Zhengyuan Zhu

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EDUCATION

Ph.D. Statistics, The University of Chicago, Chicago, IL, August 2002.

B.A. Mathematics, Fudan University, Shanghai, China, July 1997.

CAREER HISTORY

2013-:	**Director**, Center for Survey Statistics Methodology, Iowa State University.
2017-:	**Professor**, Department of Statistics, Iowa State University.
2011–2017:	**Associate Professor**, Department of Statistics, Iowa State University.
2009–2011:	**Assistant Professor**, Department of Statistics, Iowa State University.
2002–2009:	**Assistant Professor**, Department of Statistics and Operations Research, the University of North Carolina at Chapel Hill.
1999:	**Research Assistant**, Statistics and Data Mining Research, Bell Labs, Lucent Technologies, Murray Hill, NJ.

RESEARCH INTERESTS

Spatial statistics, survey statistics, machine learning, statistical data integration, and applications in environmental science, agriculture, remote sensing, and official statistics.

RESEARCH FUNDING AND AWARDS

Awards

LAS Outstanding Achievement in Research Award, Iowa State University, 2025.

Elected Fellow of the American Statistical Association, 2020.

LAS Dean's Professorship, Iowa State University, 2019.

LAS Mid-Career Achievement in Research Award, Iowa State University, 2017.

Elected member of the International Statistical Institute, 2014.

Faculty fellow, SAMSI Program on Astrostatistics, Spring 2006.

R.J. Reynolds Junior Faculty Development Award, University of North Carolina at Chapel Hill, 2004.

Research Funding

Current

PI, DOJ National Institute of Justice (Co-PI E. Berg K. Burgason), "FUSE: Fast Unbiased Small-area Estimation for Timely Measurement of Community Perceptions of Policing and Public Safety". $499,562.00, 2025-2027.

PI, USDA Natural Resources Conservation Service (Co-PI: J. Kim, C. Yu, and E. Berg), "Statistical and Survey Methods Support for the National Resources Inventory". $7,750,000.00, 2023-2026.

PI, NSF CBET 2041859, "UNS: Integrated assessments of urbanization impacts on building energy use for urban energy sustainability", $315,581.00, 2021-2025.

PI, Iowa nutrient research and education council, "Statistical and survey methods support for the collection and analysis of the in-field agricultural practices data in Illinois crop reporting districts", $15,000, 2024-2025.

PI, Iowa Department of Health and Human Services, "Iowa Youth Survey Administration", $59,976, 2024-2025.

co-PI, Department of Interior Bureau of Land Management (PI: C. Yu), "Statistical and Survey Methods Support for the BLM-Managed Lands Survey Program", $821,999.00, 2023-2028.

co-PI, DHS-Federal Emergency Management Agency (FEMA) (PI: Guowen Song) "Guarding Against Lithium-Ion Hazards: Understanding and Mitigating PPE Contamination in Battery Fire Smoke", $1,500,000, 2024-2028.

co-I, USDA NIFA (PI: G. Trevisan), "Enabling Rapid and Effective Response to Disease Outbreaks in Swine Populations", $1,000,000, 2024-2027.

co-I, USDA NIFA (PI: G. Trevisan), "Use of diagnostic data to rapidly detect and raise stakeholder awareness of emerging biological animal health and production threats", $1,000,000, 2023-2026.

co-PI, The Brigham and Women's Hospital Inc., "Evaluating agreement of physical activity indicators in the BWEL trial", $142,568, 2023-2024.

co-PI, DHS-Federal Emergency Management Agency (FEMA) (PI: Guowen Song) "Developing a systematic tool for contaminant protection and reducing exposure to contaminated PPE", $1,499,811, 2022-2025.

co-PI, NSF (PI: Hongwei Zhang), "Collaborative Research: SII-NRDZ: ARA-NRDZ: From Site And Application Investigation To Prototyping And Field Testing", $485,000, 2022-2025.

co-I, Iowa department of agriculture & land stewardship (PI: Michael Castellano), "The Iowa Nitrogen Initiative", $3,000,000, 2022-2025.

co-PI, NSF, (PI: K. Zarecor), "SCC-IRG Track 2: Overcoming the Rural Data Deficit to Improve Quality of Life and Community Services in Smart and Connected Small Communities", $1,532,000, 2020-2025

co-PI, USDA Natural Resources Conservation Service (PI: C. Yu), "CEAP Grazing Land Support". $650,000.00, 2019-2025.

Past

PI, USDA Natural Resources Conservation Service (Co-PI: J. Kim, C. Yu, and E. Berg), "Statistical and Survey Methods Support for the National Resources Inventory". $10,930,000.00, 2020-2023.

PI, Iowa nutrient research and education council, "Statistical and survey methods support for the collection and analysis of the in-field agricultural practices data in Illinois crop reporting districts", $15,000, 2023-2024.

PI, Iowa nutrient research and education council, "Statistical and survey methods support for the collection and analysis of the in-field agricultural practices data in Illinois crop reporting districts", $25,000, 2022-2023.

co-PI, Department of Interior Bureau of Land Management (PI: C. Yu), "Statistical and Survey Methods Support for the BLM-Managed Lands Survey Program", $385,000.00, 2022-2023.

Senior Personnel, NSF, (PI: R. Hridesh), " HDR:TRIPODS: D4 (Dependable Data Driven Discovery) Institute", $1,531,995.00, 2019-2023.

co-PI/PI, "Integrating Social and Biophysical Indicator of Nutrient Reduction Progress in Iowa Watershed Projects", $166,155.00, 2019-2021.

co-PI, USDA ARS (PI: C. Yu), "Design, Implementation, Integration, and Analysis for the BLM Landscape Monitoring Framework". $315,000.00, 2019-2021.

PI, IA DPS-Governor's Traffic Safety Bureau, "Traffic Safety Survey Data Collection 2021", $7,000, 2020-2021.

PI, USDA Natural Resources Conservation Service (Co-PI: J. Kim, C. Yu, and E. Berg), "Statistical and Survey Methods Support for the National Resources Inventory". $10,177,450.00, 2017-2020.

Co-PI, Department of Interior Bureau of Land Management (PI: C. Yu), "Statistical and Survey Methods Support for the BLM-Managed Lands Survey Program", $1,750,000.00, 2013-2019.

PI, National Center for Food and Agricultural Policy (Co-PI: C. Yu, E. Berg), "Design, Implementation, Integration, and Analysis of the 2017 Pet Ownership and Demographics Survey and Annual Metro Market Demand Surveys", $361,361, 2016-2018.

Senior Investigator, Iowa State University PIIR for Data Driven Science (PI: P. Gauger), "Development and integration of bioinformatics tools to characterize, monitor, and rapidly recognize emerging influenza viruses in swine through data driven science", $375,000, 2016-2019. 15% effort.

Co-PI, Gradient (PI: Z. He), "A Counterfactual Approach to Quantify the Causal Effect of Fine Particulate Matter on Mortality", $100,976, 2016-2018. 50% effort.

PI, Iowa Nutrient Research Center (co-PI: J. Arbuckle), "Advancing Longitudinal,

Multilevel, and Spatial Analysis of the Iowa Nutrient Reduction Strategy Farmer Survey Data", $41,598, 2016-2018.

PI, USDA National Agricultural Statistics Services, "New Approaches for Area Frame Development, Area Sample Design and Geospatial Data Collection", $44,500, 2016-2017.

Co-PI, Iowa Department of Agriculture and Land Stewardship (PI: J. Arbuckle), "Iowa Nutrient Reduction Strategy Farmer Survey Grant", $299,990, 2015-2020. 50% effort.

Senior Investigator, Iowa State University PIIR for Data Driven Science (PIs: C. Lawrence-Dill, A. Singh, B. Ganapathysubramanian), "Data Driven Discoveries for Agricultural Innovation", $750,000, 2015-2018.

PI, USDA Natural Resources Conservation Service (Co-PI: J. Kim, C. Yu, and E. Berg), "Statistical and Survey Methods Support for the National Resources Inventory". $9,500,000, 2014-2017.

PI, Food and Agriculture Organization of the United Nations (Co-PI: J. Kim and E. Berg), "Improvement of the Collection and Management of Data from Administrative Sources". $225,000, 2014-2016.

PI, Midwest Transportation Center (Co-PI: M. Kaiser), "Data Driven Urban Traffic Prediction for Winter Performance Measurements", $75,039, 2014-2017

PI, Iowa Department of Transportation/AURORA project (Co-PI: M. Kaiser), " Improving Estimations of Real-Time Traffic Speeds during Weather for Winter Performance Measurement", $129,896, 2013-2017

Co-PI, USDA National Agricultural Statistics Services (PI: E. Berg), "Statistical and Survey Methods Support for the Conservation Effects Assessment Project". $500,000, 2013-2016. 50% effort.

