Xinwei Deng

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Department of Statistics, Virginia Tech
211 Hutcheson Hall
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ACADEMIC APPOINTMENTS

Associate Professor, Department of Statistics, Virginia Tech, Blacksburg, VA — June 2016-present

Assistant Professor, Department of Statistics, Virginia Tech, Blacksburg, VA — May 2011-May 2016

Visiting Assistant Professor, Department of Statistics, University of Wisconsin-Madison, Madison, WI — Aug. 2009 to May 2011

EDUCATION

- Ph.D., School of Industrial and Systems Engineering,
  Georgia Institute of Technology (Aug. 2004 – Aug. 2009)

  Advisors: Professor C. F. Jeff Wu and Professor Ming Yuan
  Major concentration: Statistics.
  Minor: Optimization.

- B.S., Mathematics,
  Nanjing University, China (Sept. 1999 – July 2003).

RESEARCH INTERESTS

- Interface between Experimental Design and Machine Learning
- Statistical Learning and Data Mining
- Design and Analysis of Computer Experiments
- Modeling and Analysis of High-Dimensional Data
- Covariance Matrix Estimation and Its Applications
- Statistical Methods for Nanotechnology

PUBLICATIONS

Refereed Articles

1. Deng, X., Yuan, M., and Sudjianto, A. (2007). A Note on Robust Kernel Principal Component Analysis, *Contemporary Mathematics*, **443**, 21–33.

2. Deng, X., Joseph, V. R., Sudjianto, A., and Wu, C. F. J. (2009). Active Learning via Sequential Design with Applications to Detection of Money Laundering, *Journal of the American Statistical Association*, **104(487)**, 969–981.

3. Deng, X., Joseph, V. R., Mai, W., Wang, Z. L., and Wu, C. F. J. (2009). A Statistical Approach to Quantifying the Elastic Deformation of Nanomaterials, *Proceedings of the National Academy of Sciences*, **106(29)**, 11845–11850.

4. Deng, X. and Yuan, M. (2009). Large Gaussian Covariance Matrix Estimation with Markov Structures, *Journal of Computational and Graphical Statistics*, **18(3)**, 640–657.

5. Mai, W. and **Deng, X.** (2010). Applications of Statistical Quantification Techniques in Nanomechanics and Nanoelectronics, *Nanotechnology*, **21(40)**, 405704.

6. Shao, J., Wang, Y., **Deng, X.**, and Wang, S. (2011). Sparse Linear Discriminant Analysis by Thresholding for High Dimensional Data, *Annals of Statistics*, **39(2)**, 1241–1265.

7. Morgan, J.P. and **Deng, X.** (2012). Experimental Design, *WIREs Data Mining and Knowledge Discovery*, **2**, 164–172.

8. Shao, J. and **Deng, X.** (2012). Estimation in High-Dimensional Linear Models with Deterministic Covariates, *Annals of Statistics*, **40(2)**, 812–831.

9. Carbo, A.[#], Bassaganya-Riera, J., Pedragosa, M., Viladomiu, M., Marathe, M., Eubank, S., Wendesdorf, K., Bisset, K., Hoops, S., **Deng, X.**, Alam, M., Krosnteiner, B., Mei, Y., and Hontecillas, R. (2013). Predictive Computational Modeling of the Mucosal Immune Responses during Helicobacter Pylori Infection, *PLoS ONE* **8(9)**: e73365.

10. Zhang, Q.[#], **Deng, X.** Qian, P. Z. G., and Wang, X. (2013). Spatial Modeling for Refining and Predicting Surface Potential Mapping with Enhanced Resolution, *Nanoscale*, **5**, 921–926.

11. Deng, X. and Tsui, K. W. (2013). Penalized Covariance Matrix Estimation using a Matrix-Logarithm Transformation, *Journal of Computational and Graphical Statistics*, **22(2)**, 494–512.

12. Yeo, I-K, Johnson, R. A., and **Deng, X.** (2014). An Empirical Characteristic Function Approach to Selecting a Transformation to Normality, *Communications for Statistical Applications and Methods*, **21(3)**, 213–224.

13. Li, H.[#], **Deng, X.**, Kim, D-Y, and Smith, E. P. (2014). Modeling Maximum Daily Temperature using a Varying Coefficient Regression Model, *Water Resource Research*, **50(4)**, 3073–3087.

