

Zijian Guo

CONTACT INFORMATION	Hill Center 110 Frelinghuysen Road Piscataway, NJ 08854	(848)445-2690 zijguo@stat.rutgers.edu http://statistics.rutgers.edu/home/zijguo/
RESEARCH INTERESTS	High-dimensional inference, causal inference, econometrics, nonparametric inference and applications to health and genetics.	<ul style="list-style-type: none">• Inference in high-dimensional regression• Robust instrumental variable methods• Mediation analysis• Nonparametric methods• Semi-supervised Inference• Heritability and co-heritability analysis in genomics• Electronic health data analysis
POSITIONS	<i>Assistant Professor</i> Department of Statistics Rutgers, the State University of New Jersey	Sep 2017-present
ACADEMIC VISITS	<i>Visiting Scholar</i> Department of Biostatistics, TH Chan School of Public Health, Harvard University <i>Host:</i> Tianxi Cai	Sep 2019
	<i>Visiting Scholar</i> Forschungsinstitut für Mathematik, ETH, Zürich <i>Host:</i> Peter Bühlmann	Nov 2018
	<i>Visiting Scholar</i> Center for Statistics in Big Data, Perelman School of Medicine, Upenn <i>Host:</i> Hongzhe Li	Aug 2017
EDUCATION	Ph.D. Statistics, University of Pennsylvania <i>Thesis advisor:</i> T. Tony Cai	2017
	B.S. Mathematics, The Chinese University of Hong Kong	2012
GRANTS	<ul style="list-style-type: none">• National Science Foundation #DMS 1811857 “Inference in High-Dimensional Linear Models: Methods, Theory and Applications.”<ul style="list-style-type: none">- Period: Aug 2018 to July 2021.- Role: Principal Investigator• National Science Foundation #DMS 2015373 “Repro Sampling Method: A Transformative Artificial-Sample-Based Inferential Framework with Applications to Discrete Parameter, High-Dimensional Data, and Rare Events Inferences”<ul style="list-style-type: none">- Period: July 2020 to June 2023.- Role: Co-Principal Investigator• National Institute of Health #R56-HL-138306-01 “Statistics Methods for Analyzing Electronic Health Record Data.”<ul style="list-style-type: none">- Period: June 2018 to Aug 2018.- Role: Co-Investigator	

- Upenn Medical School “Statistics Methods for Analyzing Electronic Health Record Data” Subcontract.
 - Period: June 2019.
 - Role: Senior Investigator