PI, Iowa State University PIIR for Data Driven Science (Co-PI: J. Kim, E. Berg, H. Jensen, B. Kreider, S. Pouliot, O. Bartalotti, I.H. Cho), "Combining Big Data and Survey Data to Meet New Challenges in Data-driven Policy Development and Evaluation", $55,000, 2015-2016.

PI, Iowa Department of Natural Resources, "Iowa Wildlife Action Plan-Prioritization and Goal Setting Prioritizing Habitats within Iowa to Manage for Priority Species with Greatest Conservation Need", $50,912, 2015-2016.

Co-PI, USDA National Agricultural Statistics Services (PI: J. Kim), "New Approaches for Area Frame Development, Area Sample Design, and Geospatial Data Collection". $1,019,050, 2011-2016. 25% effort.

PI, National Center for Food and Agricultural Policy, "Pilot Study of the Market Demand of Veterinary Services", $45,552, 2015.

PI, Iowa Department of Transportation (Co-PI: M. Kaiser), "Quantifying Uncertainty in Real Time Performance Measurement for Highway Winter Maintenance Operations", $54,865, 2013-2014.

PI, USDA Natural Resources Conservation Service, "Statistical and Survey Methods Support for the National Resources Inventory". $3,100,000, 2013-2014.

Co-PI, USDA Natural Resources Conservation Service (PI: S.M. Nusser), "Statistical and Survey Methods Support for the National Resources Inventory". $6,100,000, 2011-2013. 35% effort.

PI, Iowa Department of Transportation (Co-PI: M. Kaiser), "Real Time Performance Measurement for Highway Winter Maintenance Operations", $50,067, 2010-2011.

Co-PI, USDA National Agricultural Statistics Services (PI: S. M. Nusser), "New Approaches for Area Frame Development, Area Sample Design, and Geospatial Data Collection". $50,000, 2010-2013. 25% effort.

Co-PI, USDA Natural Resources Conservation Service (PI: S. M. Nusser), "Statistical and Survey Methods Support for the National Resources Inventory". $5,100,000, 2009-2011. 25% effort.

PI, NSF Award DMS-0605434 (co-PI: Richard L. Smith), "Optimal Design of Experiments for Correlated Observations", $218,961, 2006-2010.

Consultant, NIH Award R01 CA140319A (PI: Ming Wen), "Neighborhood Built and Social Environment and Physical Activity and Weight Status". $249,830, 2010-2015.

Co-investigator, EPA STAR Grant R832751010 (PI: Adel F. Hanna), "Effects of Climate Change on Human Health: Current and Future Impacts", $599,103, 2005-2008.

PUBLICATIONS

Note: students are marked by *.

Book Chapters

1. Zhengyuan Zhu and Evangelos Evangelou*(2015), Optimal Design for Spatial Models. In A. Dean, D. Bingham, M. Morris, J. Stufken (eds.), *Handbook on Design of Experiments*, Chapman & Hall/CRC Press.

2. Vivekananda Roy, Evangelos Evangelou*, and Zhengyuan Zhu (2015), Empirical Bayes methods for Transformed Gaussian Random Fields Model with Additive Measurement Errors. In D. K. Dey, U. Singh and A. Loganathan (eds.), *Current Trends in Bayesian Methodology with Applications*, Chapman & Hall/CRC Press.

Refereed Journal Publications

3. Dae-Gyu Jang*, Cindy Yu, and Zhengyuan Zhu, "Estimating Total Acres of Rangeland for Specific Geographies Using Cropland Data Layer (CDL)" (2025+), Journal of Survey Statistics and Methodology, accepted for publication.

4. Zhonglei Wang*and Zhengyuan Zhu (2025+), "Resampling Method for Generalized One-per-Stratum Sampling Designs." Statistica Sinica, Accepted for publication. doi:10.5705/ss.202024.0001

5. Hu, Jia*, Yuyu Zhou, Yingbao Yang, Zhengyuan Zhu, Jun Yang, Xiangjin Meng, and Feilin Lai. "Multi-city local climate zone mapping and its quantitative applications on measuring surface urban heat Island in China." Remote Sensing of Environment 330 (Dec. 2025): 114965.

6. Wang, Zhenzhong*, Zhengyuan Zhu, and Cindy Yu (2025), "Variable Selection in Macroeconomic Forecasting with Many Predictors." Econometrics and Statistics, Volume 36, October 2025, Pages 19-36. https://doi.org/10.1016/j.ecosta.2023.01.003

7. Zhang, Xin*, Shan Yu, Zhengyuan Zhu, and Xin Wang (2025). "Spatial Heterogeneous Additive Partial Linear Model: A Joint Approach of Bivariate Spline and Forest Lasso." Journal of Computational and Graphical Statistics (2025): 1-13.

8. Sun, Hao*, Suraj Upadhaya, Chris Morris, J. Arbuckle, Laurie Nowatzke, and Zhengyuan Zhu (2025). "The Flux of Agricultural Conservation: Understanding Changes in Iowa Farmers' Adoption of Cover Crops and No-Till Over Time." Society & Natural Resources (2025): 1-20.

9. Labuzzetta, Charles Jacob*, and Zhengyuan Zhu, (2024), "Mapping Conservation Practices via Deep Learning: Improving Performance via Hillshade Imagery, Sampling Design, and Centerline Dice Loss." Statistics and Data Science in Imaging 1, no. 1 (Oct. 2024): 2401756.

10. Xu, Wenru*, Yuyu Zhou, Hannes Taubenböck, Eleanor C. Stokes, Zhengyuan Zhu, Feilin Lai, Xuecao Li, and Xia Zhao (2024). "Spatially explicit downscaling and projection of population in mainland China." Science of the Total Environment 941 (Sept. 2024): 173623.

11. Zhao, Xia*, Yuyu Zhou, Xi Li, Tao Zhang, Yueying Wang*, Zhengyuan Zhu, Kai Zhang, and Deren Li (2024). "Improving assessment of population exposure and health impacts to PM2. 5 with high spatial and temporal data." GIScience & Remote Sensing 61.1 (Aug. 2024): 2388921.

12. Sun, Hao*, Emily Berg, and Zhengyuan Zhu (2024), "Multivariate Small-area Estimation for Mixed-type Response Variables With Item Nonresponse." Journal of Survey Statistics and Methodology, Volume 12, Issue 2, April 2024, Pages 320–342. https://doi.org/10.1093/jssam/smad018

13. Zhang, Xin*, Jia Liu, and Zhengyuan Zhu (2024) Learning Coefficient Heterogeneity over Networks: A Distributed Spanning-Tree-Based Fused-Lasso Regression, Journal of the American Statistical Association, 119.545 (2024): 485-497. DOI: 10.1080/01621459.2022.2126363

14. Qiu, Jiaming*, Xiongtao Dai, and Zhengyuan Zhu (2024), "Nonparametric Estimation of Repeated Densities with Heterogeneous Sample Sizes." Journal of the

American Statistical Association, 119.545 (2024): 176-188. https://doi.org/10.1080/01621459.2022.2104728

15. Shahid, Mukaram, Kunal Das*, Taimoor Ul Islam, Christ Somiah, Daji Qiao, Arsalan Ahmad, Jimming Song et al. "Wireless Spectrum Measurements in Rural Areas: Status, Challenges and Opportunities." RS Open Journal on Innovative Communication Technologies 4, no. 11 (2024).

16. Han, Aihua*, Jian Huang, Xin Wang, and Zhengyuan Zhu. "Efficient Water-Saving Irrigation, Space Efficiency and Agricultural Development—Study Based on Spatial Stochastic Frontier Model." Journal of Systems Science and Complexity 36.6 (2023): 2559-2579.

17. Wang, Xin*, Xin Zhang*, and Zhengyuan Zhu (2023), "Clustered Coefficient Regression Models for Poisson Process with an Application to Seasonal Warranty Claim Data." Technometrics 65.4 (2023): 514-523.DOI: 10.1080/00401706.2023.2190779

18. Wang, Xin*, Zhengyuan Zhu, and Hao Helen Zhang (2023), "Spatial heterogeneity automatic detection and estimation." Computational Statistics & Data Analysis: Volume 180, April 2023, 107667. https://doi.org/10.1016/j.csda.2022.107667

19. Batista, Ricardo*, Zhengyuan Zhu, David Peters, and Kimberly Zarecor (2023), "Predicting resident satisfaction with public schools in small town Iowa." Stat 12, no. 1 (2023): e517.