14. Alam, M.[#], **Deng, X.***, Philipson, C., Bassaganya-Riera, J., Bisset, K., Carbo, A., Eubank, S., Hontecillas, R., Hoops, S., Mei, Y., Abedi, V., and Marathe, M. (2015). Sensitivity Analysis of an ENteric Immunity Simulator (ENISI)-based Model of Immune Responses to *Helicobacter pylori* Infection, *PLoS ONE*, **10(9)**, e0136139.

15. Jin, R. and **Deng, X.** (2015). Ensemble Modeling for Data Fusion in Manufacturing Process Scale-up, *IIE Transactions*, **47(3)**, 203–214.

16. Deng, X., Hung, Y., and Lin, C. D. (2015). Design for Computer Experiments with Qualitative and Quantitative Factors, *Statistica Sinica*, **25**, 1567–1581.

17. Deng, X. and Jin, R. (2015). QQ Models: Joint Modeling for Quantitative and Qualitative Quality Responses in Manufacturing Systems, *Technometrics*, **57(3)**, 320–331.

18. Wang, X.[#], Wu, S., Wang, K., **Deng, X.**, Liu, L., and Cai, Q. (2016) A Spatial Calibration Model for Nanotube Film Quality Prediction, *IEEE Transactions on Automation Science and Engineering*, **13(2)**, 903-917.

19. Zeng, L., **Deng. X.**, and Yang, J. (2016). Constrained Hierarchical Modeling of Degradation Data in Tissue-engineered Scaffold Fabrication, *IIE Transactions*, **48(1)**, 16-33.

20. Jiang, H. J., **Deng, X.***, Lopez, V., and Hamann, H. (2016). Online Updating of Computer Model Output Using Real-time Sensor Data, *Technometrics*, **58(4)**, 472-482.

21. Li, H.[#], **Deng, X.**, Dolloff, A., and Smith, E. P. (2016). Bivariate Functional Data Clustering: Grouping Streams based on a Varying Coefficient Model of the Stream Water and Air Temperature Relationship, *Environmetrics,* **27(1)**, 15-26.

22. Sun, H.[#], **Deng, X.**, Wang, K., and Jin, R. (2016). Logistic Regression for Crystal Growth Process Modeling through Hierarchical Nonnegative Garrote based Variable Selection, *IIE Transactions,* **48(8)**, 787-796.

23. Deng, X., Lin, C. D., Liu, K-W, and Rowe, R. K. (2017). Additive Gaussian Process for Computer Models with Qualitative and Quantitative Factors, *Technometrics,* **59(3)**, 283-292.

24. Li, H.[#], **Deng, X.**, and Smith E. (2017). Missing Data Imputation for Paired Stream and Air Temperature Sensor Data, *Environmetrics*, **28(1)**, e2426.

25. Nino-Ruiz, E. D.[#], Sandu, A., and **Deng, X.** (2017). A Parallel Ensemble Kalman Filter Implementation Based on Modified Cholesky Decomposition, *Journal of Computational Science,* in press.

26. Zheng, H.[#], Tsui, K-W, Kang, X. and **Deng, X*.** (2017). Cholesky-based Model Averaging for Covariance Matrix Estimation, *Statistical Theory and Related Fields*, **1(1)**, 48-58.

27. Sun, H.[#], Rao, P. K., Kong, Z., **Deng, X.**, and Jin, R. (2017). Functional Quantitative and Qualitative Models for Quality Modeling in a Fused Deposition Modeling Process, *IEEE Transactions on Automation Science and Engineering,* accepted.

28. Wu, H.[#], **Deng, X*.**, and Ramakrishnan, N. (2017). Sparse Estimation of Multivariate Poisson Log-Normal Model and Inverse Covariance for Counting Data, *Statistical Analysis and Data Mining*, accepted.

29. Nino-Ruiz, E. D.[#], Sandu, A., and **Deng, X.** (2017). An Ensemble Kalman Filter Implementation Based On Modified Cholesky Decomposition for Inverse Covariance Matrix Estimation, *SIAM Journal on Scientific Computing*, accepted.

30. Zeng, L. and **Deng, X.** (2017). A Constrained Gaussian Process Approach to Modeling Tissue-engineered Scaffold Degradation, *IISE Transactions,* accepted.

