Colloquium*. Iowa State University, Ames, Iowa, October, 2006.
21. Reliability assessment in fMRI studies: a test-retest estimation approach. *Applied Statistics Seminar Colloquium*. Indian Statistical Institute, Kolkata, India, May, 2005.
22. Statistical issues in functional imaging: from the operating room to hollywood. *VIGRE Seminar Series in Statistical Computing*. Department of Statistics and Statistical Laboratory, Iowa State University, , October, 2004.
23. Reliability assessment in fMRI studies: a test-retest estimation approach. *VIGRE Seminar Series in Statistical Computing*. Department of Statistics and Statistical Laboratory, Iowa State University, , September, 2003.
24. Clustering massive datasets from arbitrary mixtures of Gaussian populations. *Department of Statistics and Statistical Laboratory Colloquium*. Iowa State University, , April, 2003.
25. Reliability assessment in fMRI studies: a test-retest estimation approach. *Department Colloquium*. Vanderbilt University Division of Epidemiology and Biostatistics, Nashville, NC, March, 2003.
26. Indexing data quality indicators: a multiple-criteria decision-making approach. *Seminar*. Office of Information Analysis and Access, United States Environmental Protection Agency, Washington, D.C., September, 2002.
27. Bayesian reconstruction in synthetic magnetic resonance imaging. *Statistics Seminar*. Biomathematics and Statistics Scotland (BIOSS), University of Edinburgh, Edinburgh, Scotland, April, 2001.
28. Bayesian reconstruction in synthetic magnetic resonance imaging. *Statistics Seminar*. University of Nottingham, Nottingham, United Kingdom, April, 2001.
29. Optimal Bayesian decisions on collecting coin-boxes. *Applied Statistics Seminar*. Indian Statistical Institute, Calcutta, India, March, 2001.
30. Statistical data mining — what? why and where?. *Part I of Special Invited Panel Series*. Department of Statistics, Case Western Reserve University, , February, 2001.
31. Statistical data mining — how?. *Part II of Special Invited Panel Series*. Department of Statistics, Case Western Reserve University, , February, 2001.
32. Statistical data mining — the future. *Part III of Special Invited Panel Series*. Department of Statistics, Case Western Reserve University, , February, 2001.
33. Data mining – a statistical perspective. *Special Statistics Colloquium*. Office of Environmental Information, United States Environmental Protection Agency, Washington D. C., February, 2001.
34. Optimal Bayesian decisions on collecting coin-boxes. *Joint Mathematics and Statistics Colloquium*. Department of Mathematics and Statistics, University of Maryland, Baltimore County, Baltimore, Maryland, October, 2000.

35. Clustering massive datasets. *Statistics Colloquium*. Division of Theoretical Statistics and Mathematics, Indian Statistical Institute, Calcutta, India, March, 2000.
36. Clustering massive datasets. *Statistics Colloquium*. , Baltimore, Maryland, February, 2000.
37. Clustering massive datasets. *Statistics seminar*. Applied Research Division, AT& T Research, Florham Park, New Jersey, March, 1999.
38. Clustering massive datasets. *Statistics colloquium*. Applied Research Area, Telcordia Technologies, Morristown, New Jersey, March, 1999.
39. Variance estimation in functional images. *Biostatistics Colloquium*. Department of Biostatistics, University of Michigan, Ann Arbor, Michigan, February, 1999.
40. Variance estimation in functional images. *Statistics Colloquium*. Department of Statistics, Carnegie Mellon University, Pittsburgh, Pennsylvania, November, 1998.
41. Variance estimation in functional images. *Statistics Colloquium*. Department of Mathematics and Statistics, University of Maryland, Baltimore County, Baltimore, Maryland, March, 1998.
42. Synthetic resampling methods for variance estimation in parametric images. *Statistics Colloquium*. Department of Mathematics, University of Maryland, College Park, College Park, October, 1997.
43. Synthetic resampling methods for variance estimation in parametric images. *Seminar*. Department of Electrical Engineering and Computer Science, University of Maryland, Baltimore County, Baltimore, Maryland, September, 1997.
44. Synthetic resampling methods for variance estimation in parametric images. *Statistics seminar*. Statistics and Mathematics Division, Indian Statistical Institute, Calcutta, India, July, 1997.
45. An affirmative action scheme for clustering massive datasets, with application to software patch classification. *Statistics colloquium*. Microsoft Research, Redmond, Washington, May, 1997.
46. Variability estimation in PET reconstructions. *Statistics seminar*. Department of Mathematics and Statistics, University of Massachusetts, Amherst, Massachusetts, March, 1997.
47. Variability estimation in PET reconstructions. *Statistics Colloquium*. Department of Statistics, Case Western Reserve University, Cleveland, Ohio, February, 1997.
48. Variability estimation in PET reconstructions. *Statistics Colloquium*. Department of Mathematics and Statistics, University of Maryland, Baltimore County, Baltimore, Maryland, February, 1997.
49. Variability estimation in PET reconstructions. *Statistics Colloquium*. Department of Statistics, Michigan State University, East Lansing, Michigan, February, 1997.
50. Variability estimation in PET reconstructions. *Statistics seminar*. Applied Research Area, Bell Communications Research, Morristown, New Jersey, April, 1996.
51. Variability estimation in PET reconstructions. *Statistics Colloquium*. Division of Statistics, University of California, Davis, Davis, California, February, 1996.
52. Bayesian reconstruction in synthetic magnetic resonance imaging. *Applied Statistics Seminar*. Indian Statistical Institute, Calcutta, India, September, 1994.
53. On best equivariant estimation and admissibility of mean direction vector in Langevin populations. *Graduate Seminar*. Department of Statistics, University of Washington, Seattle, Washington, November, 1992.
54. On best equivariant estimation and admissibility of mean direction vector in Langevin populations. *Applied Statistics Seminar*. Indian Statistical Institute, Calcutta, India, September, 1992.