20. Wang, Zhenzhong*, Abolfazl Safikhani, Zhengyuan Zhu, and David S. Matteson (2023), "Regularized Estimation in High-Dimensional Vector Auto-Regressive Models using Spatio-Temporal Information." *Statistica Sinica*, 33 (2023), 1271-1294. doi:10.5705/ss.202020.0056

21. Moraes, Daniel CA, Amy L Vincent Baker, Xin Wang*, Zhengyuan Zhu, Emily Berg, Giovani Trevisan, Jianqiang Zhang et al. (2023), "Veterinarian perceptions and practices in prevention and control of influenza virus in the Midwest United States swine farms." Frontiers in Veterinary Science 10 (2023): 68.

22. Welk, Greg, Nicholas R. Lamoureux, Chengpeng Zeng*, Zhengyuan Zhu, Emily Berg, Dana L. Wolff-Hughes, and Richard P. Troiano (2023), "Equating NHANES Monitor Based Physical Activity to Self-Reported Methods to Enhance Ongoing Surveillance Efforts." Medicine and Science in Sports and Exercise (2023). June 2023, Volume 55 (6), p 1034–1043. DOI: 10.1249/MSS.0000000000003123

23. Zhu, Weicheng*, Zhengyuan Zhu, and Xiongtao Dai. "Spatiotemporal satellite data imputation using sparse functional data analysis." The Annals of Applied Statistics 16, no. 4 (2022): 2291-2313.

24. Sun, Hao*, Emily Berg, and Zhengyuan Zhu. "Bivariate small-area estimation for binary and gaussian variables based on a conditionally specified model." Biometrics 78.4 (2022): 1555-1565.

25. Zhang, Tao*, Yuyu Zhou, Kaiguang Zhao, Zhengyuan Zhu, Ghassem R. Asrar, and Xia Zhao. "Gap-filling MODIS daily aerosol optical depth products by developing a spatiotemporal fitting algorithm." GIScience & Remote Sensing 59, no. 1 (2022): 762-781.

26. Zhang, Tao*, Yuyu Zhou, Li Wang, Kaiguang Zhao, and Zhengyuan Zhu. "Estimating 1 km gridded daily air temperature using a spatially varying coefficient model with sign preservation." Remote Sensing of Environment 277 (2022): 113072.

27. Zhang, Tao*, Yuyu Zhou, Kaiguang Zhao, Zhengyuan Zhu, Gang Chen, Jia Hu, and Li Wang. "A global dataset of daily maximum and minimum near-surface air temperature at 1 km resolution over land (2003–2020)." Earth System Science Data 14, no. 12 (2022): 5637-5649.

28. Zhang, Tao*, Yuyu Zhou, Zhengyuan Zhu, Xiaoma Li, and Ghassem R. Asrar. "A global seamless 1 km resolution daily land surface temperature dataset (2003–2020)." Earth System Science Data 14, no. 2 (2022): 651-664.

29. Berg, Emily, Johgho Im*, Zhengyuan Zhu, Colin Lewis-Beck*, and Jie Li. "Integration of statistical and administrative agricultural data from Namibia." Statistical Journal of the IAOS, vol. 37, no. 2, pp. 557-578, 2021.

30. Labuzzetta, Charles*, Zhengyuan Zhu, Xinyue Chang*, and Yuyu Zhou. "A Submonthly Surface Water Classification Framework via Gap-Fill Imputation and Random Forest Classifiers of Landsat Imagery." Remote Sensing 13, no. 9 (2021): 1742.

31. Leung, Sze Him*, Ji Meng Loh, Chun Yip Yau, and Zhengyuan Zhu. "Spatial Sampling Design Using Generalized Neyman–Scott Process." Journal of Agricultural, Biological and Environmental Statistics 26, no. 1 (2021): 105-127.

32. Lewis-Beck, Colin*, Zhengyuan Zhu, Victoria Walker, and Brian Hornbuckle. "Modeling Crop Phenology in the US Corn Belt Using Spatially Referenced SMOS Satellite Data." Journal of Agricultural, Biological and Environmental Statistics 25, no. 4 (2020): 657-675.

33. Xuecao Li*, Yuyu Zhou, Zhengyuan Zhu, and Wenting Cao. A national dataset of 30-m annual urban extent dynamics (1985-2015) in the conterminous United States. *Earth System Science Data*, 12, 357-371, 2020.

34. Yang Li*and Zhengyuan Zhu. Spatio-temporal modeling of global ozone data using convolution. *Japanese Journal of Statistics and Data Science*, (2020): 1-14.

35. Colin Lewis-Beck*, Zhengyuan Zhu, Anirban Mondal, Joon Jin Song, Jonathan Hobbs, Brian Hornbuckle, and Jason Patton. A Parametric Approach to Unmixing Remote Sensing Crop Growth Signatures. Journal of Agricultural, Biological and Environmental Statistics (2019): 1-15.

36. Xin Wang*and Zhengyuan Zhu (2019), Small area estimation with subgroup analysis, *Statistical Theory and Related Fields*, 3(2), 129-135. DOI: 10.1080/24754269.2019.1659097

37. Zhonglei Wang*and Zhengyuan Zhu (2019), Spatio-Temporal Balanced Sampling Design for Longitudinal Area Survey. *Journal of Agricultural, Biological, and Environmental Statistics*. 24, no. 2 (2019): 245-263. DOI: 10.1007/s13253-019-00350-w

38. Raymond K. W. Wong, Yehua Li, and Zhengyuan Zhu (2019), Partially Linear Functional Additive Models for Multivariate Functional Data. *Journal of the American Statistical Association.* 114, no. 525 (2019): 406-418. DOI: 10.1080/01621459.2017.1411268

39. Eunice J. Kim*and Zhengyuan Zhu (2019), Variance function estimation of a one-dimensional nonstationary process. *Journal of the Korean Statistical Society.* Volume 48, Issue 3, September 2019, Pages 327-339. https://doi.org/10.1016/j.jkss.2019.01.001

40. Danhyang Lee*, J. Arbuckle, Zhengyuan Zhu, and Laura Nowatzke (2018) Conditional Causal Mediation Analysis of Factors Associated with Cover Crop Adoption in Iowa, USA, *Water Resources Research*, Volume54, Issue11, November 2018, Pages 9566-9584. DOI: 10.1029/2017WR022385

41. Xin Wang*, Emily Berg, Zhengyuan Zhu, Dongchu Sun, Gabriel Demuth (2018), Small Area Estimation of Proportions with Constraint for National Resources Inventory Survey. *Journal of Agricultural, Biological, and Environmental Statistics*, 23: 509. https://doi.org/10.1007/s13253-018-0329-6

42. Xuecao Li*, Yuyu Zhou, Zhengyuan Zhu, Lu Liang, Bailang Yu, and Wenting Cao, Mapping annual urban dynamics (1985-2015) using time series of Landsat data. *Remote Sensing of Environment*, 216 (2018): 674-683.

43. Xiaoma Li*, Yuyu Zhou, Ghassem R. Asrar, and Zhengyuan Zhu, Developing a 1 km resolution daily air temperature dataset for urban and surrounding areas in the conterminous United States." *Remote Sensing of Environment*, 215 (2018): 74-84.

44. Shuiqing Yin, Zhonglei Wang*, Zhengyuan Zhu, Xukai Zou, and Wenting Wang (2018), Using Kriging with Heterogeneous Measurement Error to Improve the Accuracy of Extreme Precipitation Return Levels Estimation. *Journal of Hydrology,* 562, 518-529..

45. Jae Kwang Kim, Zhonglei Wang*, Zhengyuan Zhu, and Nathan Cruze (2018), Combining survey and non-survey big data for improved sub-area prediction using a multi-level model, *Journal of Agricultural, Biological, and Environmental Statistics*, 23(2), 175-189.

46. Xin Wang*, Vivekananda Roy, and Zhengyuan Zhu (2018), A new algorithm to estimate monotone nonparametric link functions and a comparison with parametric approach. *Statistics and Computing* 28(5), 1083-1094.

47. Xiaoma Li*, Yuyu Zhou, Ghassem R. Asrar, and Zhengyuan Zhu (2018), Creating a Seamless 1 km Resolution Daily Land Surface Temperature Dataset for Urban and Surrounding Areas in the Conterminous United States. *Remote Sensing of Environment* 206 (2018): 84-97.

48. Jonathan Lisic, Hejian Sang*, Zhengyuan Zhu, and Stephanie Zimmer*, (2018) Optimal Stratification and Allocation for the June Agricultural Survey. *Journal of Official Statistics* Vol. 34, No. 1, 121-148.

