

Harrison H. Zhou

Department of Statistics and Data Science
Yale University, New Haven, CT 06520-8290
Phone: (203) 432-0643 (O), Fax: (203) 432-0633
Email: huibin.zhou@yale.edu
<http://www.stat.yale.edu/people/harrisonzhou.html>

Positions

2017/7 -2021/6	Yale University Chair, Department of Statistics and Data Science	New Haven, CT
2012/7 -2017/6	Yale University Chair, Department of Statistics	New Haven, CT
2012/1 -2012/6	Yale University Acting Chair, Department of Statistics	New Haven, CT
2010/7 -	Yale University Professor	New Haven, CT
2009/7 -2010/6	Yale University Associate Professor	New Haven, CT
2004/7 -2009/6	Yale University Assistant Professor	New Haven, CT

Education

1998/7-2004/6	Cornell University Ph.D. in Mathematics, Aug 2004.	Ithaca, NY
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Research Interests

- Le Cam theory
- Analysis of iterative algorithms - Lloyd, EM, Variational inference, Gibbs sampler
- Covariance matrix estimation
- Graphical model
- Bayesian nonparametrics
- Network analysis
- Sparse CCA and PCA
- Shrinkage estimation and model selection
- Function (wavelet) estimation
- Multiple comparisons
- Functional data analysis
- Bioinformatics

Honors and Awards

- **Henry Ford II Professor of Statistics and Data Science**, Yale University, 2018/6 -.
- **Lex Hixon '63 Prize** for Teaching Excellence in the Social Sciences at Yale, 2018.
- **Elected member**, International Statistical Institute, 2014.
- **Fellow**, Institute of Mathematical Statistics, 2014. *For influential work in Le Cam's theory, nonparametric function estimation, and high-dimensional statistical inference, in particular: optimal estimation of large covariance and precision matrices.*
- **IMS Medallion Lecture**, Institute of Mathematical Statistics, 2014.
- **Tweedie Award**, Institute of Mathematical Statistics, 2010. *For innovative and significant contributions to the theory and methods of nonparametric function estimation; for outstanding contributions to high-dimensional statistical inference, including estimation of large covariance matrices and sparse signals.*
- **Noether Young Researcher Scholar Award**, American Statistical Association, 2009. *For outstanding early career contributions to nonparametric statistics.*
- **National Science Foundation, FRG Grant, Focused Research Group--Statistical Inference for High-Dimensional Data: Theory, Methodology and Applications**, 2009/9-2013/3. *Jointly with T. Tony Cai and Tianxi Cai*
- **National Science Foundation CAREER Award**, *Asymptotic Decision Theory and Its Applications*, 2007/5 -- 2012/10.
- **Liu Memorial Award**, May 2001. Awarded to the best student researcher of Chinese descent at Cornell. Established in the late 1960s. First mathematics graduate student to receive this honor.

Papers and Manuscripts

Published/Accepted

- Optimal estimation of high-dimensional Gaussian mixtures (with N. Doss, Y. Wu, P. Yang)
The Annals of Statistics (2023+)
- Randomly initialized EM algorithm for two-component Gaussian mixture achieves near optimality in $O(\sqrt{n})$ iterations (with Y. Wu)
Mathematical Statistics and Learning (2022+).
- Optimality of Spectral Clustering for Gaussian Mixture Model (with M. Loffler, and Y. Zhang)
Annals of Statistics (2021).
- Testing for Balance in Social Networks (with D. Feng, D. Stafford, and N. A. Christakis)
Journal of the American Statistical Association, 2020.
- Theoretical and Computational Guarantees of Mean Field Variational Inference for Community Detection (with A. Zhang)
Annals of Statistics. Volume 48, Number 5, 2575-2598, 2020.
- A General Framework for Bayes Structured Linear Models (with C. Gao and A. W. van der Vaart).
Annals of Statistics. Volume 48, Number 5, 2848-2878, 2020.