**Ph. D. Students:****Major Professor (Dissertation Advisor) of Dissertation Advisees:**

1. Yifan Zhu (2021, currently Staff Scientist, inDeed).
2. Fan Dai (2020, *Joint with Somak Dutta*, currently Assistant Professor, Michigan Technological University).
3. Nicholas Berry (2019, currently Statistical Scientist, Berry Consultants).
4. Andrew Lithio (2017, *Joint with Dan Nettleton*, currently Research Scientist, Lily).
5. Israel A. Almodóvar-Rivera (2017, currently Assistant Professor, University of Puerto Rico).
6. Karl T. Pazdernik (2013, currently Senior Data Scientist, Pacific Northwest National Laboratories).
7. Dan W. Adrian (2011, currently Assistant Professor, Grand Valley State University).
8. Anna Peterson (2011, *Joint with Arka Ghosh*, currently Associate Teaching Professor, ISU).
9. Volodymyr Melnykov (2009, currently Professor, University of Alabama).
10. Ivan P. Ramler (2008, currently Associate Professor, St. Lawrence University).
11. Rafaela M. Guidi (2003, *University of Maryland, Baltimore County*, currently Senior Adviser, Bank of Brazil).
12. Geoffrey Z. Thompson (2021, expected).
13. Carlos J. Llosa-Vite (2022, expected).
14. Subrata Pal (2023, expected, *Joint with Somak Dutta*).
15. Joshua Berlinski (2022, expected).

**Other Committee Members:**

1. Elizabeth Macias (2022, expected, *Physics and Astronomy*).
2. Sebastian Sanchez-Falero (2021, expected, *Physics and Astronomy*).
3. Princess Tiffany-Dantes (2020, *Agriculture and Biosystems Engineering*).
4. Jose Sepulveda-Quiroz (2018, *Physics and Astronomy*).
5. Jia Liu (2013).
6. Xiao Ma (2013, *Industrial and Manufacturing Systems Engineering*).
7. Minsun Kim (2013).
8. Tian Ye (2013).
9. Wei-Chen Chen (2011).
10. Wei Lu (2011, *Electrical and Computer Engineering*).
11. Adam T. Pinter (2010).
12. Ming Li (2010).
13. Timothy Bancroft (2009).
14. Haming Ma (2009).
15. Chunwang Gao (2009).

16. Wuyan Zhang (2006).
17. Rhonda DeCook (2006).
18. Yurong Wang (2006).
19. Eric Moulton (2004, *University of Maryland Dental School*).
20. Xiaoming Li (2000, *University of Maryland, Baltimore County*).
21. Xianong Gu (2000, *University of Maryland, Baltimore County*).
22. Yi-Tzu Li (1999, *University of Maryland, Baltimore County*).
23. Vladimir Mats (1997, *University of Maryland, Baltimore County*).
24. Samuel Benidt (2018, expected).

**External Dissertation Examiner:**

Siow-Hoo Leong, *University of Malaya*. Title: Mixture model clustering for very large datasets.