49. Shuiqing Yin, Zhengyuan Zhu, Li Wang, Baoyuan Liu, Yun Xie, Guannan Wang, and Yishan Li (2018), Regional Soil Erosion Assessment Based on Sample Survey and Geostatistics. *Hydrology and Earth System Sciences.* Vol. 22, 1695-1712.

50. Min Sang Yoon*, Ahmed E. Kamal, and Zhengyuan Zhu (2017), Adaptive Data Center Activation with User Request Prediction. *Computer Networks* Vol. 122, 191-204.

51. Chong Zhang, Xiaoling Lu, Zhengyuan Zhu, Yin Hu, Darshan Singh, Corbin Jones, Jinze Liu, Jan Prins, and Yufeng Liu (2017), REC: Fast Sparse Regression-based Multicategory Classification. *Statistics and Its Interface*, 10 (2017) 175-185.

52. Shui-qing Yin, Yun Xie, Mark A. Nearing, Wen-li Guo, and Zhengyuan Zhu (2016), Intra-storm Temporal Patterns of Rainfall in China Using Huff Curves. *Transactions of The American Society of Agricultural and Biological Engineers*, 59(6): 1619-1632.

53. Yang Li*and Zhengyuan Zhu, Modeling Nonstationary Covariance Function With Convolution On Sphere (2016). *Computational Statistics and Data Analysis*, 104 (2016) 233-246.

54. Vivekananda Roy, Evangelos Evangelou*, and Zhengyuan Zhu (2016), Efficient Estimation and Prediction for the Bayesian Spatial Generalized Linear Mixed Model with Flexible Link Functions. *Biometrics*, 72(1), 289-298.

55. Dae-Jin Lee*, Zhengyuan Zhu, and Peter Toscas (2015), Spatio-temporal Functional Data Analysis for Wireless Sensor Networks Data. *Environmetrics*, 26(5), 354-362.

56. Shu Yang* and Zhengyuan Zhu (2015), Variance Estimation and Kriging Prediction for a Class of Non-stationary Spatial Models. *Statistica Sinica*, 25(1), 135-149.

57. Matthew Van Hala*, Dan Nordman, and Zhengyuan Zhu(2015), Empirical Likelihood for Irregularly Located Spatial Data. *Statistic Sinica*, 25(4), 1399-1420.

58. Shijie Zhou, Neil L. Klaer, Ross M. Daley, Zhengyuna Zhu, Michael Fuller, and Anthony D.M. Smith (2014), Modelling Multiple Fishing Gear Efficiencies and Abundance for Aggregated Populations using Fishery or Survey Data. *ICES Journal of Marine Science*, 71(9), 2436-2447.

59. Lingsong Zhang*, Zhengyuan Zhu, and Steve Marron (2014), MultiResolution Anomaly Detection Method for Fractional Gaussian Noise. *Journal of Applied Statistics*, 41(4), 769-784.

60. Shu Yang*, Jae-Kwang Kim, and Zhengyuan Zhu (2013), Parametric Fractional Imputation for Mixed Models with Nonignorable Missing Data. *Statistics and Its Interface*, 6(3), 339-347.

61. Lingsong Zhang* and Zhengyuan Zhu (2013), Spatial Multiresolution Cluster Detection Method. *Statistics and Its Interface*, 6(1), 65-77.

62. Evangelos Evangelou* and Zhengyuan Zhu (2012), Optimal Predictive Design Augmentation for Spatial Generalised Linear Mixed Models. *Journal of Statistical Planning and Inference*, 142(12), 3242-3253.

63. S.N. Lahiri, XuanLong Nguyen, Jun Yang, Zhengyuan Zhu, and P. Banerjee (2012), Wireless Sensor Networks : Statistical Issues and Challenges. *Journal of the Indian Statistical Association*, 50(1), 151-191.

64. Evangelos Evangelou*, Zhengyuan Zhu, and Richard L. Smith (2011), Estimation and Prediction for Spatial Generalized Linear Mixed Models Using High Order Laplace Approximation. *Journal of Statistical Planning and Inference*, 141(11) 3564-3577.

65. Cheolwoo Park, Felix Hernandez-Campos, Long Le, J. S. Marron, Juhyun Park, Vladas Pipiras, F. D. Smith, R. L. Smith, Michele Trvero, and Zhengyuan Zhu (2011), Long Range Dependence Analysis of Internet Traffic. *Journal of Applied Statistics*, 38(7), 1407-1433.

66. Adel Hanna, Karin Yeatts, Aijun Xiu, Zhengyuan Zhu, Richard Smith, Neil Davis, Kevin Talgo, Gurmeet Arora*, Qingyu Meng, and Joseph Pinto (2011), Asscociations between Ozone and Morbidity Using the Spatial Synoptic Classification (SSC) System. *Environmental Health*, 10(1), 1-15.

67. Zhengyuan Zhu and Yichao Wu (2010), An Efficient Algorithm for Estimation and Prediction of a Class of Convolution-based Spatial Nonstationary Models. *Journal of Computational and Graphical Statistics*, 19(1), 74-95.

68. Zhengyuan Zhu and Yufeng Liu (2009), Estimating Spatial Covariance using Penalized Likelihood with Weighted L_1 Penalty. *Journal of Nonparametric Statistics*, 21(7), 925-942.

69. Haipeng Shen and Zhengyuan Zhu (2008), Efficient Mean Estimation in Lognormal Linear Models. *Journal of Statistical Planning and Inference*, 138(3), 552-567.

70. Hae Kyung Im*, Michael L. Stein, and Zhengyuan Zhu (2007), Semiparametric Estimation of Spectral Density with Irregular Observations. *Journal of the American Statistical Association*, 102(478), 726-735.

71. Haipeng Shen, Zhengyuan Zhu and Thomas Lee (2007), Robust Estimation of Self-similarity Parameter in Network Traffic Using Wavelet Transform. *Signal Processing*, 87, 2111-2124.

72. Ji-Meng Loh and Zhengyuan Zhu (2007), Accounting for Spatial Correlation in the Scan Statistic. *Annals of Applied Statistics*, 1(2), 560-584.

73. Lingsong Zhang*, Steve Marron, Haipeng Shen, and Zhengyuan Zhu (2007), Singular Value Decomposition and its Visualization. *Journal of Computational and Graphical Statistics*, 16(4), 833-854.

74. Zhengyuan Zhu and Hao Zhang (2006), Spatial Sampling Design under In-fill Asymptotic Framework. *Environmetrics*, 17, 323-337.

75. Zhengyuan Zhu and Michael L. Stein (2006), Two-step Spatial Sampling Design for Prediction with Estimated Parameters. *Journal of Agricultural, Biological and Environmental Statistics*, 11(1), 24-44.

76. Zhengyuan Zhu and Murad S. Taqqu (2005), Impact of the Sampling Rate on the Estimation of the Parameters of Fractional Brownian Motion. *Journal of Time Series Analysis*, 27(3), 367-380.

77. Zhengyuan Zhu and Michael L. Stein (2005), Spatial Sampling Design for Parameter Estimation of the Covariance Function. *Journal of Statistical Planning and Inference*, 134(2), 583-603.

78. Zhengyuan Zhu and Michael L. Stein (2002), Parameter Estimation for Fractional Brownian Surfaces. *Statistica Sinica*, 12, 863-883.

Refereed Conference Proceedings

79. Shahid, Mukaram, Kunal Das*, Hadia Ushaq, Hongwei Zhang, Jiming Song, Daji Qiao, Sarath Babu, Yong Guan, Zhengyuan Zhu, and Arsalan Ahmad. "ReVeal: A Physics-Informed Neural Network for High-Fidelity Radio Environment Mapping." In 2025 IEEE International Symposium on Dynamic Spectrum Access Networks (DySPAN), pp. 1-10. IEEE, 2025.

80. Liu, Zhuqing, Xin Zhang*, Jia Liu, Zhengyuan Zhu, and Songtao Lu. "PILOT: An O (1/K)-Convergent Approach for Policy Evaluation with Nonlinear Function Approximation." In International Conference on Learning Representations. 2024. (Spotlight Presentation, spotlight rate: 5%, acceptance rate: 31%).

81. Zhang, Xin*, Minghong Fang, Zhuqing Liu, Haibo Yang, Jia Liu, and Zhengyuan Zhu. "Net-fleet: Achieving linear convergence speedup for fully decentralized federated learning with heterogeneous data." In Proceedings of the Twenty-Third International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing, pp. 71-80. 2022. (acceptance rate: 19.8%).