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- Structured Matrix Estimation and Completion (with O. Klopp, Y. Lu, and A. Tsybakov)
Bernoulli. Volume 25, Number 4B, 3883-3911, 2019.
 - Sparse CCA via Precision Adjusted Iterative Thresholding (with M. Chen, C. Gao, and Z. Ren).
Proceeding of International Congress of Chinese Mathematicians. 2018.
 - Community Detection in Degree-Corrected Block Models (with C. Gao, Z. Ma, and A. Zhang).
Annals of Statistics. Volume 46, Number 5, 2153-2185, 2018
 - Adaptive functional linear regression via functional principal component analysis and block thresholding (with T. Cai, and L. Zhang).
Statistica Sinica. A Special Issue in the Memory of Professor Peter Hall. 28, 2455-2468 (2018).
 - Discussion on "Minimax Optimal Procedures for Locally Private Estimation" (with A. Zhang)
Journal of the American Statistical Association. 113, 2018.
 - Achieving Optimal Misclassification Proportion in Stochastic Block Model (with C. Gao, Z. Ma, and A. Zhang).
Journal of Machine Learning Research, 18(60):1-45, 2017.
 - Sparse CCA: Adaptive estimation and computational barriers (with C. Gao and Z. Ma).
Annals of Statistics. Volume 45, Number 5, 2074-2101, 2017
 - Estimating sparse precision matrices (with N. Padmanabhan, M. White, and R. O'Connell).
Monthly Notices of the Royal Astronomical Society, 460, 1567-1576, 2016.
 - *Optimal Estimation and Completion of Matrices with Biclustering Structures* (with C. Gao, Y. Lu, Z. Ma).
Journal of Machine Learning Research, 17, 1-29, 2016.
 - Minimax Rates of Community Detection in Stochastic Block Models (with A. Zhang).
Annals of Statistics. Volume 44, Number 5, 2252-2280, 2016.
 - Optimal Large-scale Quantum State Tomography With Pauli Measurements (with T. Cai, D. Kim, Y. Wang, M. Yuan).
Annals of Statistics. Volume 44, Number 2, 682-712, 2016
 - Rate exact Bayesian adaptation with modified block priors (with C. Gao)
Annals of Statistics, 44, 318-345, 2016.
 - Estimating Structured High-Dimensional Covariance and Precision Matrices: Optimal Rates and Adaptive Estimation (with T. Cai and R. Zhao)
Electronic Journal of Statistics with Discussions, Volume 10, Number 1, 1-59, 2016
 - Rate-optimal Graphon Estimation (with C. Gao and Y. Lu)
Annals of Statistics, 43, 2624-2652, 2015.
 - *Minimax Estimation in Sparse Canonical Correlation Analysis* (with C. Gao, Z. Ma, and Z. Ren).
Annals of Statistics, 43, 2168-2197, 2015.
 - Bernstein-von Mises Theorems for Functionals of Covariance Matrix (with C. Gao)
Electronic Journal of Statistics. To appear.

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- Tight Minimax Rates for Manifold Estimation under Hausdorff Loss (with A. Kim)
Electronic Journal of Statistics, 9, 1562-1582, 2015.
 - Asymptotically Normal and Efficient Estimation of Covariate-Adjusted Gaussian Graphical Model (with M. Chen, Z. Ren and H. Zhao).
Journal of the American Statistical Association. To appear.
 - Law of Log Determinant of Sample Covariance Matrix and Optimal Estimation of Differential Entropy for High-Dimensional Gaussian Distributions (with T. Cai and T. Liang).
Journal of Multivariate Analysis, 137, 161–172, 2015.
 - Asymptotic Normality and Optimalities in Estimation of Large Gaussian Graphical Model (with Z. Ren, T. Sun and C. Zhang).
Annals of Statistics, 43, 991-1026, 2015.
 - Rate-optimal Posterior Concentration for Sparse PCA (with C. Gao)
Annals of Statistics, 43, 785-818, 2015.
 - Estimating Sparse Precision Matrix: Optimal Rates of Convergence and Adaptive Estimation (with T. Cai and W. Liu).
Annals of Statistics. To appear.
 - Quantile Coupling Inequalities and Their Applications (with D. Mason).
Probability Survey, 9, 439-479, 2012.
 - Optimal Sparse Volatility Matrix Estimation for High Dimensional Ito Processes With Measurement Errors (with M. Tao and Y. Wang).
Annals of Statistics, 41, 1816-1864, 2013.
 - Discussion of "Latent Variable Graphical Model Selection Via Convex Optimization" (with Z. Ren).
Annals of Statistics, 40, 1989-1996, 2012.
 - Optimal Rates of Convergence for Sparse Covariance Matrix Estimation (with T. Cai).
Annals of Statistics, 40, 2389-2420, 2012.
 - Functional Regression for General Exponential Families (with W. Dou, D. Pollard).
Annals of Statistics, 40, 2421-2451, 2012.
 - Model Selection and Sharp Asymptotic Minimality (with Z. Wu).
Probability Theory and Related Fields, 156, 165-191, 2013.
 - Optimal Rates of Convergence for Estimating Toeplitz Covariance Matrices (with T. Cai and Z. Ren).
Probability Theory and Related Fields, 156, 101-143, 2013.
 - Minimax Estimation of Large Covariance Matrices under ℓ_1 -Norm (with T. Cai).
Statistica Sinica with Discussions, 22, 1319-1378, 2012.
 - Nonparametric Regression in Natural Exponential Families (with T. Cai).