**M. S. Students:**

**Major Professor (Creative Component Advisor) of Advisees:**

1. Joshua Berlinski (2021, currently at ISU).
2. Martin Silerio-Vázquez (2019, currently at Iowa State University).
3. Carlos J. Llosa-Vite (2018, currently at ISU).
4. Yifan Zhu (2018, currently at ISU).
5. Nicholas Berry (2016, currently Statistical Scientist, Berry Consultants).
6. Juan P. Rodriguez-Ramirez (2016, currently at California State University, Bakersfield).
7. Israel A. Almodóvar-Rivera (2014, currently at University of Puerto Rico).
8. Christopher Bruno (2011, currently at Hokua Software).
9. Anna Peterson (2008, *Joint with Arka Ghosh*, currently at ISU).
10. Adam T. Pintar (2007, currently at NIST).
11. William Baumann (2006, currently at Minnesota State Community and Technical College).
12. Erin K. McMurtry (2005, currently at Mayo Clinic).
13. Nichole M. Gray (2005, currently at Mercer).
14. Peter N. Hoekstra (2004, currently at Expedia).
15. Souradeep Chattopadhyay (2021, expected).

**Other Committee Memberships:**

1. Yifan Wang (2017).
2. Brandon Klinedinst (2017, *Interdisciplinary Graduate Studies*).
3. Jian Gong (2005, *Electrical Engineering*).

**Undergraduate Research Advising:**

1. Lynne Huang, 2018-19, Undergraduate capstone project
2. Aisha Washington, 2018-19, Undergraduate Honors project
3. Benjamin Mulaosmanovic, 2009, First Year Honors Mentoring Program (*Joint with Dorman, K. S.*)
4. Michelle Wallace, 2009, First Year Honors Mentoring Program (*Joint with Dorman, K. S.*)
5. Stephanie Wilkerson, Xaviers' University, New Orleans, Louisiana, 2008, NSF Alliance (AGEP) (*Joint with Dorman, K. S.*)
6. Ashley Bennett, Simpson College, Indianola, Iowa, 2004, NSF VIGRE Undergraduate Summer

**Research Assistants Funded:**

1. Geoffrey Z. Thompson (2020).
2. Geoffrey Z. Thompson (2017-19).
3. Emily M. Goren (2018).
4. Nathan M. Garton (2016-17).
5. Israel A. Almodóvar-Rivera (2014-16).
6. Wei-Chen Chen (2008-10).
7. John J. Riddles (2008-10).
8. Volodymyr Melnykov (2007-09).
9. David Faden (2007-08).
10. Karl T. Pazdernik (2008).
11. Ivan P. Ramler (2005-07).
12. William Baumann (2005-06).
13. Teresa McConville (2004-05).
14. Subrata Pal (2019-present).
15. Carlos J. Llosa-Vite (2019-present).

**Classes taught:****Iowa State University:**

(Note that “\*” denotes course conception and/or (re-)development while “†” denotes classes taught with additional online distance sections. )

1. HONS 290 – Freshman Honors Program (Spring '06, '09)
2. Stat 105 – Introduction to Statistics for Engineers (Fall '14, Spring '14, '15)
3. Stat 305 – Engineering Statistics (Fall '20, Spring '20)
4. \*Stat 330 – Probability and Statistics for Computer Scientists and Engineers (Fall '09, '10, '13, Spring '12)
5. Stat 341 – Introduction to the Theory of Probability (Fall '17, Spring '19)



6. Stat 342 – Introduction to the Theory of Probability and Statistics – II (Spring '12)
7. Stat 407 – Multivariate Statistical Methods (Fall '18, '19)
8. Stat 490 – Undergraduate Capstone Research (Spring '19)
9. Stat 490H – Undergraduate Honors Research (Spring '19)
10. \*Stat 501 – Multivariate Statistical Methods (Spring '04, '11<sup>†</sup>, '12, '13, '16, '17, '18)
11. Stat 515 – Theory and Applications of the Non-linear Model (Fall '03)
12. \*Stat 579 – An Introduction to R (Fall '06, '07, '08, '11<sup>†</sup>, '15<sup>†</sup>, '16<sup>†</sup>, '17<sup>†</sup>, '21)
13. \*Stat 580 – Statistical Computing (Spring '05, '06, '07, '08, '10, '13, '14, '20)
14. \*Stat 680/690E – Advanced Statistical Computing (Fall '05, '07, '08, '09, '11, '14, '16, '18, '21)

### **University of Maryland Baltimore County:**

(Note that “\*” denotes course conception and/or (re-)development.)