PUBLICATION	<u>Published/Accepted Papers</u> (* indicates alphabetical ordering authorship)
	<ol style="list-style-type: none"> 1. *Cai, T. T., & Guo, Z. (2020). Semi-supervised Inference for Explained Variance in High-dimensional Linear Regression and Its Applications. <i>Journal of the Royal Statistical Society: Series B (Statistical Methodology)</i>, 82(2), 391-419. 2. Guo, Z., Wang, W., Cai, T. T., & Li, H. (2019). Optimal estimation of genetic relatedness in high-dimensional linear models. <i>Journal of the American Statistical Association</i>, 114(525), 358-369. 3. Guo, Z., Kang, H., Cai, T. T., & Small, D. S. (2018). Testing Endogeneity with High Dimensional Covariates. <i>The Journal of Econometrics</i>, 207(1), 175-187. 4. Guo, Z., Kang, H., Cai, T. T., & Small, D. S. (2018). Confidence Interval for Causal Effects with Invalid Instruments using Two-Stage Hard Thresholding. <i>Journal of the Royal Statistical Society: Series B (Statistical Methodology)</i>, 80(4), 793-815. 5. *Cai, T. T., & Guo, Z. (2018). Accuracy assessment for high-dimensional linear regression. <i>Annals of Statistics</i>, 46(4), 1807-1836. 6. Guo, Z., Small, D. S., Gansky, S. A., & Cheng, J. (2018). Mediation analysis for count and zero-inflated count data without sequential ignorability and its application in dental studies. <i>Journal of the Royal Statistical Society: Series C (Applied Statistics)</i>, 67(2), 371-394. 7. Cheng, J., Cheng N. F., Guo, Z., Gregorich, S., Amid I. I., & Gansky, S. A. (2018). Mediation analysis for count and zero-inflated count data. <i>Statistical Methods in Medical Research</i>, 27(9), 2756-2774. 8. *Cai, T. T., & Guo, Z. (2017). Confidence intervals for high-dimensional linear regression: Minimax rates and adaptivity. <i>Annals of Statistics</i>, 45(2), 615-646. 9. Guo, Z., & Small, D. S. (2016). Control function instrumental variable estimation of nonlinear causal effect models. <i>Journal of Machine Learning Research</i>, 17(100), 1-35. 10. Guo, Z., Cheng, J., Lorch, S. A., & Small, D. S. (2014). Using an instrumental variable to test for unmeasured confounding. <i>Statistics in Medicine</i>, 33(20), 3528-3546. 11. Guo, Z., Kogan, R., Qiu, H., & Strichartz, R. S. (2014). Boundary value problems for a family of domains in the Sierpinski gasket. <i>Illinois Journal of Mathematics</i>, 58(2), 497-519.
	<u>Technical Reports</u>
	<ol style="list-style-type: none"> 12. *Cai, Tianxi, Cai, T. T., & Guo, Z. (2019). Individualized Treatment Selection: An Optimal Hypothesis Testing Approach In High-dimensional Models. Under revision at <i>Journal of the Royal Statistical Society: Series B</i>. 13. Guo, Z. & Zhang, C. (2019). Extreme Nonlinear Correlation for Multiple Random Variables and Stochastic Processes with Applications to Additive Models. Under revision at <i>Stochastic Processes and their Applications</i>. 14. Guo, Z., Renaux, C., Bühlmann, P., & Cai, T. T. (2019). Group Inference in High Dimensions with Applications to Hierarchical Testing. <i>Technical Report</i>. 15. Guo, Z. & Zhang, C. (2019). Local Inference in Additive Models with Decorrelated Local Linear Estimator. <i>Technical Report</i>. 16. Guo, Z., Rakshit, P., Herman, D., & Chen, J. (2019). Inference for Case Probability in High-dimensional Logistic Regression. <i>Technical Report</i>. 17. Guo, Z., Ćevid, D., & Bühlmann, P. (2020). Doubly Debiased Lasso: High-Dimensional Inference under Hidden Confounding and Measurement Errors. <i>Technical Report</i>.

18. *Cai, T. T., **Guo, Z.**, & Ma, R. (2020). Statistical Inference for High-Dimensional Generalized Linear Models with Binary Outcomes. *Technical Report*.

SOFTWARE R codes are available at <https://statistics.rutgers.edu/home/zijguo/Software.html>

1. **Two Stage Hard Thresholding (TSHT)**
2. **Functional Inference in High-dimensional Regression (FIHR)**

TEACHING EXPERIENCE	Instructor		
	- Rutgers University		
	FSRM 588: Financial Data Mining		Spring 2020
	FSRM 588: Financial Data Mining		Fall 2019
	<i>Instructor Rating:</i> 4.75 out of 5.0		
	STAT 594: Advanced Modern Statistical Inference II		Spring 2019
	<i>Instructor Rating:</i> 4.82 out of 5.0		
	FSRM 588: Financial Data Mining		Fall 2018
	<i>Instructor Rating:</i> 4.71 out of 5.0		
	FSRM 588: Financial Data Mining		Fall 2017
	<i>Instructor Rating:</i> 4.82 out of 5.0		
	- The Wharton School, University of Pennsylvania		
	STAT 111 : Introductory Statistics		Summer 2016
	<i>Instructor Rating:</i> 3.6 out of 4.0		
	Recitation Instructor		Fall 2014
	The Wharton School, University of Pennsylvania		
	STAT 111: Introductory Statistics		
	Teaching Assistant		
	The Wharton School, University of Pennsylvania		
	STAT 102: Business Statistics		Spring 2017
	STAT 970: Mathematical Statistics		Fall 2016
	STAT 622: Statistical Modeling		Spring 2016
	STAT 550: Mathematical Statistics		Fall 2015
STUDENTS SUPERVISION	PhD Thesis Advisor: Prabirsha Rakshit (expected 2023)		
	PhD Students and Post Doc Mentor¹: Domagoj Civid (ETH); Jue Hou (Harvard); Molei Liu (Harvard); Lu Wang (Upenn); Rong Ma (Upenn); Claude Renaux (ETH); Ye Tian (Rutgers); Zheshi Zheng (Rutgers).		
	PhD Thesis Committee: Sai Li (2018); Yisha Yao (expected 2020)		
	Master Thesis Advisor: Yankun Xu (2018); Yangdi Li (2018); Guanyu Huang (2018); Haoze Tang (2018); Wenzhe Zhang (2018); Yaran Su (2018); Xinyi Zhang (2018); Yuan Liang (2019); Hequan Zhang (2019); Qiaochu Chen (2019); Jiamin Deng (2019); Zeen Huo (2019); Jianyu Li (2020); Junjie Chen (2020).		