James O. Berger, T. Tony Cai and Iain M. Johnstone, eds., Borrowing Strength: Theory Powering Applications – A Festschrift for Lawrence D. Brown (Beachwood, Ohio, USA: Institute of Mathematical Statistics), 199-215, 2010

- False Discovery Rate Control with Groups (with J. Hu and H. Zhao).
Journal of the American Statistical Association, 105, 1215-1227, 2010.
- Nonparametric Regression in Exponential Families (with L. Brown and T. Cai).
Annals of Statistics, 38, 2005-2046, 2010.
- Optimal Rates of Convergence for Covariance Matrix Estimation (with T. Cai and C. Zhang).
Annals of Statistics, 38, 2118-2144, 2010.
- Asymptotic Equivalence of Spectral Density Estimation and Gaussian White Noise (with G. Golubev and M. Nussbaum).
Annals of Statistics, 38, 181-214, 2010.
- Asymptotic Equivalence and Adaptive Estimation for Robust Nonparametric Regression (with T. Cai).
Annals of Statistics, 37, 3204-3235, 2009
- Robust Nonparametric Estimation via Wavelet Median Regression (with L. Brown and T. Cai).
Annals of Statistics, 36, 2055-2084, 2008.
- The Root-unroot Algorithm for Density Estimation as Implemented via Wavelet Block Thresholding (with L. Brown, T. Cai, R. Zhang, and L. Zhao).
Probability Theory and Related Fields, 146, 401-433, 2010
- A Data-Driven Block Thresholding Approach to Wavelet Estimation (with T. Cai).
Annals of Statistics, 37, 569–595, 2009.
- Discussion of "Sure independence screening for ultra-high dimensional feature space" by Fan and Lv (with X. Lin).
Journal of the Royal Statistical Society, Series B, 70, 903-904, 2008.
- A Complement to Le Cam's Theorem (with M. Low).
Annals of Statistics, 35, 1146-1165, 2007.
- Minimax Estimation with Thresholding and its Application to Wavelet Analysis (with J. Hwang).
Annals of Statistics, 33, 101-125, 2005.

Submitted/Revised

- Leave-one-out Singular Subspace Perturbation Analysis for Spectral Clustering (with A. Zhang)
Submitted to *the Annals of Statistics*
- Rates of estimation for high-dimensional multi-reference alignment (with Z. Dou and Z. Fan.)
Under revision for *the Annals of Statistics*.

- Statistical and Computational Guarantees of Lloyd's Algorithm and its Variants (with Y. Lu).
Under revision for the Annals of Statistics.

Ph.D. Dissertation

- Minimax Estimation with Thresholding and Asymptotic Equivalence for Gaussian Variance Regression. Advisors: J. T. Gene Hwang and Michael Nussbaum.

Professional Service

- Chair of IMS Nomination Committee to select the IMS President and Council Members, 2022-2023
- IMS Council Member, 2022-2025
- IMS Program Chair for Invited Talks at JSM 2020
- Associate Editor, Harvard Data Science Review, 2019-
- Associate Editor, *Bernoulli*, 2013–.
- Associate Editor, *Annals of Statistics*, 2010–2018.
- Associate Editor, *Statistical Science*, 2017–2020.
- Associate Editor, *Journal of Nonparametric Statistics*, 2011 –2017.
- Associate Editor, *STAT*, 2013–2015.
- Co-Guest Editor, a special issue of *Statistical Science, Network Analysis and Applications*, 2017-2018.
- Co-Guest Editor, a special issue of *Statistics and Its Interface*, for the second IMS-China International Conference, 2009-2010.
- Associate Editor, a special issue of *Journal of Nonparametric Statistics*, 2008.
- Chair of the IMS Committee to select Editors-in-chief for all IMS journals (including Annals of Statistics, Annals of Probability etc.), 2015-2018.
- Member of the IMS Committee to select Editors-in-chief for all IMS journals (including Annals of Statistics, Annals of Probability etc.), 2010-2013.
- External review committee, Harvard statistics department, March 21-22, 2022
- Review Panels, National Science Foundation.
- Review Panel, Department of Veterans Affairs.
- External review, GSU 2014 Academic Program Review for the College of Arts and Science/ Mathematics & Statistics Department on April 14-15, 2014.
- Member of International Advisory Committee for the Discipline of Statistics, Shanghai Jiao Tong University.
- Member of the program committee, *Non-convex optimization and deep learning*, Jan 27-30, 2019, MIT, Boston.
- Member of the program committee, *Theoretical Foundation of Deep Learning*, Oct 8-10, 2018, Georgia Tech, Atlanta.
- Co-Organizer of a workshop, *Matrix Estimation Meets Statistical Network Analysis: Extracting low-dimensional structures in high dimension*, June 17-23, 2018, Oberwolfach, Germany. Jointly with Florentina Bunea, Angelika Rohde, and Patrick Wolfe.
- Co-Chair of the program committee of a workshop, *The 10th anniversary on the establishment of Center for Statistical Research*, June 24-27, 2015, CAS, Beijing. Jointly with Jianqing Fan.

