

# Harrison H. Zhou

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

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## Position

2009/7 -	Yale University Associate Professor	New Haven, CT
2004/7 -2009/6	Yale University Assistant Professor	New Haven, CT

## Education

1998-2004	Cornell University Ph.D. in Mathematics, Aug 2004.	Ithaca, NY
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## Research interests

- Decision theory
- Le Cam theory
- Shrinkage estimation and Model selection
- Function (wavelet) estimation
- Multiple comparisons
- Functional data analysis
- Covariance matrix estimation
- Bioinformatics

## Honors and Awards

- **Noether Young Researcher Scholar Award**, 2009. For outstanding early career contributions to nonparametric statistics.
- **National Science Foundation, DMS- 0854975 (PI)**, *Focused Research Group--Statistical Inference for High-Dimensional Data: Theory, Methodology and Applications*, 2009/9-2012/9. Amount awarded: \$330,000.
- **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 -- 2012/4. Amount awarded: \$400,000.
- **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

*Papers published or accepted*

- Nonparametric Regression in Exponential Families (with Lawrence D. Brown and Tony T. Cai). To appear. *Annals of Statistics*.
- Optimal Rates of Convergence for Covariance Matrix Estimation (with T. Cai and C.-H. Zhang). To appear. *Annals of Statistics*.
- Asymptotic Equivalence of Spectral Density Estimation and Gaussian White Noise (with G.K. Golubev and Michael Nussbaum). To appear. *Annals of Statistics*.
- Asymptotic Equivalence and Adaptive Estimation for Robust Nonparametric Regression (with Tony T. Cai). *Annals of Statistics*, 37, 3204-3235.
- Robust Nonparametric Estimation via Wavelet Median Regression (with Lawrence .D. Brown and Tony T. Cai). *Annals of Statistics*, 36, 2055-2084, 2008.
- The Root-unroot Algorithm for Density Estimation as Implemented via Wavelet Block Thresholding (with Lawrence D. Brown, Tony T. Cai, R. Zhang, and Linda H. Zhao). To appear. *Probability Theory and Related Fields*.
- A Data-Driven Block Thresholding Approach to Wavelet Estimation (with Tony T. Cai). To appear. *Annals of Statistics*, 37, 569–595, 2009.
- A Complement to Le Cam's Theorem (with Mark G. Low). *Annals of Statistics*, 35, 1146-1165, 2007.
- Minimax Estimation with Thresholding and its Application to Wavelet Analysis (with J.T. Gene Hwang). *Annals of Statistics*, **33**, 101-125, 2005.

#### *Papers submitted*

- A Note on Quantile Coupling Inequalities and Their Applications. Submitted.
- Adaptive Functional Linear Regression (with Tony T. Cai). Submitted.
- Multiple Hypothesis Testing with Groups (with J. Hu and H. Zhao). Under revision for JASA.

#### *Ph.D. Dissertation*

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

#### *Discussions*

- Discussion of "Sure independence screening for ultra-high dimensional feature space" by Fan and Lv (with Xihong Lin), *Journal of the Royal Statistical Society, Series B*, 70, 903-904, 2008.

### **Professional service**

- Co-Chair of the organizing committee and member of scientific committee, *International Conference on Statistics and Society*, July 2010 (<http://stat.yale.edu/Conferences/ICSS2010/index.html>).
- Organizer of a workshop, *Innovation and Inventiveness in Statistical Methodologies*, May 2009 (<http://www.stat.yale.edu/Conferences/Stats2009/>).
- Member of the scientific committee, *the second IMS-China International Conference, 2009*.
- 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.
- Co-Editor, a special issue of *Statistics and Its Interface*, for the second IMS-China International Conference, 2009.
- Associate Editor, *Annals of Statistics*, 2010 Jan – 2012 Dec.
- Associate Editor, a special issue of *Journal of Nonparametric Statistics*.
- Referee for *Annals of Statistics*, *Journal of The American Statistical Association*, *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, A conference at the Wharton school in honor of L. D. Brown, 2010
- Invited speaker, *The Eighth ICSA International Conference: Frontiers of Interdisciplinary and Methodological Statistical Research*, 2010
- Invited speaker, IMS Annual meeting, 2010.
- Invited speaker, JSM, 2010.
- Invited speaker, *International Conference on Statistics and Society*, July 2010
- Invited participant, *Modern Nonparametric Statistics*, Oberwolfach, Germany, 2010
- Invited speaker, session on "Functional Data Analysis", *JSM 2009*.
- Invited speaker, *the first IMS-Asia Pacific Rim Meeting, 2009*, Seoul, Korea.
- Invited speaker, *the second IMS-China International Conference, 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: Cornell stat., Wayne State math., Columbia Stat. (twice), Penn State stat., UC Davis stat., Ohio State stat., Iowa State stat, UConn stat, IBM Watson, Boston U. Math (twice), Rutgers stat., UC Berkeley Stat., Harvard Stat., Harvard Biostat., Beijing University math, Renming University Stat., Newton Institute at Cambridge, UPenn Wharton School

### Teaching

- Fall 2005 and Fall 2006, [Stat 610](#), *Statistical Inference*.

- Spring 2005 and Spring 2006 and Spring 2007, [Stat 242/542](#), *Theory of Statistics*.
- Spring 2006 and Fall 2009, [Stat 680](#), *Nonparametric Estimation*.
- Fall 2006 and Fall 2007, [Stat 241/541](#), *Probability Theory with Applications*.
- Spring 2007, [Stat 619](#), *Statistical Decision Theory*.
- Fall 2007, [Stat 673](#), *Functional Data Analysis*.
- Fall 2009, Stat 106, *Data Analysis*

#### **Current Ph. D. Students**

- James Xing Hu (Statistics department, anticipated graduation May 2010 )
- Wei Dou (co-advisor with David Pollard, Statistics department, anticipated graduation May 2010)
- Arlene Kim (Statistics department, anticipated graduation May 2011)
- Peisi Yan (Statistics department, anticipated graduation May 2011)
- Zheyang Wu (Committee member, Biostatistics division, May 2009)

#### **Professional Affiliations**

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