¹I am mentoring these PhD students or Post Doc for one or multiple projects but not their advisor

HONORS AND AWARDS	<ul style="list-style-type: none"> • ICSA New Researcher Award, ICSA 2019 • IMS travel Award, JSM • President Gutmann Leadership Award, University of Pennsylvania • J. Parker Bursk Prize <i>Awarded by the Statistics Department at the Wharton School for excellence in research.</i> • Statistics in Epidemiology Young Investigator Award, JSM <i>Awarded by the American Statistical Association section on Statistics in Epidemiology for the paper “Using an instrumental variable to test for unmeasured confounding.”</i> • Chung Chi College Departmental Prize, CUHK • Dr. Chao Yong Chi-hsing Scholarship in Mathematics, CUHK • Chung Chi Traveling Award in Mathematics, CUHK • Chung Chi Ivy League Exchange Scholarship, CUHK • Caring Alumni Student Exchange Scholarship, CUHK • Dean’s List, College of Arts and Science, UPenn • Dean’s Honors List, Faculty of Science, CUHK • Chung Chi College Scholarship, CUHK • Honors at Entrance to the Chinese University of Hong Kong (4 years) 	Dec. 2019 Aug. 2017 Apr. 2017 Sept. 2016 Aug. 2013 2011 2011 2011 2010 2010 2010 2008, 2009 2009 2008
ACADEMIC SERVICE	<ul style="list-style-type: none"> • Department Retreat Chair (2019-2020), Department of Statistics, Rutgers • Department Seminar Chair (2018-2019), Department of Statistics, Rutgers • Other Rutgers Committee service: Department retreat (2017-2018); FSRM (2017-2018, 2018-2019, 2019-2020); Ph.D. Exam (2018-2019, 2019-2020); Graduate Curriculum (2019-2020); • Organizing Committee for 2019 Rutgers Statistics Symposium • Program Committee for ICSA 2019 11th International Conference • Local Organizing Committee for 2018 ICSA Applied Symposium. • Session organizer for 2019 Hangzhou Data Science Conference • Session organizer for 2018 ICSA Applied Symposium. • Reviewer for the following journals: <i>Annals of Statistics</i>, <i>JASA</i>, <i>JRSSB</i>, <i>Biometrika</i>, <i>Statistica Sinica</i>, <i>IEEE International Symposium on Information Theory</i>, <i>Journal of Applied Statistics</i>, <i>Biometrics</i>, <i>Journal of Machine Learning</i>, <i>COLT</i>. 	
TALKS	<ul style="list-style-type: none"> • Invited talk (virtual), JSM 2020, Philadelphia, USA, “<i>Doubly Debiased Lasso: High-Dimensional Inference under Hidden Confounding and Measurement Errors.</i>”, Aug 2020 • Department seminar (virtual), Department of Statistics, UC Davis, USA “<i>Doubly Debiased Lasso: High-Dimensional Inference under Hidden Confounding and Measurement Errors.</i>”, May 2020 • Upenn causal reading group (virtual), Upenn, USA, “<i>Doubly Debiased Lasso: High-Dimensional Inference under Hidden Confounding and Measurement Errors.</i>”, May 2020 • Department seminar, Department of Statistics, East China Normal University, Shanghai, China, “<i>Group Inference in High Dimensions with Applications to Hierarchical Testing</i>”, Dec 2019 • Invited talk, 11th ICSA International Conference, Hangzhou, China, “<i>Group Inference in High Dimensions with Applications to Hierarchical Testing</i>”, Dec 2019 • Invited talk, International Statistical Conference in Memory of Professor Sik-Yum Lee, Hong 	

