

Zhigen Zhao

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EDUCATION

- Ph.D. in Mathematics, 2009, **Cornell University**, Ithaca, NY
Ph.D. Dissertation: *Decision Approach and Shrinkage Confidence Intervals*
- B.S. in Mathematics, 2003, **Nankai University**, Tianjin, China

EMPLOYMENT

- Associate Professor, Temple University, 2016-Present
- Assistant Professor, Temple University, 2009-2016,
- Research and Teaching Assistant, Cornell University, 2004-2009,

RESEARCH CONTRIBUTIONS

Refereed Journal Publications

1. Lin, Q., Zhao, Z., and Liu, J. (2015) On consistency and sparsity for sliced inverse regression in high dimension. *Annals of Statistics*. Accepted.
2. Chang, Y. W., Tsong, Y., and Zhao, Z. (2016) Sample size determination for a three-arm equivalence trial of Poisson and Negative binomial responses. *Journal of Biopharmaceutical Statistics*. Accepted.
3. Ni, H., Qin, J., Zhou, L., Zhao, Z., Wang, J., Hou, F. (2017). Network analysis in detection of early-stage mild cognitive impairment. *Physica A: Statistical Mechanics and its Applications*. Vol. 142, 113-119.
4. Zhang, J., Zhao, Z., Zhang, K., and Wei, Z. (2016) A Feature Sampling Strategy for Analysis of High Dimensional Genomic Data. APBC2017: The Fifteenth Asia Pacific Bioinformatics Conference.
5. Liu, Y., Sarkar, S. K., and Zhao, Z. (2015) A new approach to multiple testing of grouped hypotheses. *Journal of Statistical Planning and Inference*. Vol. 179, 1-14. (One of the most downloaded articles from Journal of Statistical Planning and Inference in the last 90 days.)
6. He, L., Sarkar, S. K. and Zhao, Z. (2015) Capturing the severity of Type II errors in high-dimensional multiple testing. *Journal of Multivariate Analysis*. Vol. 142, 106-116.
7. Zhao, Z. and Sarkar, S. K. (2015) A Bayesian approach to construct multiple confidence intervals of selected parameters with sparse signals. *Statistica Sinica*. Volume 25, Number 2, 725-742.

8. Anis, M., Zhao, Z., Khurana, J., Krynetskiy, E. and Soliman, A. (2014) Translational genomics of acquired laryngotracheal stenosis. *The Laryngoscope*. Vol. 124, Issue 5, 175-179.
9. Clements, N., Sarkar, S. K., Zhao, Z. and Kim, D. (2014) Applying multiple testing procedure to detect changes in east African vegetation. *Annals of Applied Statistics*. Volume 8, No.1, 286-308.
10. Chang, Y. W., Tsong, Y., Dong, X. and Zhao, Z. (2013) Sample size determination for a three-arm equivalence trial of normally distributed responses. *Journal of Biopharmaceutical Statistics*. Vol. 24, Issue 6, 1190-1202.
11. Zhao, Z., Wang, W. and Wei, Z. (2013) An empirical Bayes testing procedure for detecting variants in analysis of next generation sequencing data. *Annals of Applied Statistics*. Volume 7, No.4, 2229-2248.
12. Hwang, J. T., Zhao, Z. (2013) Empirical Bayes confidence intervals for selected parameters in high dimensional data. *Journal of the American Statistical Association*. Volume 108, Issue 502, 607-618.
13. Zhao, Z. and Hwang, J. T. (2012) Empirical Bayes FCR controlling confidence interval. *Journal of the Royal Statistical Society, Series B*, Volume 74, Issue 5, 871-891.
14. Zhao, Z. (2010) Double shrinkage empirical Bayesian estimation for unknown and unequal variances, *Statistics and Its Interface*. Volume 3, 533-541.
15. Hwang, J. T., Qiu, J. and Zhao, Z. (2009) Empirical Bayes confidence intervals shrinking both means and variances. *Journal of the Royal Statistical Society, Series B*. Volume 71, Issue 1, 265-285.

Research Completed and Submitted for Publication

1. Zhao, Z. (2017) Where to find needles in a haystack?
2. Lin, Q., Zhao, Z. , and Liu, J. (2016) Sparse Sliced Inverse Regression for High Dimensional Data.
3. Pan, J. C., Zhao, Z., and Hwang, J. T. (2014) Improving on Morris' empirical Bayes intervals.
4. Chang, Y. W., Tsong, Y., and Zhao, Z. (2014) Sample size determination for a three-arm equivalence trial of Poisson and Negative Binomial responses.
5. Ji, P. and Zhao, Z. (2015) Rate optimal multiple testing procedure in high-dimensional regression.