82. Zhang, X.*, Liu, Z., Liu, J., Zhu, Z. and Lu, S. 2021, Taming Communication and Sample Complexities in Decentralized Policy Evaluation for Cooperative Multi-Agent Reinforcement Learning. In Proc. NeurIPS 2021 - The Thirty-fifth Conference on Neural Information Processing Systems. (acceptance rate: 26%).

83. Zhang, X.*, Liu, J., Zhu, Z. and Bentley, E.S. 2021, GT-STORM: Taming Sample, Communication, and Memory Complexities in Decentralized Non-Convex Learning. In Proc. ACM Mobihoc 2021 - The Twenty-Second International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing (pp. 261-270). (acceptance rate: 20.1%)

84. Zhang, X.*, Liu, J., Zhu, Z. and Bentley, E.S. 2021, Low Sample and Communication Complexities in Decentralized Learning: A Triple Hybrid Approach. In *Proc. IEEE INFOCOM 2021.* (acceptance rate: 19.9%)

85. Zhang, X.*, Liu, J. and Zhu, Z., 2020. Taming Convergence for Asynchronous Stochastic Gradient Descent with Unbounded Delay in Non-Convex Learning. In *Proc. IEEE CDC 2020.*

86. Zhang, X.*, Fang, M., Liu, J. and Zhu, Z. Private and Communication-Efficient Edge Learning: A Sparse Differential Gaussian-Masking Distributed SGD Approach. In *Proc. ACM Mobihoc 2020.* (acceptance rate: 15%)

87. Zhang, X.*, Liu, J., Zhu, Z., and Bentley, E. S. Communication-Efficient Network Distributed Optimization with Differential-Coded Compressors. In *Proc. IEEE INFOCOM 2020.* (acceptance rate: 19.8%)

88. Zhang, X.*, Liu, J., Zhu, Z. and Bentley, E.S. Compressed Distributed Gradient Descent: Communication-Efficient Consensus over Networks. In *Proc. IEEE INFOCOM 2019.* (acceptance rate: 19.7%)

89. Haozhe Zhang*, Zhengyuan Zhu, and Shuiqing Yin, Identifying Precipitation Regimes in China using Model-based Clustering of Spatial Functional Data (2016), *Proceedings of the 6th International Workshop on Climate Informatics,* 117-120.

90. Min Sang Yoon*, Ahmed E. Kamal, and Zhengyuan Zhu, Requests Prediction in Cloud with a Cyclic Window Learning Algorithm (2016). *Proceedings of the IEEE GLOBECOM 2016 Workshops in Washington D.C.*

91. Eunice J. Kim*and Zhengyuan Zhu (2016), Estimating Variance Function of A Nonstationary Process Using A Difference Filter. *Advances in Geocomputation: Geocomputation 2015 - The 13th International Conference.*

92. Thomas C. M. Lee and Zhengyuan Zhu (2009), Nonparametric Spectral Density Estimation with Missing Observations. *Proceedings of the 2009 IEEE International Conference on Acoustics, Speech and Signal Processing.*

93. Lingsong Zhang*, Zhengyuan Zhu, Kevin Jeffay, J. S. Marron and F. Donelson Smith (2008), MultiResolution Anomaly Detection for the Internet. *Proceedings of the 1st IEEE Workshop on Automated Network Management.*

94. A. F. Hanna, J. Pinto, Q. Meng, A. Xiu, P. Robinson, K. Yeatts, and Z. Zhu (2008), Analysis of Weather Patterns Associated with Air Quality Degradation and Potential Health Impacts. *Proceedings of the 20th Conference on Climate Variability and Change at the 88th AMS Annual Meeting.*

95. A.F. Hanna, A. Xiu, K. Yeatts, P. Robinson, Z. Zhu, and J. Pinto (2007), Exploratory Analysis of the Potential Health Impacts of Climatic Variability and Air Pollution. *Proceedings of the 16th Conference on Applied Climatology at the 87th AMS Annual Meeting.*

96. Deepak Agarwal, Andrew McGregor, Jeff M. Phillips, Suresh Venkatasubramanian, and Zhengyuan Zhu (2006), Spatial Scan Statistics: Approximations and Performance Study. *Proceedings of the Twelfth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining.*

97. Jeff Terrell, Lingsong Zhang, Kevin Jeffay, Zhengyuan Zhu, Haipeng Shen, Andrew Nobel, and F. D. Smith (2005), Multivariate SVD Analyses for Network Anomaly Detection. *ACM SIGCOMM Refereed Poster Proceedings*, Philadelphia, US, August 22-26, 2005.

Refereed Abstracts

98. K. Yeatts, A. F. Hanna, Z. Zhu, A. Xiu, G. Arora, Q. Meng, J. Pinto, and P. Robison (2009), Ozone, PM10, and Synoptic Circulation Patterns Associated with Asthma/Myocardial Infarction Hospital Admissions. *Epidemiology* Volume 20, Issue 6, p S226.

99. Q. Meng, J. Pinto, A. F. Hanna, A. Xiu, Z. Zhu, P. Robison, and K. Yeatts (2008), Air Pollution Characterization Based on Air Masses: Implications for Human Exposures. *Epidemiology* Volume 19, Issue 6, S258.

100. K. Yeatts, Z. Zhu, A. Xiu, J. Pinto, Q. Meng, and A. Hanna (2008), Synoptic Circulation Patterns Associated with Air Pollution and Asthma/Myocardial Infarction Hospital Admissions. *Epidemiology* Volume 19, Issue 6, S329-S329.

101. K. Yeatts, Z. Zhu, A. Xiu, J. Pinto, P. Robison, and A. F. Hanna, (2007), Synoptic climate patterns, air pollution, and risk of myocardial infarctions. *Epidemiology* Volume 18, Issue 5, S128-S129.

Invited Discussions and Encyclopedia Articles

102. Zhengyuan Zhu (2013), Sensor Network. In *Encyclopedia of Environmetrics*, A.H. El-Shaarawi and W. Piegorsch (eds), John Wiley & Sons Ltd: Chichester, UK. DOI: 10.1002/9780470057339.vnn059.

103. Zhengyuan Zhu (2006), Comments on Statistics of Optical Colors of KBOs and Centaurs. Statistical Challenges in Modern Astronomy IV, 2006, G. J. Babu and E. D. Feigelson (eds.), San Francisco: Astron. Soc. Pacific.

Other Publications

104. Vianey Leos Barajas[*], Zhonglei Wang[*], Mark Kaiser, and Zhengyuan Zhu (2017), Improving Estimates of Real-Time Traffic Speeds During Weather Events for Winter Maintenance Performance Measurement. Aurora program final report, available at *http://www.aurora-program.org/projectdetail.cfm?projectID=7*

105. Jae-Kwang Kim, Zhonglei Wang[*], and Zhengyuan Zhu (2015), Area Level Model Approach to Small or Large area Estimation Incorporating Auxiliary Information. *Proceedings of the 60th ISI World Statistics Congress, 26-31 July 2015, Rio de Janeiro, Brazil*

106. Tina Greenfield, Matt Haubrich, Mark Kaiser, Zhengyuan Zhu, Daniel Fortin, and Jing Li (2012), Winter Performance Measurement Using Traffic Speed Modeling. *Transportation Research E-Circular* E-C162, pp 187-197, 2012-4.

107. Shu Yang, Jae-Kwang Kim, and Zhengyuan Zhu (2012), Parametric Fractional Imputation using Adjusted Profile Likelihood for Linear Mixed Models with Nonignorable Missing Data. *Proceedings of the Joint Statistical Meeting, 2012*

108. Zhengyuan Zhu and Liliya Williams (2006), Reconstruction of the Galaxy Cluster Mass Distribution. *Statistical Challenges in Modern Astronomy IV*, 2006, G. J. Babu and E. D. Feigelson (eds.), San Francisco: Astron. Soc. Pacific.

Technical Reports

109. Richard Smith and Zhengyuan Zhu (2004), Asymptotic Theory for Kriging with Estimated Parameters and its Application to Network Design. 2004 Technical Report Serials, Department of Statistics, the University of North Carolina at Chapel Hill.

110. Jin Cao, Scott Vander Wiel, Bin Yu, and Zhengyuan Zhu (2000), A Scalable Method for Estimating Network Traffic Matrices from Link Counts. Bell Labs Technical Report.

111. Michael L. Stein and Zhengyuan Zhu (1999), Designs for Estimating the Fractal Dimension of Gaussian Processes. Technical Report 486, Department of Statistics, the University of Chicago, 1999.

Submitted for Publication

112. A. Moore *, L. Chu, Z. Zhu Adaptive Block-Based Change-Point Detection for Sparse Spatially Clustered Data with Applications in Remote Sensing Imaging, arXiv preprint arXiv:2505.21814, revision for Annals of Applied Statistics.