Kong, China, “*Group Inference in High Dimensions with Applications to Hierarchical Testing*”, Dec 2019

- Causal reading group (led by James Robins), School of Public Health, Harvard University “*Semi-supervised Inference for Explained Variance in High-dimensional Linear Regression and Its Applications*”, Sep. 2019
- Department seminar, Department of Statistics, East China Normal University, Shanghai, China, “*Individualized Treatment Selection: A Hypothesis Testing Approach In High-dimensional Models*”, June. 2019
- Invited talk, 2019 Hangzhou Data Science Conference, Hangzhou, China, “*Local Inference in High-dimensional Sparse Additive Modeling*”, May. 2019
- Department seminar, School of Data Science, City University of Hong Kong, Hong Kong, China, “*Individualized Treatment Selection: A Hypothesis Testing Approach In High-dimensional Models*”, May. 2019
- Department seminar, ISOM, HKUST, Hong Kong, China, “*Local Inference in High-dimensional Sparse Additive Modeling*”, May. 2019
- Department seminar, Department of Statistics, University of Virginia, USA, “*Local Inference in High-dimensional Sparse Additive Modeling*”, March. 2019
- Invited Speaker, 2019 ICSA Data Science Conference, Xishuangbanna, Yunnan, China. “*Individualized Treatment Selection: A Hypothesis Testing Approach In High-dimensional Models*”, Jan. 2019
- Young Research Session, Memorial Workshop for Lawrence D. Brown, University of Pennsylvania, USA. “*Individualized Treatment Selection: A Hypothesis Testing Approach In High-dimensional Models*”, Nov. 2018
- Seminar for Statistics, Department of Mathematics, ETH, Swiss, “*Semi-supervised Inference for Explained Variance in High-dimensional Linear Regression and Its Applications*”, Nov. 2018
- Department seminar, Department of Mathematics, NJIT, USA, “*Semi-supervised Inference for Explained Variance in High-dimensional Linear Regression and Its Applications*”, Nov. 2018
- Department seminar, ORFE, Princeton, USA, “*Semi-supervised Inference for Explained Variance in High-dimensional Linear Regression and Its Applications*”, Oct. 2018
- Department seminar, ISOM, HKUST, Hong Kong, China, “*Semi-supervised Inference for Explained Variance in High-dimensional Linear Regression and Its Applications*”, July. 2018
- Department seminar, Department of Statistics, Naikai University, China, “*Semi-supervised Inference for Explained Variance in High-dimensional Linear Regression and Its Applications*”, July. 2018
- Invited talk, IMS Asia Pacific Rim Meeting, Singapore, “*Semi-supervised Inference for Explained Variance in High-dimensional Linear Regression and Its Applications*”, June. 2018
- Invited talk, HongKong EcoStat Conference, Hong Kong, China, “*Semi-supervised Inference for Explained Variance in High-dimensional Linear Regression and Its Applications*”, June. 2018
- Invited talk, ICSA Symposium 2018, New Brunswick, USA, “*Semi-supervised Inference for Explained Variance in High-dimensional Linear Regression and Its Applications*”, June. 2018
- Invited talk, Purdue Symposium on Statistics, USA, “*Semi-supervised Inference for Explained Variance in High-dimensional Linear Regression and Its Applications*”, June. 2018
- Invited talk, 2018 Hangzhou Data Science Conference, Hangzhou, China, “*Semi-supervised Inference for Explained Variance in High-dimensional Linear Regression and Its Applications*”, May. 2018
- Invited talk, Lorentz Center, Leiden University, Netherlands, “*Semi-supervised Inference for Explained Variance in High-dimensional Linear Regression and Its Applications*”, Apr. 2018
- Department seminar, Department of Statistics, Columbia University, “*Semi-supervised Infer-*

ence for Explained Variance in High-dimensional Linear Regression and Its Applications”, Apr. 2018