1. Stat 121 – An Introduction to Statistics for the Social Sciences (Summer '01)
2. Stat 350 – Statistics with Applications in the Biological Sciences (Fall '98, '99, '00, '01, '02, Spring '98, '99, '00)
3. Stat 355 – Probability and Statistics for Scientists and Engineers (Fall '96, '97, Spring '98)
4. Stat 432 – A Tutorial Introduction to SAS (Fall '00, Winter '01)
5. \*Stat 433 – Introduction to Statistical Computing (Spring '02)
6. \*Stat 454 – Applied Statistics (Fall '01)
7. \*Stat 490/CMSE 491C – An Introduction to Data Mining (Spring '02)
8. \*Stat 601 – Applied Statistics (Fall '97, '98)
9. \*Stat 625/700 – Spatial Statistics and Image Analysis (Fall '99, '00)

### **Professional Activities:**

2020	Workshop on Recent Advances in Statistical Analysis of Imaging Data, Organizing Committee.
2018-22	Panelist for reviewing proposals submitted to Neural Basis of Psychopathology, Addictions and Sleep Disorders Study Section of the National Institutes of Health: <i>Standing committee member</i> .
2018-20	Editor, ( <i>Area: Statistical Methodology</i> ), <i>Statistical Analysis and Data Mining – The ASA Data Science Journal</i> .
2017-18	Panelist for reviewing proposals submitted to Neural Basis of Psychopathology, Addictions and Sleep Disorders Study Section of the National Institutes of Health: <i>Temporary member</i> .
2017	Organizer, Topic-contributed Session on “Clustering Methods for Big Data Problems” in 2017 Joint Statistical Meetings.
2017	Chair, Topic-Contributed Session on “Optimal Transport and Scalable Bayes: A Fruitful Synergy?” in 2017 Joint Statistical Meetings.
2017	Panelist for reviewing proposals submitted to Neural Basis of Psychopathology, Addictions and Sleep Disorders Section of the National Institutes of Health.

- 2016 Organizer, Topic-contributed Session on “Novel Statistical Methodologies for Neuroimaging Data” in 2016 Joint Statistical Meetings.
- 2016-present Mentor to Evercita Eugenio, JSM Mentoring Program, American Statistical Association.
- 2015 Organizer and Chair, Topic-contributed Session on “Statistical Methods for Improved Processing and Analysis of fMRI Data” in 2015 Joint Statistical Meetings.
- 2015-present Mentor to J. L. Ding and Sandeep Saha, JSM Mentoring Program, American Statistical Association.
- 2014 Panelist for reviewing proposals submitted to Division of Mathematical Sciences - Statistics Program Panel of the National Science Foundation.
- 2014-present Mentor to Aymeric Stamm and Qiong Zhang, JSM Mentoring Program, American Statistical Association.
- 2012-14 Publications Officer, ASA Section on Statistics in Imaging.
- 2012-14 Member, Executive Committee, ASA Section on Statistics in Imaging.
- 2012 International Indian Statistical Association (IISA) Representative, 2012 Joint Statistical Meetings (JSM) Program Committee.
- 2012 Panelist for reviewing proposals submitted to Division of Mathematical Sciences - Statistics Program Panel of the National Science Foundation.
- 2011-12 Organizer, Invited Session on “Recent Advances and Unresolved Challenges in Statistical Genetics” in 2012 Joint Statistical Meetings.
- 2010-11 Organizer, Invited Session on “Recent Advances in Finite Mixture Models and Clustering” in 2011 Joint Statistical Meetings.
- 2010 Organizer and Chair, Topic-Contributed Session on “Finite Mixture Models and Model-Based Clustering” in 2010 Joint Statistical Meetings.
- 2010 Chair, Session on “Methods for High-Dimensional Datasets” in Conference on Resampling Methods and High-dimensional Data, College Station, TX.
- 2010-present Editor, *Statistics Surveys*.
- 2010-present Founding Member, ASA Section on Statistics in Imaging.
- 2009 Organizer, Invited Session on “High-dimensional Methods” in Conference to Celebrate the 75th Anniversary of the Statistical Laboratory, Department of Statistics, Iowa State University, Ames, IA.
- 2008-10 Associate Editor, *Statistics Surveys*.
- 2008 Panelist for reviewing proposals submitted to Scientific Computing Research Environments for the Mathematical Sciences (SCREMS) of the National Science Foundation.
- 2008-present Associate Editor, *Sankhyā: The Indian Journal of Statistics, Series A: Theoretical Statistics, Probability Theory and Stochastic Processes*.
- 2008-present Reviewer for Discovery Grants of the Natural Sciences and Engineering Research Council of Canada.
- 2004 Panelist for reviewing proposals submitted to Mathematical and Computer Science Panel of the National Science Foundation.
- 2003 Organizer and Chair, “Session on MCMC computations for large-dimensional problems” in Joint Statistical Meetings, San Francisco, CA.
- 2002-05 Editor, Section on Statistical Computing, American Statistical Association, *Statistical Computing and Graphics Newsletter*.