Refereed Conference Papers

31. Lozano, A. C., Jiang, H. J., and **Deng, X.** (2013). Robust Joint Sparse Estimation of Multiresponse Regression and Inverse Covariance Matrix, *19th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2013)*, 293-301. (acceptance rate 18%).

32. Jiang, H. J., **Deng, X.**, Lopez, V., and Hamann, H. (2013). A Statistical Approach to Real-time Updating and Automatic Scheduling of Physical Models, *ASME 2013 International Technical Conference and Exhibition on Packaging and Integration of Electronic and Photonic Microsystems*, IPACK2013-73042.

33. Nino-Ruiz, E. D.[#], Sandu, A., and **Deng, X.** (2015). A Parallel Ensemble Kalman Filter Implementation based on Modified Cholesky Decomposition. *The 6th Workshop on Latest Advances in Scalable Algorithms for Large-Scale Systems (ScalA'15)*, Article 4. DOI=http://dx.doi.org/10.1145/2832080.2832084.

34. Cadena, J.[#], Basak, A., **Deng, X.**, and Vullikanti, A. (2017). Graph Scan Statistics with Uncertainty. *32nd AAAI Conference on Artificial Intelligence (AAAI-18)*, accepted. (Acceptance rate 25%)

Book Chapter

35. Moon, J. Y.[#], Chaibub Neto, E., **Deng, X.**, and Yandell, B. S. (2014). Bayesian Causal Phenotype Network Incorporating Genetic Variation and Biological Knowledge, in *Probabilistic Graphical Models for Genetics, Genomics and Postgenomics,* Oxford University Press.

36. Michalak, P., Sobral, B. W., Abedi, V., Kim, Y-B., **Deng, X.**, Philipson, C., Viladomiu, M., Lu, P., Wendelsdorf, K., Hontecillas, R. and Bassaganya-Riera, J. (2015). From Big Data Analytics and Network Inference to Systems Modeling, in *Computational Immunology: Models and Tools, Elesvier.*

37. Alam, M.[#], Abedi, V., Bassaganya-Riera, J., Wendelsdorf, K. Bisset, K., **Deng, X.**, Eubank, S., Hontecillas, R., Hoops, S., Marathe, M. (2015). Agent-Based Modeling and High Performance Computing, in *Computational Immunology: Models and Tools, Elesvier.*

38. Deng, X.*, Hung, Y., and Lin, C. D. (2017). Design and Analysis of Computer Experiments, in *Handbook of Research on Applied Cybernetics and Systems Science*, *IGI Global*, 264-279.

[#]: work with students
[*]: work as a corresponding author

Papers Submitted

39. Kang, L., **Deng, X.**, and Jin, R. (2016). Bayesian D-Optimal Design of Experiments with Quantitative and Qualitative Responses, revision for *Journal of the American Statistical Association*.

40. Xie, Y., Li, J., **Deng, X**., Hong, Y., and Kolivras, K. N. (2017). Spatial Variable Selection via Elastic Net with an Application to Virginia Lyme Disease Case Data, revision for *Journal of the American Statistical Association*.

41. Kang, X., and **Deng, X.** (2017). Ensemble Estimation of Large Sparse Covariance Matrix Based on the Modified Cholesky Decomposition, submitted to *Statistica Sinica*.

42. Kang, X., and **Deng, X.** (2017). An Improved Modified Cholesky Decomposition Method for Inverse Covariance Matrix Estimation, submitted to *Journal of Computational and Graphical Statistics.*

43. Deng, X. and Qian, P. Z. G. (2017). Designs of Simulation Experiments for Estimating Error Rate of a Classification Rule, to be submitted to *Journal of Computational and Graphical Statistics*.

44. Zhang, A., **Deng, X.**, Wang, J., and Hobart, J. (2016). A Two-stage Risk Model Construction and Evaluation in Reject Inference, revision for *Annals of Applied Statistics*.

45. Jin, R. and **Deng, X.** (2016). Dynamic Quality Models for Manufacturing Systems Considering Equipment Degradation, revision submitted to *Journal of Quality and Technology*.

46. Peng, T., Jiang, H., Kim, H., and **Deng, X.** (2016) Robust Estimation of Sparse Gaussian Graphical Model by a Minimum Distance Criterion, revision for *Journal of Nonparametric Statistics*.