113. J. Qiu *, X. Dai, Z. Zhu, S. Yin, Spatial Prediction of Local Soil Erosion Distribution in the Wasserstein Space, revision for Annals of Applied Statistics.

INVITED PRESENTATIONS IN THE PAST FIVE YEARS

1. "Adaptive Block-Based Change-Point Detection for Sparse Spatially Clustered Data with Applications in Remote Sensing Imaging", The 3rd Joint Conference on Statistics and Data Science (JCSDS), Hangzhou, China, July 11-13, 2025.

2. "Adaptive Block-Based Change-Point Detection for Sparse Spatially Clustered Data with Applications in Remote Sensing Imaging", 2025 ICSA China Conference, Zhuhai, China, June 28-30, 2025.

3. "Optimal Integration of Data from Probability and Non-probability Sample", HKBU Conference in Statistics and Data Science in Honor of Professor Emeritus Lixing Zhu, Hong Kong, China, June 24-26, 2025.

4. "Optimal Integration of Data from Probability and Non-probability Sample", The Korean Statistical Society (KSS) Summer conference, Gyeongju, Korea, June 19-21, 2025.

5. "The use of foundation models for Local Climate Zone Mapping and Urban Heat Island Studies", 31st The International Environmetrics Society Conference (TIES 2024), Adelaide, Australia, December 2-5, 2024.

6. "Spatial-temporal Data Integration to Improve the Assessment of Population Exposure and Health Risks to PM2.5", 7th International Conference on Econometrics and Statistics (EcoSta 2024), Beijing, China, July 17-19, 2024.

7. "Maximizing Benefits under Harm Constraints: A Generalized Linear Contextual Bandit Approach", Fifth International Workshop on Statistical Analyses of Multi-Outcome Data, Salzburg, Austria, July 9-10, 2024.

8. "Modeling of Spatially Indexed Distributions and Application to Local Soil Erosion Distribution Prediction", ISBA 2024 World Meeting, Venice, Italy, July 1-7, 2024.

9. "Clustered Coefficient Regression Models for Poisson Process with an Application to Seasonal Warranty Claim Data", ICSA 2024 China Conference, Wuhan, China, June 28-30, 2024.

10. "Mapping Best Management Practices for Soil and Water Conservation via Deep Residual U-net", Conference on Applied Statistics in Agriculture and Natural Resources, Ames, Iowa, May 13-16, 2024.

11. "Optimal Integration of Data from Probability and Non-probability Sample", Conference on the Theory and Foundations of Statistics in the Era of Big Data, Florida State University, April 19-21, 2024.

12. "Mixed Graphical Model for Surveys Under Informative Design", 64th ISI World Statistics Congress, Ottawa, Canada, July 16-20, 2023.

13. "Deep Learning and Uncertainty Quantification", NASA Jet Propulsion Laboratory, July 11, 2023.

14. "Optimal Split Questionnaire Designs for Multivariate Survey Data", ICSA 2023 China Conference, Chengdu, China, (June 30 – July 3, 2023.

15. "A Distributed Approach for Learning Spatial Heterogeneity", WNAR/IMS 2023 Annual Meeting, June 18-21, 2023

16. "Deep Learning and Uncertainty Quantification", Pacific Northwest National Laboratory, June 6, 2023

17. "A Distributed Approach for Learning Spatial Heterogeneity", Department of Statistics, University of Arizona, Feb. 20, 2023

18. "A Distributed Approach for Learning Spatial Heterogeneity", Department of Statistics, George Mason University, December 2, 2022

19. "A Distributed Approach for Learning Spatial Heterogeneity", Department of Statistics, University of Virginia, November 30, 2022

20. "A Distributed Approach for Learning Spatial Heterogeneity", Department of Statistics, George Washington University, October 28, 2022

21. "Locally Weighted Conformal Prediction for Classification with Application to Best Management Practices Segmentation via Deep Residual U-Net", ENVR 2022 Workshop: Environmental and Ecological Statistical Research and Applications with Societal Impacts, Provo, UT, October 6-8, 2022.

22. "Multivariate small area estimation for mixed-type response variables with item nonresponse", keynote address of the 33rd Commerce Statistical Society of China Market Survey, Teaching, and Research Branch Annual Meeting, Kunming, China, August 6th 2022. (Presented remotely)

23. "Spatial Prediction of Local Soil Erosion Distribution in the Wasserstein Space", 2022 ICSA China Conference, Xi'An, China, July 1-4 2022. (Presented remotely)

24. "Semi-parametric estimation of spatially indexed probability densities with application to regional soil erosion assessment", 2022 WNAR/IMS/JR Annual Meeting, June 10-15, 2022. (Presented remotely)

25. "Multivariate small area estimation for mixed-type response variables with item nonresponse", SAE 2022: Small Area Estimation, Surveys and Data Science, University of Maryland, College Park, USA, May 23-27 2022.

26. "Spatial-temporal functional imputation for satellite data and application to National Resource Inventory survey", Department of Statistics, Penn State University, September 10, 2021.

27. "Bivariate Small Area Estimation for Binary and Gaussian Variables Based on aConditionally Specified Model", 63st ISI World Statistics Congress, July 2021. (Presented remotely)

28. "Spatial-temporal functional imputation for satellite data and application to National Resource Inventory survey", Manchester Metropolitan University, March 10, 2021. (Presented remotely)

29. "Spatial-temporal functional imputation for satellite data and application to National Resource Inventory (NRI) survey", Department of Statistics, Texas A&M University, Feb. 7, 2020.

30. "Spatial Sampling Design using Generalized Neyman-Scott Process", The 11th ICSA International Conference Hangzhou, China December 20-22, 2019.

31. "Machine Learning/Deep Learning and Their Application to the National Resources Inventory", Department of Statistics, Zhongnan University of Economy and Law, Wuhan, China, December 11, 2019.

32. "Spatial-temporal functional imputation for large satellite image data and application to National Resource Inventory survey", Department of Statistics, University of Illinois Urbana-Champaign, September 5, 2019.

33. "Functional Covariate Balancing for Survey Data Integration", Conference on the Current Trends in Survey Statistics, Institute for Mathematical Sciences, National University of Singapore, Singapore, August 13-16, 2019.

34. "Learning Parameter Heterogeneity over Networks: A Distributed Tree-Based Fused-Lasso Approach ", International Workshop on Data Science, Jilin University, Changchun, China, July 2019.

35. "High-dimensional Vector Auto-regressive Modeling with Weighted L1 penalty for Spatio-temporal Data", The International Chinese Statistical Association China Conference, Tianjin, China, July 1-4, 2019.

36. " Learning Coefficient Heterogeneity over Networks: A Distributed Approach", Statistica Sinica, Taipei, Taiwan, June 2019.

37. "A Parametric Approach to Unmixing Remote Sensing Crop Growth Signatures", The 3rd International Conference on Econometrics and Statistics, Taichung, Taiwan, June 2019.

38. "Distributed Computing for Large Heteroskedastic Spatial Data", Symposium on Data Science and Statistics, Seattle, WA, May 2019.

39. "Spatial Temporal Satellite Data Imputation Based on Sparse Functional Data Analysis", University of Cincinnati, OH, April 19, 2019.

40. "Spatial Temporal Satellite Data Imputation Based on Sparse Functional Data Analysis", Miami University, Miami, OH, April 18, 2019.

41. "Some Theory and Practice of Statistical Data Integration", University of Illinois at Chicago, Chicago, Feburary 6, 2019.

42. "The Use of Machine Learning Methods and Remote Sensing Data to improve the US National Resources Inventory Survey", Renmin University, Beijing, China, January 15, 2019.

43. "Hierarchical multi-resolution spatial-temporal functional imputation for large satellite image data", 2019 ICSA Conference on Data Science, Yunnan, China, January 10-14, 2019.

CONSULTING EXPERIENCE

2016:

- Continued statistical consulting to Iowa Nutrient Research and Education Council (INREC) on data collection of infield agricultural practices, which is part of the larger effort to understand the source of nutrients, and to develop an effective nutrient reduction strategy.

- Provided statistical consulting to Elizabeth Swanner, Assistant Professor in the Department of Geological & Atmospheric Sciences, and her student Tania Leung on designing sampling plan to collect representative sediment samples from Lake Okoboji to study the role of Fe release in stimulating algal blooms.