2002	Chair, “Invited Session on International Environmental Statistics” in TIES 2002, The International Environmetrics Society Meetings, Genova, Italy.
2001	Chair, Session on Applications of Nonparametrics in 2001 Joint Statistical Meetings, Atlanta, GA.
1999	Invited Participant, National Research Council (NRC) Workshop on “Statistical Methods for Reducing Uncertainty in Ocean Science Models,” National Academy of Sciences.
1997-05	Member, Executive Committee, Section on Statistical Computing, American Statistical Association.
1997-02	Continuing Education Co-Liason, Section on Statistical Computing, American Statistical Association.
1996	Reviewer for papers submitted to: <i>1996 IEEE Nuclear Science Symposium and Medical Imaging Conference, Biometrics, Computational Statistics and Data Analysis, IEEE Transactions on Medical Imaging, Journal of Classification, Journal of Computational and Graphical Statistics, Journal of Environmental Statistics, Journal of Statistical Education, Journal of Statistical Planning and Inference, Journal of the American Statistical Association, Mathematical Programming, Naval Research Logistics, Naval Research Statistics, Statistics and Probability Letters, and Technometrics.</i>

### **Departmental Service:**

2020-present	Primary Affiliate Liason, National Institute of Statistical Sciences, ISU.
2019-present	Mentor to Somak Dutta, Department of Statistics, ISU.
2018-20	Member, Sustainability Committee, ISU.
2017-19	Member, Computation Advisory Committee, ISU.
2017-18	Chair, Fall Colloquia, ISU.
2016-17	Member, Advisory Committee to the Chair, ISU.
2015-17	Chair, Computation Advisory Committee, ISU.
2014-16	Chair, Library Liason, ISU.
2014-16	Coordinator, Fall Working Group on Semi- and Unsupervised Learning in Massive Datasets, ISU.
2014-15	Member, Memorial Lecture Series, ISU.
2014-15	Member, Faculty Search Committee, ISU.
2013-14	Member, Computation Advisory Committee, ISU.
2013-present	Mentor to Kris de Brabanter, Department of Statistics, ISU.
2012-14	Member, Honors and Awards Committee, ISU.
2012-13	Co-chair, Big Data Faculty Search Committee, ISU.
2011-12	Chair, Fall Colloquia, ISU.
2010-13	Member, Graduate Admissions Committee, ISU.
2009-13	Coordinator, Fall Working Group in Statistical Computing and Computationally-Intensive Methods, ISU.
2009-10	Chair, Fall Colloquia, ISU.

2008-09	Chair, Fall Colluoquia, ISU.
2008-09	Chair, Computation Advisory Committee, ISU.
2008-09	Member, Graduate Admissions Committee, ISU.
2008-09	Member, Memorial Lecture Series, ISU.
2007-08	Co-chair, Computation Advisory Committee, ISU.
2007-08	Chair, Journals Rankings Committee, ISU.
2006-07	Member, Faculty Search Committee, ISU.
2005-09	Coordinator, NSF RTG/VIGRE Working Group on Statistical Computing, ISU.
2004-06	Member, Strategic Planning Committee, ISU.
2004	Chair, Computation Advisory Committee, ISU.
2003-11	Member, Computation Advisory Committee, ISU.
2003-04	Chair, Spring Colloquia, ISU.
2001-03	Member, Department Undergraduate Committee, University of Maryland, Baltimore County.
1999-01	Member, Department Computer Committee, University of Maryland, Baltimore County.
1998	Acting chair, Department Computer Committee, University of Maryland, Baltimore County.
1994-95	Organizer, 1994-1995 Statistics Department Student Seminar Series, University of Washington.

### **University and Community Service:**

2017-20	LAS Senate Caucus Representative, Research Policy and Planning Committee, ISU.
2016-19	College of Liberal Arts and Sciences, LAS Honors and Awards Committee, ISU.
2010-12	LAS Senate Caucus Representative, Faculty Appeals Committee, ISU.
2009-12	Departmental Representative, Faculty Senate, ISU.
1999-00	Member, Faculty Classroom Instructional Technology Committee, University of Maryland, Baltimore County.
1997-03	Volunteer, UMBC Graduate School Open House.