47. Kang L., Kang X., **Deng X.** and Jin R. (2016). Bayesian Hierarchical Models for Quantitative and Qualitative Responses, revision for *Journal of Quality Technology*.

48. Chu, S., **Deng, X.,** and Marathe, A. (2016). A Latent Process Approach for Change-Point Detection of Mixed-Type Observations, revision for *Journal of Quality Technology.*

49. Kang X., **Deng X.**, Tsui K. and Pourahmadi, M (2017). Order-Averaged Cholesky-GARCH Models: Comparison of Asset Ordination Methods, submitted to *American Statistician*.

50. Lan, Q., Sun, H., Robertson, J., **Deng, X.**, and Jin R. (2017). Non-invasive Assessment of Liver Quality in Transplantation based on Thermal Imaging Analysis, submitted to *Journal of Biomedical Informatics.*

51. Li, Y., Jin, R., Sun, H., **Deng, X.**, and Zhang, C. (2017). Smooth Spatial Variable Selectionfor Quality Prediction in Printed Electronics Manufacturing, submitted to *IIE Transactions.*

52. Zhang, A. and **Deng, X.** (2017). A Regularized Approach to Sparse Linear Discrimination Analysis for Two-class Classification, to be submitted to *Journal of Statistical Planning and Inference*.

53. Li, Y. and **Deng, X.** (2017). A Sequential Algorithm of Constructing I-Optimal Design for Generalized Linear Models, to be submitted to *Journal of the American Statistical Association*.

54. Chu. S, Jiang, H., **Deng, X.**, and Xue. Z, (2017). Convex Clustering for Generalized Linear Models with Applications to IT Service Pricing, to be submitted to *Technometrics*.

GRANTS

Finished

G1. Collaborative Research: A Statistics-Guided Framework for Synthesis and Characterization of Nanomaterials, **NSF-CMMI-1233571**, Sole-PI, $123,192, 09/01/12-08/31/15.

G2. Empirical Model Validation for Thermal Spray Coating Processes, **CCAM** (Commonwealth Center for Advanced Manufacturing), PI, $60,754, 08/11/2014-08/03/2015.

G3. An Integrated Modeling Framework for Thermal Spray Processes, **CCAM** (Commonwealth Center for Advanced Manufacturing), Co-PI, $35,000, 02/04/2013-03/31/2014.

G4. Ensemble Modeling for Continuous Fiber Manufacturing, Chengdu Jiyi Technology Co. Ltd., Co-PI, $60,000, 07/10/2013-09/10/2014.

G5. Modeling and Quality Control for Manufacturing Big Data System, **Procter & Gamble Co.**, Co-PI, $50,000, 08/01/2015-07/31/2016.

G6. Live Input Control of Thermal Spray - Phase 3, **CCAM** (Commonwealth Center for Advanced Manufacturing), Co-PI, $87,026, 07/18/2016-06/30/2017.

G7. Data Fusion for Complex Engineering Systems, **VT-ICTAS** Diversity and Inclusion Seed Grant, PI, $10,000, 10/15/2016 - 06/30/2017.

Ongoing

G8. Collaborative Research: Experimental Design and Analysis of Quantitative-Qualitative Responses in Manufacturing and Biomedical Systems, **NSF-CMMI-1435996**, Co-PI, $226,020, 09/01/14-08/31/18.

G9. Data-driven Modeling and Optimization for Energy-Smart Manufacturing, **NSF-CMMI-1634867**, Co-PI, $300,000, 09/01/16-08/31/19.

G10. Big Data Methodologies for Simplifying Traffic Safety Analyses, **Safe-D National UTC**, Co-PI, $109,608, 05/01/2017-08/31/2018.

G11. EAGER: SSDIM: Ensembles of Interdependent Critical Infrastructure Networks, **NSF-CMMI-1745207**, Co-PI, $200,000, 09/01/2017-08/31/2018.

G12. Integrative Genomics Approach to Computational Assessment of Threats (IGACAT), **IARPA**, Co-PI, $3,000,000, 05/01/2017-12/15/2018.