2015:

- Continued statistical support and consulting service for the 2015 Iowa Seat Belt Survey, the Iowa DOT highway winter maintenance operations, the Iowa Nutrient Reduction Strategy Farmer Survey, and other continuing projects.
- Statistical consulting to the American Veterinary Medical Association on pet demographic survey and related market research surveys, which led to a grant to the Center for Survey Statistics Methodology (CSSM) to design and carry out a pilot survey for the market demand of veterinary services, and perform analysis combining the survey with administrative veterinary clinic data.
- Statistical consulting to Iowa Nutrient Research and Education Council (INREC) on data collection of in-field agricultural practices. INREC just won an award from ISU College of Agriculture and Life Sciences (CALS) to conduct a survey of Iowa agricultural retailers, and will work with CSSM for the sampling design.
- Statistical consulting to ISU faculty from the Department of Natural Resource Ecology and Management on sampling milkweed population for Monarch butterfly conservation, which led to a joint proposal to the National Fish and Wildlife Foundation, "Design of a Probabilistic Survey to Quantify Milkweed Populations in Iowa: A Framework for Assessing Monarch Habitat in the Summer Breeding Range".

2014: Continued statistical support and consulting service for the 2014 Iowa Seat Belt Survey and the Iowa DOT highway winter maintenance operations. Statistical consulting to the ISU Office of Admissions on how to use probabilistic record linkage techniques in the admissions process to help match student records, which led to the Office of Admissions funding one CSSM student to implement this approach. Statistical consulting on the Iowa Nutrient Reduction Strategy (NRS) survey design and related statistical issues for the Iowa Nutrient Research Center. Participated in AAU's effort to develop and implement a sexual assault climate survey.

2013: Provided statistical support for the 2013 Iowa Seat Belt Survey, including sample selection, weighting, and estimation. Continued consulting service to the Iowa DOT to develop performance measures for highway winter maintenance operations. Provided statistical consulting for SBRS projects such as Women Landowner Survey, Land Ownership Study, etc. Project consultant on an NIH proposal "A Detailed and Longitudinal Study of Alcohol Use among Non-College Bound Youth."

2012: Provided statistical support for the 2012 Iowa Seat Belt Survey, including sample selection, weighting, and estimation. Continued consulting service to the Iowa DOT to develop performance measures for highway winter maintenance operations.

2011: Helped design the sampling plan and compute the data weighting for the Producer Participation Survey of Iowa Farmers to study the use of cellulosic biomass as a bio-fuel in Iowa.
Continued consulting service to the Iowa DOT and the CIRAS.
Designed the Iowa Seat Belt Survey, which is the first to meet the new NHTSS guildeline.
Provided consulting service on sampling design and helped to write the section on statistical sampling for an Engineering Research Center (ERC) proposal to NSF to establish a center at ISU in the area of nano-sensors for food safety.

2010: Provided consulting service to the Iowa Department of Transportation on developing models for real time prediction of traffic speed drops during major weather events.
Provided statistical support for Ames Labs on their beryllium sampling project.
Provided statistical support for the power plant at the Iowa State University to monitor presence of metal in groundwater at ash disposal site.

2009: Provided statistical support for Center for Industrial Research and Service (CIRAS) on sampling design for random audits of the USDA Bio-preferred program.

1997–2002: Advised researchers from the University of Chicago Hospitals, Department of Anthropology and Department of Biochemistry and Molecular Biology on design of experiments and statistical analysis.

TEACHING EXPERIENCE

2009-Current Iowa State University:

Stat 341: *Introduction to the Theory of Probability and Statistics I*
An undergraduate level course on probability and distribution functions.
Stat 421 *Survey Sampling Techniques*
A major undergraduate/nonmajor graduate course on survey sampling designs.
Stat 506 *Statistical Methods for Spatial Data*
A graduate course on spatial statistics.
Stat 521 *Theory & Application of Survey Sampling*
A graduate course on the practical aspects and basic theory of design and estimation in sample surveys for finite populations.
Stat 606 *Advanced Spatial Statistics*
An advanced graduate course on spatial statistics.
Stat 643 *Advanced Theory of Statistical Inference*
A core course for statistics Ph.D. students.

2002-2009 University of North Carolina at Chapel Hill:

Statistics 31/STOR 155: *Introductory Statistics* (University of North Carolina)
An undergraduate level introductory course for statistics.
Statistics 101/STOR 455: *Statistical Methods I* (University of North Carolina)
An undergraduate level course on regression analysis and related techniques.
Statistics 174/STOR 664: *Applied Statistics I* (University of North Carolina)
A graduate level core course on linear models for Ph.D. students.

Statistics 175/STOR 665: *Applied Statistics II* (University of North Carolina)
A graduate level core course on generalized linear models for Ph.D. students.
STOR 331: *The Theory of the Design of Experiments* (University of North Carolina)
An advanced graduate level course for Ph.D. students.
STOR 890: *Spatial Statistics* (University of North Carolina)
An advanced graduate level course for Ph.D. students.

2001 University of Chicago:

Statistics 220: *Statistical Methods and Their Applications* (University of Chicago)
An undergraduate level introduction course on statistics.

STUDENT SUPERVISION:

Current Graduate Students and Post-Docs

Ph.D. students:
Yingchao Zhou (with Dan Nordman)
Chengpeng Zeng (with Emily Berg)
Jiaxin Shi
Alan Moore (with Lynna Chu)
Geping Chen (with Chunlin Li)
Zihao Yang (with Kosuke Morikawa)

M.S. students:

Post-Docs:
Jia Hu

Ph.D. students/Postdoc completed

Bufei Guo (with Chunlin Li) Ph.D. 2025 Summer
Current Position: Data scientist at Google
Kunal Das (with Lily Wang) Ph.D. 2025 Summer
Current Position: Postdoc at Montana State University

Ricardo Batista Ph.D. 2023
Current Position: Data Scientist at Waymo

Yoon Bae Jun (with Dan Nettleton), PostDoc, 2023
Current Position: Assistant professor at University of Nevada Reno.

Tao Zhang (With Yuyu Zhou), PostDoc, 2023
Current Position: TBD

Hao Sun (with Emily Berg), Ph.D. 2022
Current Position: Senior Manager, Biostatistics at Bristol Myers Squibb.

Charlie Labuzzetta (with Yuyu Zhou) Ph.D. 2022
Current Position: Mathematical Statistician, USGS.

Dae-Gyu Jang (with Cindy Yu), Ph.D. 2022
Current Position: Biostatistician, University of Michigan

Jiaming Qiu (with Xiongtao Dai), Ph.D. 2022

Current Position: Postdoc, Fred Hutchinson Cancer Research Center

Yueying Wang (joint with Li Wang), Ph.D. 2021
Current Position: Data Scientist, Amazon

Hengfang Wang (joint with Jae-Kwang Kim), Ph.D. 2021
Current Position: Assistant Professor, Fujian Normal University, China

Xinyue Chang (joint with Xiongtao Dai and Yehua Li), Ph.D. 2021
Current Position: Research Scientist at Eli Lilly and Company

Xin Zhang (joint with Kevin Jia Liu), Ph.D. 2021
Current Position: Research Scientist at Facebook

Zhenzhong Wang (joint with Cindy Yu), Ph.D. 2020
Current Position: Research Scientist at Eli Lilly and Company

Xuecao Li (joint with Yuyu Zhou), Postdoc, 2020
Current Position: Professor, Beijing University

Stephanie Zimmer (joint with Sarah Nusser and Jae-Kwang Kim), Ph.D. 2019
"Multivariate Stratification Methods to Accommodate Multiple Estimation Goals."
Current Position: Research Statistician, RTI International

Zhonglei Wang (joint with Jae-kwang Kim), Ph.D. 2019
"Topics in Bootstrap methods for survey sampling and spatially balanced design."
Current Position: Associate Professor, Xiamen University.

Weicheng Zhu (joint with Yehua Li), Ph.D. 2019
"Topics in sparse functional data analysis."
Current Position: Applied Scientist, Amazon.com, Inc.

Xin Wang (joint with Roy Vivek), Ph.D. 2019
"Topics in generalized linear mixed models and spatial subgroup analysis."
Current Position: Assistant Professor, Department of Statistics, San Diego State University.

Jongho Im, PostDoc, 2017
Current Position: Assistant Professor, Department of Applied Statistics, Yonsei University.

Daniel Fortin (joint with Petrutza Caragea), Ph.D. 2015
"Contributions to modeling spatially indexed functional data using a reproducing kernel Hilbert space framework."
Current Position: Statistical Scientist, Pacific Northwest National Laboratory.

Shu Yang (joint with Jae Kwang Kim and Alex Roiterstein), Ph.D. 2014.
"Fractional Imputation Methods in Missing Data Analysis and Nonstationary Spatial Modeling."
Current Position: Professor, Department of Statistics, North Carolina State University.