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- Co-Organizer of a workshop, *Empirical Process and Statistical Decision Theory*, May 7-9, 2015, Yale. Jointly with Sahand Negahban.
 - Co-Organizer of a summer school, June 22 – June 25, 2014, and a workshop on June 26, 2014, CAS, Beijing, China. Jointly with Jianqing Fan.
 - Co-Organizer of a workshop, *The Seventh International Conference on Frontiers of Statistics*, June 28 – 29, 2013, CAS, Beijing, China. Jointly with Jianqing Fan and Tony Cai.
 - Co-Organizer of a summer school, June 22 – June 27, 2013, CAS, Beijing, China. Jointly with Jianqing Fan and Tony Cai.
 - Co-Organizer of a workshop, *NSF Workshop for High-Dimensional Data: Theory, Methodology and Applications*, May 31 – June 2, 2012, (<http://euler.stat.yale.edu/Conferences/nsfWorkshop/index.html>), Yale. Jointly with Tony Cai and Tianxi Cai.
 - Co-Organizer of a workshop, *NSF Workshop on High Dimensional Data*, May 2011 (<http://people.hsph.harvard.edu/~linli/workshop/index.html>), Nantucket. Jointly with Tony Cai and Tianxi Cai.
 - Co-Chair of the organizing committee, *International Conference on Statistics and Society*, July 2010 (<http://stat.yale.edu/Conferences/ICSS2010/index.html>), China.
 - Organizer of a workshop, *Innovation and Inventiveness in Statistical Methodologies*, May 2009 (<http://www.stat.yale.edu/Conferences/Stats2009/>), Yale.

 - Member of the program committee, *The Tenth ICSA International Conference, December 19-22, 2016, Shanghai, China*.
 - Member of the program committee, *ICSA Applied Statistics Symposium, June 2012, Boston*
 - Member of the scientific committee, *The Third IMS-China International Conference, 2011*.
 - Member of the scientific committee, *the third IMS-China International Conference, 2011*.
 - Member of the scientific committee, *the second IMS-China International Conference, 2009*.

 - Organizer of an invited session, *IMS Annual Meeting*, July 29-Aug 3, 2017, Baltimore, Maryland.
 - Organizer of an invited session, *International Conference on Data Science*, Dec 16-19, 2016, Shanghai, China.
 - Organizer of an invited session, *Nonparametric Workshop*, Oct 6-7, 2016, Ann Arbor, Michigan.
 - Organizer of an invited session on "Recent advances in large covariance matrix estimation", *the third IMS-China International Conference, 2011*, Xi'An, China.
 - Organizer of an invited session on "Large Covariance Matrices Estimation and Its Applications", *the second IMS-China International Conference, 2009*, Weihai, China.
 - Organizer of an invited session on "High dimensional data analysis", *the first IMS-China International Conference, 2008*, Hangzhou, China.
 - Organizer of an invited session on "Asymptotic Decision Theory on Nonparametric Estimation", *IMS Annual Meeting, 2007*, Salk City, Utah, USA.
 - Organizer of an invited session on "Shrinkage Theory and its Applications to Bioinformatics and Machine Learning", *ICSA 2006 Applied Statistics Symposium*, USA.

 - Referee for *Annals of Statistics*, *Journal of The American Statistical Association*, *JRSSB*, *Bernoulli*, *Econometric Theory*, *Probability Theory and Related Fields*, *J. of Machine Learning Research*, *J. of Multivariate Analysis*, *J. of Statistical Planning and Inference*, *PNAS*, *Stochastic Processes and their Applications*, *Statistics and Probability Letter*, *Statistica Sinica*.