STUDENT ADVISING

Completed

- Han Li (Ph.D. in Statistics at Virginia Tech), "Statistical Modeling and Analysis of Bivariate Spatial-Temporal Data with the Application to Stream Temperature Study", October, 2014 (Co-advisor: Eric Smith).

- Angang Zhang (Ph.D. in statistics at Virginia Tech), "Some Advances in Classifying and Modeling Complex Data", November, 2015.

- Xiaoning Kang (Ph.D. in statistics at Virginia Tech), "Contributions to Large Covariance and Inverse Covariance Matrices Estimation", July, 2016.

- Shuyu Chu (Ph.D. in statistics at Virginia Tech), "Change Detection and Analysis of Data with Heterogeneous Structures", July, 2017 (Co-advisor: Achla Marathe).

Current

- Sumin Shen (Ph.D. in statistics, expected spring 2019)
- Huiying Mao (Ph.D. in statistics, expected spring 2019)
- Zhihao Hu (Ph.D. in statistics, expected spring 2021)

TEACHING EXPERIENCE

Department of Statistics, Virginia Tech

Spring 2017, Stat 5204 – Experimental Design and Analysis (SPOT Overall: 4.86/6)
Spring 2017, Stat 4204/5204G – DoE: Concepts and Applications (SPOT Overall: 5.15/6)
Spring 2017, Stat 6984 – Causality Learning (SPOT Overall: 4.33/6)
Fall 2016, Stat 5504 – Multivariate Methods (SPOT Overall: 5.67/6)
Spring, 2016, Stat/CS 5526 – Data Analytics II (SPOT Overall: 5.18/6)
Spring 2016, Stat5204 – Experimental Design and Analysis (SPOT Overall: 4.10/6)
Fall 2015, Stat 5504 – Multivariate Methods (SPOT Overall: 5.71/6)
Spring, 2015, Stat 5204 – Experimental Design and Analysis (SPOT Overall: 4.96/6)
Fall 2014, Stat 5504 – Multivariate Methods (SPOT Overall: 5.67/6)
Spring 2014, Stat 5304 – Statistical Computing (SPOT Overall: 5.71/6)
Spring, 2014, Stat/CS 5526–Data Analytics II (SPOT Overall: 5.75/6)
Spring, 2013, Stat 6424 – Advanced Multivariate Analysis (SPOT Overall: 6/6)
Fall 2012, Stat 5504 – Multivariate Methods (SPOT Overall: 4.93/6)
Spring 2012, Stat 5304 – Statistical Computing (SPOT Overall: 5/6)
Fall, 2011, Stat/CS 5525 – Data Analytics I (SPOT Overall: 5.20/6)

ACADEMIC AWARDS & HONORS

- Elected Member of the International Statistical Institute (ISI), 2017.
- IISE Transactions Best Paper Award on Quality and Reliability Engineering, 2017.
- Commencement Speaker, Department of Statistics, Virginia Tech, 2016.
- International Travel Supplemental Grant Award, Virginia Tech, 2012, 2014, 2017.
- Nomination for Council Member of the INFORMS at Data Mining (DM) Section, 2012.
- Nomination for 3M Non-Tenured Faculty Award, 2012.
- Recipient of Mentoring Project Award, Virginia Tech, 2012.
- NSF Travel Support, International Conference on Robust Statistics (ICORS), 2012.

INVITED TALKS

- Online Updating of Computer Model Output Using Real-time Sensor Data, Department of Statistics, University of Georgia, 2017, Athens, GA.