Eunice Kim, Ph.D., 2013.
"Hotspot detection and a nonstationary process variance function estimation"
Current Position: Data Scientist, Microsoft Corporation.

Yang Li, Ph.D., 2013.
"Non-parametric and Semi-parametric estimation of Spatial Covariance Function."

Current Position: Associate Professor, Department of Mathematics and Statistics, Florida Atlantic University

Vangelis Evangelou, Ph.D., 2009. (jointly with Richard Smith)
"Asymptotic Theory for Inference in Non-linear Mixed Models."
Current Position: Senior Lecturer in Statistics with tenure, Department of Mathematical Science, University of Bath, United Kingdom.

Xuanyao He, Ph.D., 2009. (jointly with Richard Smith)
"Statistical Inferences for Correlated Observations: Prediction, Estimation and Design."
Current Position: Associate Research Scientist at Purdue Discovery Park

Lingsong Zhang, Ph.D., 2007. (jointly with Steve Marron)
"Functional Singular Value Decomposition and MultiResolution Anomaly Detection."
Current Position: Professor, Department of Statistics, Purdue University

M.S. students completed

Caleb Leedy, M.S., 2022

Boyle Tanner, M.S., 2021

Charlie Labuzzetta, M.S., 2020

Haozhe Zhang, M.S., 2016
"Clustering Multiscale Spatial Functional Data with Application to Precipitation Regimes Identification."

Guangyu Liu, M.S., 2011.
"Microarray cluster analysis and its applications on nectary microarray data."

Lu Liu, M.S., 2011.
"Comparisons of statistical methods for completely mapped spatial point process data from Plant Pathology."

Yichun Hu M.S., 2007.
"Semi-Parametric Time Series Model of Air Pollution and Admission of Asthma and Infarction."

Undergraduate Students completed

Shitian Li, First-Year Honors Mentor Program, Spring 2012.

Ashley E. Johnson, ISU Math/Stat REU Alliance program, summer 2010.
2009 class: James Hemphill Pickard, Kelly Jo Quinn, Anthoni Cameron Lee Taylor, Wai Chung Wong.

2008 class: Oanh Thi Nguyen, Paul Kumar Nataraja, Justin Wayne Sharrock, Chris Graham Spivey.

DEPARTMENTAL SERVICE

College and University Committees at Iowa State University:

Search Committee for Vice President for Diversity, Equity, and Inclusion.
Information Technology Leadership Committee (2015-)

ISU High Performance Computing Advisory Committee (2015-)
Data Driven Science Initiative (DDSI) Faculty Steering Committee (2015-)
University Research Awards selection committee (2015)
LAS Center Task Force Committee (2014)
Elected member of graduate council (2013-2016)

Departmental Committees at Iowa State University:

Chair, Memorial and Distinguished Lecture Committee (2013-2016)
Advisory Committee to the chair (2014-2015)
Search Committee for survey position (2014-2015)
Admissions Committee (2009-2021)
Chair, search committee for survey research faculty (2013-2014)
Search Committee for big data position (2013-2014)
Seminar Committee (Spring 2010, Fall 2013)
Exams Committee (2011-2012)
Honors and Awards Committee (2010-2012)
Social Committee (2010-2012)
STATCOMM faculty advisor (2010)
Library committee (2009-2010)

Ph.D. and Master thesis Committee (Iowa State University):

PhD in Statistics: Haozhe Zhang, Lanfeng Pan, Colin Lewis-Beck, Nicholas Clark, Ran Bi, Aaron Baker, Gabriel Demuth, Xiaojun Mao, Liuhua Peng, Ju Ji, Yinan Fang, Xiaoyue Cheng, Matthew Mark Van Hala, Jonathan Hobbs, Jun Li, Sixia Chen, Ping-Shou Zhong.
Master in Statistics: Ran Bi, Amy Tentinger.
PhD and Master in other department:
Yoon Min Sang (Ph.D., Electrical and Computer Engineering, current)
Kai Liu (Ph.D., Agricultural and Biosystems Engineering and Animal Science, current)

Yuting Guo (Master, Sociology, current)

Elisabeth Callen (Ph.D., Geological and Atmospheric Sciences, 2016)

Jinsheng Zhang (Ph.D., Computer Science, 2016)

Michael Sundberg (Master, Natural Resource Ecology and Management, 2016)

Jing Xu (Ph.D., Applied Linguistics and Technology, 2015)

Jun Chen (Ph.D., Computer Science, 2014)

Rosan Luo (Master, Mass Communication and Journalism, 2014)

Herman Sahota (Ph.D., Electrical and Computer Engineering, 2013)

Ph.D. and Master thesis Committee (University of North Carolina, Chapel Hill):

Ying Lu (Ph.D., 2009)
Hongyu Ru (M.S., 2009)
Gurmeet Arora (M.S., 2009)
Elizabeth C Shamseldin (Ph.D., 2008)
Michele Trovero (Ph.D., 2007)

Jie Zhou (Ph.D., 2007)
Li Cai (M.S., 2006)
Jim Crooks (M.S., 2006)
Xiaohui Wang (Ph.D., 2005)
Ivan Pacheco-Soto (Ph.D., 2005)
Stas Kolenikov (Ph.D., 2005)
Rima Izem (Ph.D., 2004)
Faheem Mitha (Ph.D.,2003)
Haonan Wang (Ph.D., 2003)
John D Fricks (M.S., 2003)

Other Committees (UNC-CH):

MDS program undergraduates advisor (2005-2009)
Ph.D. Comprehensive Written Exams Committee (2002-2009)
Chair, Ph.D. Comprehensive Written Exams Committee (2002-2004)
Computing committee (2002-2005)
Supervising the revision of department webpage (2002-2005)
Faculty Search Committee (2002-2003)

PROFESSIONAL SERVICES

External Committees:

Member, steering committee of the Central Plains Federal Statistical Research Data Center, 2014-present

Member, National Academies of Sciences, Engineering, and Medicine Committee on Data and Management Strategies for Recreational Fisheries with Annual Catch Limits, 2020-2021

Member, NSF Advisory Panel for the Methodology, Measurement, and Statistics (MMS) Program, 2017-2018

Member, Scientific Advisory Committee, the United Nations Food and Agriculture Organization Global Strategy, 2015-2018

Editor/Associate Editor:

Editor, Stat, 2023-

AE, Environmental and Ecological Statistics, 2014-

Statistics and Its Interface, 2013-2016

Treasurer:

American Statistical Association (ASA) Iowa Chapter

Referee:

Annals of Statistics, Biometrics, Biometrika, Bioinformatics, Bernoulli, Environmental and Ecological Statistics, Geoderma, Journal of Agricultural, Biological, and Environmental Statistics, Journal of the American Statistical Association, Journal of Computational and Graphical Statistics, Journal of Statistical Planning and Inference,

Journal of Machine Learning Rearch, Journal of Nonparametric Statistics, Journal of Probability and Statistics, Journal of the Royal Statistical Society: Series A, Journal of Statistical Computation and Simulation, Probability Theory and Related Fields, Statistica Sinica, Technometrics Applied Stochastic Models in Business and Industry, Computational Statistics & Data Analysis, IEEE Transaction on Signal Processing, Scientia Marina.

Session organizer:

Invited session "Model Assessment for Complex Dependence Structure" in 2016 ICSA Applied Statistics Symposium, Atlanta, Georgia, June 2016.
Invited session "Spatial Statistics and Computer Experiment Design" in 2016 Spring Research Conference, Chicago, 2016.
Co-organized Invited session "Issues in Probabilistic Models for Random Graphs" in Joint 24th ICSA Applied Statistics Symposium and 13th Graybill Conference, Fort Collins, Colorado, June 2015.
Invited session "Spatial Sampling Design: Methodology and Application" in the 24th Annual TIES Conference, Dec. 2014.
Invited session "Sensor Network" in the 58th World Statistics Congress of the International Statistical Institute (ISI), August 2011.
Invited session "Scan Statistics and Spatial test" in IMS-China International Conference on Statistics and Probability 2011, July 8-11, 2011, XiAn, China.
Invited session "Statistical issues in long term natural resources monitoring survey" in The International Environmetrics Society 3rd North American Regional Meeting, July 2011.
Invited session "Applications in Spatial Statistics" in the 20th ICSA Applied Statistics Symposium. June 2011.

PROFESSIONAL MEMBERSHIPS

Elected member of the International Statistical Institute (2014).
Member of American Statistical Association.
Member of Institute of Mathematical Statistics.
Member of the International Chinese Statistical Association.
Member of the International Environmetrics Society.