Invited Presentations

- Invited speaker, *Annals of Statistics Invited Session, JSM*, Aug 5-10, 2023, Toronto.
- Invited speaker, *The 9th International Forum on Statistics*, Beijing, July 15-16, 2023
- Invited speaker, *The 12th ICSA International Conference*, Hong Kong, July 7-9, 2023
- Invited speaker, a conference in honor of Regina Liu and Cun-Hui Zhang, Rutgers, May 11-13, 2023
- Invited participant, *International Conference on Statistical Foundations of Data Science and their Applications*, Princeton, May 8-10, 2023
- Invited speaker, *International Conference on Statistics and Data Science*, CCNU, Nov 5-6, 2022
- Invited speaker, *Welcome to the 2022 Workshop on Statistical Network Analysis and Beyond*, NYU, Aug 3-5, 2022
- Invited speaker, *Machine Learning Across Disciplines: New Theoretical Developments*, Chicago, June 23, 2022
- Invited speaker, *A Statistics Workshop in Honor of Peter Bickel's 80th Birthday*, Berkeley, June 1-3, 2022
- Invited speaker, *A Statistics Workshop in Honor of Iain Johnstone*, Stanford, May 20-21, 2022
- Invited participant, *Re-thinking High-dimensional Mathematical Statistics*, Oberwolfach, May 16-20, 2022
- Invited speaker, *A Statistics Workshop in Honor of Ed George's 70th Birthday*, U Penn, Dec 10-11, 2021
- Invited speaker, *Joint Statistical Meeting*, July 27 -Aug 1, 2021.
- Invited speaker, *Online Seminars on Mathematical Foundations of Data Science*, April 9, 2021
- Invited participant, *Mathematical Foundations of Machine Learning*, Oberwolfach, March 21-27, 2021
- Invited seminar speaker, Harvard Statistics Department, Nov 23, 2020
- Invited speaker, *Joint Statistical Meeting*, Aug 1 -Aug 6, 2020.
- Invited speaker, *SAMSI Workshop on Deep Learning*, Aug 12-16, 2019, Duke University.
- Invited Speaker, *Joint Statistical Meeting*, July 27 -Aug 1, 2019.
- Invited speaker, *Statistical Conference in Honor of Aad van der Vaart's 60th Birthday*, June 17-21, 2019, Leiden.
- Inaugural PhD students' invited seminar speaker, Stanford Statistics Department, May, 2019
- Invited participant, *Statistical and Computational Aspects of Learning with Complex Structure*, May 5-11 2019, Oberwolfach, Germany.
- Seminar speaker, invited by graduate students, April 30, 2019. Stanford Statistics Department.
- Tutorials, *Meeting in Mathematical Statistics*, Dec 16-21, 2018, Frejus, France.
- Discussant, Larry Brown's Memorial Workshop, Nov 30- Dec 1, 2018, the Wharton School, University of Pennsylvania.
- Lecture series, *Statistical Network Analysis*, July 8-13, Yunnan University.
- Invited participant, *Matrix Estimation Meets Statistical Network Analysis: Extracting low-dimensional structures in high dimension*, June 17-23 2018, Oberwolfach, Germany
- Invited Speaker, May 17-20, 2018, Zhejiang University, China.
- Invited Speaker, *Bridging Mathematical Optimization, Information Theory, and Data Science*, May 14-16, 2018, Princeton.
- Invited participant, *Uncertainty Quantification in Complex, Nonparametric Statistical Models*, April 16-20, 2018, Lorentz Center, Leiden, Netherlands.
- Invited participant, *Data Science Leadership Summit*, March 26, 2018, Oberwolfach, Germany

- Invited participant, *Statistical Inference for Structured High-dimensional Models*, March 11-17, 2018, Oberwolfach, Germany
- Invited speaker, *Meeting in Mathematical Statistics*, December 18 - 22, 2017, CIRM, France
- Plenary speaker, *Statistics meets Friends: From Biophysics to Inverse Problems and back*, Nov. 29 - Dec. 1, 2017, Göttingen, Germany.
- Invited speaker– *Annals of Statistics Invited Session, IMS Annual meeting*, July 29-Aug 3, 2017, Baltimore, Maryland.
- Invited speaker, *IMS-China*, June 28-July 1, 2017, Nanning, China.
- Invited speaker, *ICSA Applied Statistics Symposium*, June 25-28, 2017, Chicago.
- Invited speaker, *Statistical Foundations of Uncertainty Quantification for Inverse Problems*, June 19-22, Cambridge University, UK.
- Invited participant, March 2017, Oberwolfach, Germany
- Invited speaker, *The Tenth ICSA International Conference*, December 19-22, 2016, Shanghai, China.
- Invited speaker, *Nonparametric Workshop*, Oct 6-7, 2016, Ann Arbor, Michigan.
- Invited speaker, *Big Data Conference*, August 22-23, 2016, the Center of Mathematical Sciences and Application, Harvard University.
- Invited 45-minutes Lecture, *The 7th International Congress of Chinese Mathematicians*, August 6 -11, 2016, Beijing.
- Invited speaker and participant, *Theoretical Foundations for Statistical Network Analysis*, July 2016, the Isaac Newton Institute, Cambridge, England.
- Invited speaker, *ISNPS 2016*, June 11-16, 2016, Avignon, France.
- Keynote speaker, *Annual Minghui Yu Memorial Student Conference*, April 30, 2016, Statistics department, Columbia University.
- Invited lecture series, Spring 2016, statistics department, the Wharton school, University of Pennsylvania.
- Invited speaker, *Statistical Network and High-Dimensional Data Analysis: Theory and Applications*, Mar 16 - Mar 18, 2016, the Center for Mathematical Sciences in Shanghai, Shanghai, China.
- Invited lecture series, *German Spring School*, March 13 -18, 2016, Brodten, the Bay of Lübeck, Germany.
- Invited participant and speaker, March 2016, Oberwolfach, Germany
- Invited speaker, *Forum on Graphical Model and Network Data Analysis*, Jan 4-8, 2016, Institute for Advanced Study, Center for Statistical Science (CSS), and the Dept. of Mathematics, HKUST.
- Invited speaker, *Cornell Statistics Day*, September 11, 2015, Ithaca, NY.
- Invited speaker, *JSM 2015*, August 8–13, 2015, Seattle, WA.
- Invited speaker, *ISI 2015*, July 26–31, 2015, Rio de Janeiro, Brazil.
- Invited speaker, *Nonparametric and high-dimensional statistics*, July 20, 2015, Heidelberg, Germany
- Invited speaker, *ISNPS Meeting 2015*, July 12-15, Graz, Austria
- Invited speaker, *IMS-China*, July 1-4, 2015, Kunming, China
- Lecture series, June 24-25, 2015, Beijing University
- Invited speaker, *The 10th anniversary on the establishment of Center for Statistical Research*, June 24-27, 2015, CAS, Beijing.
- Distinguished University Lecture, June 23, 2015, Central China Normal University.
- Invited speaker, *High-Dimensional Problems and Quantum Physics*, June 6-10, 2015, Paris, France
- Invited speaker, *Structured Nonparametric Modeling*, June 4-6, 2015, Berlin, Germany