- Additive Gaussian Process for Computer Models with Qualitative and Quantitative Factors, INFORMS Annual Meeting, 2017, Houston, TX.
- Change-point Detection for Mixed-type Observations, Spring Research Conference (SRC) 2017, New Brunswick, NJ.
- Bayesian D-Optimal Design of Experiments with Quantitative and Qualitative Responses, IMS-China International Conference on Statistics and Probability, 2017, Nanning, China.
- Additive Gaussian Process for Computer Models with Qualitative and Quantitative Factors, ICSA Canada Chapter Symposium, 2017, Vancouver, Canada.
- A Mixed Variance Component Model for Quantifying the Elasticity Modulus of Nanomaterials, Joint Statistical Meetings (JSM), 2017, Baltimore, MD.
- Design and Analysis for Computer Experiments with Qualitative and Quantitative Factors, School of Mathematics, Beijing Institute of Technology, 2017, Beijing, China.
- Robust Estimation for Sparse Multivariate Regression, Department of Mathematics, Nanjing University, 2017, Nanjing, China.
- Design and Analysis for Computer Experiments with Qualitative and Quantitative Factors, Department of Mathematics, IUPUI, Indianapolis, IN, 2017.
- An Order-Invariant Cholesky-Log-GARCH Model for Multivariate Financial Time Series INFORMS Annual Meeting, 2016, Nashville, TN.
- Online Updating of Computer Model Output Using Real-time Sensor Data, International Conference on Advances in Interdisciplinary Statistics and Combinatorics (AISC 2016), Greensboro, NC, 2016.
- Design and Analysis for Computer Experiments with Qualitative and Quantitative Factors, IBM Thomas J. Watson Research Center, New York, NY, 2016.
- A Latent Process Approach to Modeling and Analysis of Mixed-type Observations, the First Sino-US Research Conference on Quality, Analytics and Innovations, 2016, Shanghai, China.
- Online Updating of Computer Model Output Using Real-time Sensor Data, Nanjing University, 2016, Nanjing, China.
- Bayesian D-Optimal Design of Experiments with Quantitative and Qualitative Responses, ICSA Applied Statistics Symposium, 2016, Atlanta, GA.
- Online Updating of Computer Model Output Using Real-time Sensor Data, Department of Statistical Sciences and Operational Research, Virginia Commonwealth University, 2015, Richmond, VA.
- Additive Gaussian Process for Computer Models with Qualitative and Quantitative Factors, IMS-China International Conference on Statistics and Probability, 2015, Kunming, China.
- Online Updating of Computer Model Output Using Real-time Sensor Data, the Fifth International Workshop on Reliability Technology and Quality Science, 2015, Beijing, China.
- A Two-stage Risk Modeling in Reject Inference, Department of Industrial and Systems Engineering, Virginia Tech, 2015, Blacksburg, VA.

- A Two-Stage Model Building and Evaluation in Reject Inference, Department of Applied Mathematics, Illinois Institute of Technology, 2015, Chicago, IL.
- Spatial Data Classification in Biomedical Thermal Images, INFORMS Annual Meeting, 2014, San Francisco, CA.
- Bayesian Variable Selection for Computer Experiments, Conference on Experimental Design and Analysis (CEDA) 2014, Taipei, Taiwan.
- Joint Modeling for Mixed Quality Responses in the Manufacturing System, Department of Industrial and Systems Engineering, Virginia Tech, 2013, Blacksburg, VA.
- QQ Model: Joint Modeling with Quantitative and Qualitative Responses in Manufacturing Scale-up, INFORMS Annual Meeting, 2013, Minneapolis, MN.
- Robust Estimation for Sparse Multivariate Regression, School of Mathematics, Peking University, 2012, Beijing, China.
- Robust Estimation for Gaussian Graphical Model and Sparse Multivariate Regression, International Conference on Robust Statistics (ICORS), 2012, Burlington, Vermont.
- Modeling and Analysis of and Analysis of High-Dimensional Data, School of Mathematics Beijing Institute of Technology, 2012, Beijing, China.
- Online Computer Model Updating with Application to Data Center Thermal Management, The Second International Conference on the Interface between Statistics and Engineering (ICISE2), 2012, Tainan, Taiwan.
- Log Covariance Matrix Estimation, Department of Statistics, Texas A&M University, 2012, College Station, TX.
- A Two-stage Modeling Strategy to Quantify Potential Distribution on 2D Nanowire Topography Surface, INFORMS 2011, Charlotte, NC.
- Experimental Designs for Statistical Learning, Joint Statistical Meetings (JSM), 2011, Miami Beach, FL.
- Penalized Covariance Matrix Estimation using a Matrix-Logarithm Transformation, Spring Research Conference (SRC), 2011, Chicago, IL.
- Sliced Latin Hypercube Designs, Quality and Productivity Research Conference (QPRC), 2011, Roanoke, VA.
- Log Covariance Matrix Estimation, the Fourth Erich L. Lehmann Symposium, 2011, Houston, TX.
- Research in Machine Learning: Active Learning via Sequential Design and Log Covariance Matrix Estimation, Department of Mathematics and Statistics, Portland State University, 2011, Portland, OR.
- Experimental Design for Machine Learning, Department of Statistics and Actuarial Science, University of Waterloo, 2011, Waterloo, Canada.
- Experimental Design for Machine Learning, Department of Statistics, University of Pittsburgh, 2011, Pittsburgh, PA.
- Experimental Design for Machine Learning, Department of Statistics, George Mason University, 2011, Fairfax, VA.