- Topic contributed talk, Joint Statistical Meetings, Baltimore, USA, “Optimal Estimation of Co-Heritability in High-Dimensional Linear Models”, Aug. 2017
- Invited talk, Statistical Foundations of Uncertainty Quantification for Inverse Problem, Cambridge, “Inference for Functionals in High-dimensional Linear Models”, June. 2017
- Seminar, Center for Statistical Methods in Big Data, University of Pennsylvania, “Inference with High-dimensional Covariates and Possibly Invalid Instruments”, Apr. 2017
- Seminar, Institute of Data science, Fox Business School, Temple University, “Inference for High Dimensional Linear Models: Fundamental Limits and Algorithms”, Feb. 2017
- Department seminar, Department of Biostatistics, UC Berkeley, “Inference for High Dimensional Linear Models: Fundamental Limits and Algorithms”, Feb. 2017
- Department seminar, Department of Statistics, Rutgers, “Inference for High Dimensional Linear Models: Fundamental Limits and Algorithms”, Feb. 2017
- Department seminar, Department of Statistics, University of Michigan, “Inference for High Dimensional Linear Models: Fundamental Limits and Algorithms”, Jan. 2017
- Department seminar, Department of Statistics, University of Minnesota, “Inference for High Dimensional Linear Models: Fundamental Limits and Algorithms”, Jan. 2017
- Department seminar, Department of Statistics, UIUC, “Inference for High Dimensional Linear Models: Fundamental Limits and Algorithms”, Jan. 2017
- Department seminar, DPMMS, University of Cambridge, “Inference for High Dimensional Linear Regression: Fundamental Limits and Algorithms”, Jan. 2017
- Department seminar, Department of Statistics, UC Santa Barbara, “Inference for High Dimensional Linear Models: Fundamental Limits and Algorithms”, Jan. 2017
- Invited talk, Mathematical Meeting in Statistics, Fréjus, France, “Optimal Estimation of Genetic Correlation in High-dimensional Linear Models”, Dec. 2016
- Econometrics Lunch, Department of Economics, University of Pennsylvania, “Confidence Intervals for Treatment Effects in High-Dimensional Linear Models”, Nov. 2016
- Contributed talk, Joint Statistical Meetings, Chicago, USA, “Accuracy Assessment for High-dimensional Linear Regression”, Aug. 2016
- Contributed talk, Eastern North American Region, Austin, USA, “Confidence Intervals for High-Dimensional Linear Regression: Minimax Rates and Adaptivity”, Mar. 2016
- Poster presentation, John W. Tukey Conference, Princeton University, “Confidence Intervals for High-Dimensional Linear Regression: Minimax Rates and Adaptivity”, Sept. 2015
- Contributed talk, Joint Statistical Meetings, Seattle, USA, “Distance Matrix Estimation from Noisy Observation of Low Rank Position Matrix”, Aug. 2015
- Contributed talk, Joint Statistical Meetings, Boston, USA, “Instrumental Variable Approach for Mediation Analysis of Count Model”, Aug. 2014
- Topic Contributed talk, Joint Statistical Meetings, Montreal, Canada, “Instrumental Variable Approach for Mediation Analysis of Zero-Inflated Count Model”, Aug. 2013
- Poster presentation, Atlantic Causal Inference Conference, Harvard University, “Control Function Instrumental Variable Estimation of Nonlinear Causal Effect Models”, May. 2013

- MEMBERSHIPS
- American Statistical Association
 - Institute of Mathematical Statistics
 - International Chinese Statistical Association
 - The Econometric Society