- Invited speaker, *Statistics for Complex Systems*, June 1-3, 2015, University of Wisconsin-Madison.
- Invited participant, *Probabilistic Techniques in Modern Statistics*, May 17-23, 2015, Oberwolfach, Germany.
- Invited speaker, *Inference in High Dimensional Regression*, Jan 20-23, 2015, American Institute of Mathematics, Palo Alto, California.
- Keynote speaker, *Statistics and Computational Interface to Big Data*, Jan 2-16, 2015, Institute for Advanced Study, HKUST.
- Invited lecture series on “Structured Covariance and Precision Matrices Estimation”, CREST, Paris, Oct 23-Nov 14, 2014.
- Invited participant, *New Horizons in Statistical Decision Theory*, September 7-13, 2014, Oberwolfach, Germany.
- Invited speaker, *International Workshop on Statistics Frontier and Related Topics*, July 14-16, 2014, Xinjing, China.
- IMS Medallion lecture, *IMS Annual meeting*, July 7-11, 2014, Sydney, Australia.
- Invited lecture series at Shanghai Jiaotong University, June 29-July 6, 2014, Shanghai, China.
- Invited speaker, *The Eighth International Conference on Frontiers of Statistics*, June 26, 2014, Shanghai, China.
- Invited speaker, *Frontiers of High-Dimensional Statistic*, June 10-12, 2014, Shanghai, China.
- Invited speaker, *Geometric Aspects of High-dimensional Inference*, March 31-April 2, 2014, SAMSI.
- Invited participant, March 9-15, 2014, Oberwolfach, Germany.
- Invited speaker, *German Open Conference on Probability and Statistics*, March 4-7, 2014, Germany.
- Invited speaker, Van Dantzig Seminar, Feb 28, 2014, Netherlands.
- Invited speaker, *Statistical Inference in Sparse High-dimensional Models: Theoretical and Computational Challenges Workshop*, February 24-26, 2014, SAMSI.
- Invited speaker, *Dimension Reduction and High Dimensional Inference*, Jan 17-18, 2014, Florida.
- Invited speaker, *Frontier Problems in Statistics*, Dec 27-28, 2013, Shanghai.
- Invited speaker, *The Ninth ICSA International Conference*, December 20-23, 2013, Hongkong.
- Invited speaker, *The Second HKUST International Forum on Probability and Statistics, HKUST*, December 19, 2013, Hongkong.
- Invited speaker, *International Conference on Frontiers of Probability and Statistics*, December 15-17, 2013, Zhejiang U, Zhejiang, China.
- Invited speaker, JSM, August 2013, Montreal, Canada.
- Invited speaker, *The 4th IMS-China International Conference*, July 1-4, 2013, China.
- Invited speaker, *The Seventh International Conference on Frontiers of Statistics*, June 28 – 29, 2013, CAS, Beijing, China.
- Invited speaker, *Young Mathematician Forum*, June 18-21, 2013, Beijing U, Beijing, China.
- Distinguished Lecturer, March 2013, Mathematics, Georgia State University.
- Invited speaker, *Nonparametric and High-dimensional Statistics*, December 17-21, 2012, France.
- Invited speaker, *The 3rd Princeton Day of Statistics*, October 19, 2012.
- Invited speaker, *High Dimensional Statistics: Advances and Challenges*, August 2012, Singapore.
- Invited speaker, *The Second IMS-Asia Pacific Rim Meeting*, July 23-26, 2012, Japan.
- Invited speaker, *ICSA Applied Statistics Symposium, June 2012, Boston*.
- Invited speaker, June 20-24, 2012, Purdue.