- Experimental Design for Machine Learning, Department of Statistics, Virginia Tech, 2011, Blacksburg, VA.
- Active Learning via Sequential Design with Applications to Detection of Money Laundering, School of Statistics and Management, Shanghai University of Finance and Economics, 2010, Shanghai, China.
- Improvement on Cross-Validation via Sliced Statistical Design, INFORMS 2010, Austin, TX.
- A Statistical Approach to Modeling the Potential Data in Nano-quantification, INFORMS 2010, Austin, TX.
- Large Gaussian Covariance Matrix Estimation with Markov Structures, Joint Statistical Meetings (JSM), 2010, Vancouver, Canada.
- Statistical Quantification in Nanomaterials, First International Workshop on Reliability Technology and Quality Science (IWRTQS), 2009, Beijing, China.
- Sparse Discriminant Analysis for Multi-categorical Classification, WNAR-IMS Meeting, 2009, Portland, OR.
- A Statistical Approach to Quantifying the Elastic Deformation of Nanomaterials, Center for Quality and Applied Statistics, Rochester Institute of Technology, 2009, Rochester, NY.
- A Statistical Approach to Quantifying the Elastic Deformation of Nanomaterials, Department of Statistics, Purdue University, 2009, West Lafayette, IN.
- Statistical Quantification in Nanomaterials and Research in Machine Learning, Department of Statistics, University of Wisconsin-Madison, 2009, Madison, WI.
- Research in Machine Learning: Active Learning and Covariance Matrix Estimation, Department of Mathematics, Wayne State University, 2009, Detroit, MI.
- Active Learning via Sequential Design with Applications to Detection of Money Laundering, INFORMS 2007, Seattle, WA.
- Active Learning via Sequential Design with Applications to Detection of Money Laundering, Design and Analysis of Experiments (DAE) 2007, Memphis, TN.

OTHER PRESENTATIONS

- Additive Gaussian Process for Computer Models with Qualitative and Quantitative Factors, Joint Statistical Meetings (JSM), 2015, Seattle, WA.
- Robust Sparse Estimation of Multi-Response Regression, Joint Statistical Meetings (JSM), 2013, Montreal, Canada.
- Large Gaussian Covariance Matrix Estimation, First International Conference on the Interface between Statistics and Engineering (ICISE), 2009, Beijing, China.
- Large Gaussian Covariance Matrix Estimation with Markov Structures, Spring Research Conference (SRC), 2009, Vancouver, Canada.
- A Statistical Approach to Quantifying the Elastic Deformation of Nanomaterials, INFORMS 2008, Washington DC.

- Large Gaussian Covariance Matrix Estimation with Markov Structures, Joint Statistical Meetings (JSM), 2008, Denver, CO.
- A Statistical Approach to Quantifying the Elastic Deformation of Nanomaterials, Quality and Productivity Research Conference (QPRC), 2008, Madison, WA.
- A Statistical Approach to Quantifying the Elastic Deformation of Nanomaterials, Spring Research Conference (SRC), 2008, Atlanta, GA.
- A Note on Robust Kernel Principal Component Analysis (Poster), SIAM International Conference on Data Mining (SDM), 2008, Atlanta, GA.
- Efficient Sequential Design Method for Detecting Money Laundering, Joint Statistical Meetings (JSM) 2007, Seattle, WA.
- Robust Kernel Principal Component Analysis, Joint Research Conference (JRC), 2006, Knoxville, TN.

PROFESSIONAL SERVICE

Editorial Board

Associate Editor for *Technometrics*, 2016-Present

Associate Editor for *Chemometrics and Intelligent Laboratory Systems,* 2016-Present

Department Editor for *IISE Transactions* on Quality and Reliability Engineering, 2017-Present

Editorial Board for *International Statistical Review*, 2017-Present

Associate Editor for *Statistical Theory and Related Fields*, 2017-Present

Guest Editor for *International Journal of Artificial Intelligence,* 2016

Referee and reviewer for

Annals of Statistics
Journal of the American Statistical Association
Journal of the Royal Statistical Society – Series A
Journal of the Royal Statistical Society – Series B
Journal of the Royal Statistical Society – Series C
Journal of Machine Learning Research
Journal of Computational and Graphic Statistics
Computational Statistics and Data Analysis
Journal of Uncertainty Quantification
Biometrika
Technometrics
Statistica Sinica
Bernoulli Journal
Electronic Journal of Statistics
Scandinavian Journal of Statistics

Statistics and Its Interface
Communications in Statistics
Sankhyā B
American Statistician
IIE (Institute of Industrial Engineers) Transactions
Journal of Statistical Planning and Inference
Journal of Quality Technology
Statistics and Probability Letters
Computational Statistics
Statistical Papers
PloS ONE
Quality Technology and Quantitative Management
Journal of Systems Science and Complexity
Statistical Analysis and Data Mining
International Conference on Machine Learning (ICML 2015, 2016, 2017)
Conference on Neural Information Processing Systems (NIPS 2014, 2015)
International Conference on Artificial Intelligence and Statistics (AISTAT 2009, 2010, 2012, 2014, 2015, 2016)

Other Professional Activities

Program Committee Co-Chair for Joint Research Conference 2018: The 2018 Joint Research Conference on Statistics in Quality, Industry and Technology

Council Member for INFORMS QSR Section: 2016-2019

NSF Proposal Review, 2018

NSF Two-Day Review Panel, 2016.

NSF Three-Day Review Panel, 2015.

ASA SPES Representative Officer for Spring Research Conference: 2014-present

Scientific Program Committee, IMS/ASA Spring Research Conference 2012: Enabling the Interface between Statistics & Engineering, Boston, MA, 2012.

Invited Paper Session organizer, Section on Physical and Engineering Sciences of ASA for Joint Statistical Meetings (JSM), Chicago, IL, 2018.

Invited Paper Session organizer, Section on Physical and Engineering Sciences of ASA for Joint Statistical Meetings (JSM), Chicago, IL, 2016.

Invited Paper Session Chair, ICSA-Canada Chapter Symposium, Vancouver, BC, 2017.

Invited Paper Session Chair, ICSA Symposium, Atlanta, GA, 2016.

Invited Paper Session Chair, AISC 2016, Greensboro, NC, 2016.

Invited Paper Session organizer, Section of Quality, Statistics, and Reliability (QSR), INFORMS Annual Meeting, Philadelphia, PA, 2015.

Invited Paper Session organizer, Section of Quality, Statistics, and Reliability (QSR), INFORMS Annual Meeting, Minneapolis, MN, 2013.

Invited Paper Session organizer, Section of Quality, Statistics, and Reliability (QSR) INFORMS Annual Meeting, Charlotte, NC, 2012.

Invited Paper Session organizer, The 2nd International Conference on the Interface between Statistics and Engineering, Tainan, Taiwan, 2012.

Invited Paper Session organizer, IMS/ASA Spring Research Conference, Chicago, IL, 2011.

Invited Paper Session organizer, Section on Physical and Engineering Sciences of ASA for Joint Statistical Meetings (JSM), Miami, FL, 2011.

University Service

Core Faculty Member of Undergraduate Program CMDA (Computational Modeling and Data Analytics), Virginia Tech's Big Data Degree, 2012-present.

CMDA Curriculum Committee Member, 2015-present.

Department Personnel Committee Member, 2016-present.

Department Graduate Admissions Committee Member, 2016-present.

Department Qualifying Exam Committee Member, 2015-present.

Department Colloquium Committee Chair, 2012-2013, 2016-2017.

Department Diversity Committee Member, 2017-present.

CMDA Search Committee Member, 2013-2014.

Department Head Search Committee Member, 2014-2015.

Department Search Committee Member, 2012-2013, 2017-2018.

PROFESSIONAL ASSOCIATIONS

- Member of American Statistical Association (ASA).
- Member of International Chinese Statistical Association (ICSA).
- Member of Institute for Operations Research and the Management Sciences (INFORMS).

COMPUTING SKILLS

- Statistical Package − R, JMP, SAS, Minitab.
- Programming Language − C&C++, Matlab, FORTRAN.