- Invited speaker, *First Conference of the International Society for NonParametric Statistics (ISNPS)*, June 14-20, 2012, Greece.
- Invited speaker, *Conference on Statistical Learning and Data Mining*, June 5-7, 2012, U. Michigan.
- Invited participant, SAMS LDHD Planning Workshop, May 17, 2012.
- Invited speaker, *Large Scale Statistical Inference and Learning: Challenges and New Directions*, April 28-29, 2012, U. Minnesota.
- Invited participant and speaker, March 2012, Oberwolfach, Germany
- Invited speaker, *The Seventh SJTU Workshop on Natural Sciences: Frontier Problems in Modern Statistics*, Jan 5-6, 2012, China.
- Keynote Speaker, *Information Theory and Shrinkage Estimation*, November 2011, Info-Metrics Institute, American University.
- Invited participant and speaker, October 2011, Oberwolfach, Germany
- Invited speaker, JSM, August 2011, Miami.
- Invited speaker, *The Third IMS-China International Conference*, July 2011, Xi'An, China.
- Invited speaker, *Bayesian Semi/Non Parametric Econometrics and Statistics*, June 2011, Yale.
- Invited speaker, *High Dimensional Statistics: Advances and Challenges*, May 2011, Singapore.
- Invited speaker, *Random Matrices and High Dimensional Statistics*, April 2011, University of Minnesota.
- Invited speaker, *Information Theory and Applications Workshop*, February 2011, UCSD.
- Invited speaker, *The Eighth ICSA International Conference: Frontiers of Interdisciplinary and Methodological Statistical Research*, Dec. 19-22, 2010, China.
- Invited speaker, A conference at the Wharton school in honor of L. D. Brown, Dec. 15-17, 2010, Philadelphia.
- Invited speaker, *IMS Annual meeting*, Aug. 9-13, 2010, Gothenburg, Sweden.
- Invited speaker, JSM, Noether Awards Invited Session, Vancouver, BC, Canada, July 31-Aug. 5, 2010.
- Invited speaker, Tweedie New Researcher Invited Lecture, *2010 New Researchers Conference*, Vancouver, BC, Canada, July 27-30, 2010
- Invited speaker, *International Conference on Statistics and Society*, July 10-12, 2010, China.
- Invited speaker, *Probability and Statistics---an international conference in honor of P.L. Hsu's 100th birthday*, July 5-7, 2010.
- Invited speaker, *International Conference at Yunnan University*, July 2-4, 2010, China.
- Invited speaker, *2010 ICSA Applied Statistics Symposium*, June 20-23, 2010, Indiana.
- Invited speaker, *2010 New England Statistics Symposium*, April 27, 2010, Harvard.
- Invited participant, *Modern Nonparametric Statistics*, March 28-April 3, 2010, Oberwolfach, Germany.
- Invited speaker, session on "Functional Data Analysis", *JSM, Aug., 2009*, Washington DC.
- Invited speaker, *the first IMS-Asia Pacific Rim Meeting*, July 2009, Seoul, Korea.
- Invited speaker, *the second IMS-China International Conference*, July 2009, Weihai, China.
- Invited lecture series on "Hypothesis testing and minimax estimation", statistics department, the Wharton school, University of Pennsylvania, fall 2008.
- Invited speaker, *High-Dimensional Data Analysis: Perspectives from the Interface of Statistics, Biosciences, and Information Sciences*, Oct 24-25, 2008, Harvard.
- Invited speaker, session on "Methodological Advances in Testing and Estimation of Gene Expression Differences", *JSM 2008*.
- Invited speaker, *Beijing International Conference on Machine Learning and Data Mining, June 2008*, Beijing, China.

- Invited participant, *Statistical Theory and Methods for Complex, High-Dimensional Data*, 7 January - 1 March 2008, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK.
- Invited speaker, Chair of plenary sessions, *International Conference on the Frontier of Statistics: High Dimensional Data Analysis*, 2007, Kunming, China.
- Invited speaker, *International Workshop on Applied Probability (IWAP)*, 2006.
- Invited talks in other departments:
 2004: Cornell stat., Wayne State math., Columbia Stat., Penn State stat., UC Davis stat., Ohio State stat., Iowa State stat.;
 2005: UConn stat, IBM Watson, Boston U. Math;
 2006: Rutgers stat., Columbia Stat;
 2007: UC Berkeley Stat., Harvard Stat., Harvard Biostat., Beijing University math, Renming University Stat.;
 2008: Newton Institute at Cambridge, Boston U. Math;
 2009: UPenn Wharton School, Columbia Biostat;
 2010: Temple Fox School, UPenn Wharton School, NYU Stern, Princeton, Wisconsin, CMU, Columbia Stat;
 2012: Boston U. Math, CCNU, Hongkong Univ. Sci. Tech., U Conn;
 2013: U. Chicago, Georgia Tech, Georgia State U, U. Michigan.
 2014: U. of Amsterdam, Boston U., ETH, Harvard Math, MIT
 2015: Heidelberg U., Columbia

Teaching

- Spring 2011, Spring 2013, Spring 2017, Spring 2018, Stat 611, *Decision Theory*.
- Fall 2004, Fall 2005, Fall 2015, Fall 2017, [Stat 610](#), *Statistical Inference*.
- Spring 2005 and Spring 2006 and Spring 2007, [Stat 242/542](#), *Theory of Statistics*.
- Spring 2006, Fall 2009, Fall 2011 and Fall 2013, [Stat 680](#), *Nonparametric Estimation*.
- Fall 2006, Fall 2007, Fall 2012, Fall 2013, Fall 2015 [Stat 241/541](#), *Probability Theory with Applications*.
- Spring 2007 and Spring 2009, [Stat 619](#), *Statistical Decision Theory*.
- Fall 2007, [Stat 673](#), *Functional Data Analysis*.
- Fall 2009 and Fall 2011, Stat 106/506, *Data Analysis*
- Spring 2010, Stat 365/665, *Data Mining and Machine Learning*

Ph. D. Students

- Natalie Doss: 2020, Quantitative Researcher, Two-Sigma
- Tal Sarig: 2020, Data Science Researcher, Facebook
- Derek Feng: 2018, Senior Machine Learning Engineer, Blue Prism
- Anderson Zhang: 2018, Assistant Professor (2019-), Wharton, University of Pennsylvania
- Yu Lu: 2017, VP, Quantitative Researcher, Two-Sigma
- Chao Gao: 2016, Assistant Professor (2016-), University of Chicago, Statistics department
- Zhao Ren: 2014, Assistant Professor (2014-), University of Pittsburgh, Statistics department
- Arlene Kim: 2012, Assistant Professor (2019-), Korea University, Statistics Department, Korea, co-advisor with David Pollard
- James Xing Hu: 2011, Executive Director, Senior Portfolio Manager, Income Partners, Hongkong.
- Wei Dou (two PhDs): 2010, Assistant Professor (2016-), Wharton, University of Pennsylvania, co-advisor with David Pollard.

- Peisi Yan: 2011, Data Analyst, Brown University
- Zheyang Wu: 2009, Associate Professor, WRI, Committee member, Biostatistics division

Grants

- **National Science Foundation, DMS - 2112918 (PI),** *Overparameterization, Global Convergence of EM, and Beyond*, 2021/7-2024/6.
- **National Science Foundation (Investigator), DMS 1918925/1922843,** *Collaborative Research: A Generalizable Data Framework Towards Precision Radiotherapy*, 2019-2022
- **National Science Foundation, DMS – 1811740 (PI),** *Statistical and Computational Guarantees of Three Siblings: EM, Mean-field Variational Inference, and Gibbs Sampling*, 2018/7-2021/6.
- **National Institutes of Health, NIH 1P50MH115716,** *Cellular, molecular, and functional imaging approaches to understanding early neurodevelopment in autism*, 2017/7-2022/6
- **National Science Foundation, DMS – 1507511 (PI),** *Optimal Estimation of Statistical Networks*, 2015/8-2018/7.
- **National Science Foundation, DMS- 1209191 (PI),** *Estimation of Functionals of High Dimensional Covariance Matrices*, 2012/9-2015/8.
- **National Cancer Institute (Co-PI),** *Chinese Herbal Medicine as a Novel Paradigm for Cancer Chemotherapy*, 9/1/2011-8/31/2016
- **National Science Foundation, DMS- 0854975 (PI),** *Focused Research Group--Statistical Inference for High-Dimensional Data: Theory, Methodology and Applications*, 2009/9-2013/9. Jointly with T. Tony Cai and Tianxi Cai
- **National Science Foundation, DMS-0852498 (PI),** *Innovation and Inventiveness in Statistical Methodologies*, 2008/12 -- 2009/11.
- **National Science Foundation CAREER Award (PI),** *Asymptotic Decision Theory and Its Applications*, 2007/5 -- 2012/10.

University Service

- Social Science Dean Selection Committee, 2021
- University Librarian Search Committee, 2019
- Neuroscience Working Group, 2019
- Advisory Committee on Library Policy, 2019-2020, 2017-2018
- PhD admission committee, 2020 and many other years
- Faculty search committee, 2019 and many other years
- STEM Teaching Committee, 2013-2015.
- Standing Advisory and Appointments Committee for the School of Public Health (SPH), 2012-2013.
- Freshman Advisor for Silliman College.

Professional Affiliations

- American Statistical Association
- Institute of Mathematical Statistics
- International Chinese Statistical Association