GRANT

1. Principle Investigator. National Science Foundation. BIGDATA: Collaborative Research: F: Statistical Theory and Methods beyond the Dimensionality Barrier. 2016-2019. NSF IIS-1633283.
2. Co-Principle Investigator. Penn Department of Transportation. Winter Roadway Maintenance Material Enhancers (Field) Evaluation. 2016-2018.

3. Co-Principle Investigator. Fox School of Business and Management Young Scholars Forum. *Determining an Optimal Design of Service Attributes for Mass Participation Sport Events*. 2013
4. Principle Investigator. National Science Foundation. *Bayesian Decision Theoretic Methods for Some High-Dimensional Multiple Inference Problems*. 2012-2015. NSF 1208735.
5. Co-Principle Investigator. Fox School of Business and Management Young Scholars Forum. *The Fama-MacBeth Method Revisited: A More Powerful Test Based*. 2010.

TEACHING

Graduate Course

- Stat8113, Statistical Methods in Business Research II, 2016 Spring
- Stat8003, Statistical Methods I, 2015 Fall
- Stat8113, Statistical Methods in Business Research II, 2015 Spring
- Stat8003, Statistical Methods I, 2014 Fall
- Stat8113, Statistical Methods in Business Research II, 2014 Spring
- BA9105, Business Research: Econometrics I, 2013 Fall
- Stat8113, Statistical Methods in Business Research II, 2013 Spring
- Stat8106, Generalized Linear Models I, 2011 Spring
- Stat8002, Probability Theory II, 2010 Spring
- Stat8001, Probability Theory I, 2009 Fall

Undergraduate Course

- Stat3503/Stat8109, Intermediate Business Statistics, 2015 Fall
- Stat3503/Stat8109, Intermediate Business Statistics, 2014 Fall
- Stat2103, Business Statistics, 2012 Fall
- Stat2103, Business Statistics, 2012 Fall
- Stat2512, Intermediate Statistics, 2012 Spring
- Stat2103, Business Statistics, 2012 Spring
- Stat2103, Business Statistics, 2011 Spring
- Stat2102, Selected Statistics Applications in Business, 2010 Fall
- Stat2102, Selected Statistics Applications in Business, 2010 Fall
- Stat2102, Selected Statistics Applications in Business, 2009 Fall

MENTORSHIP

I am serving as Ph.D. Dissertation Chair for

- Yeil Kwon. June 2015 - current. Expected in 2018.
- Yanping Liu, *New Approaches to Multiple Testing of Grouped Hypotheses*. Co-chaired with Dr. Sanat K. Sarkar. June 2013 - 2016. First position in Merck.
- Victoria(Yu-Wei) Chang, *Sample Size Determination for a Three-arm Biosimilar Trial*. January 2012 - July 2014. First position in Boehringer Ingelheim.

I am serving as a member of Advisory Committees for

- Zeda Li
- Scott Bruce
- Jie Zhang (NJIT)
- Jing Xiao
- Bu Hyoung Lee
- Yiyong Fu
- Yihuan Xu
- Wei Wang (NJIT)
- Nicolle Clements
- Ibrahim Turkoz
- Elizabeth Stone
- Bhramori Banerjee
- Li He
- Tingting Zhan
- Vishwanath Iyer

SERVICE CONTRIBUTION

Professional Service

- Membership committee, *ICSA (International Chinese Statistical Association)*, 2015-2017,
- Associate Editor, *Statistical Analysis and Data Mining*, 2013 - present.
- Ad-hoc Review (* more than once):
 - Journal of the American Statistical Association(*)
 - Journal of Royal Statistical Society, Series B(*)

- Biometrika
 - Annals of Statistics
 - Biometrics
 - The American Statistician(*)
 - Statistica Sinica(*)
 - Journal of Statistical Planning and Inference(*)
 - Journal of the Korean Statistical Society
 - Statistical Analysis and Data Mining
 - Journal of Probability and Statistics
 - Journal of Nonparametric Statistics
 - Journal of Statistical Modelling
 - Test
 - Journal of Biopharmaceutical Research
 - Statistics and Probability Letters.
- Organize two invited sessions for the International Chinese Statistical Association Symposium, 2017
 - Organize an invited session for the International Chinese Statistical Association Symposium, 2014
 - Organizing committee of the conference on high dimensional statistics, 2013, Temple University
 - Organize an invited session, titled “Statistical Method and Theory for High-dimensional Data” in the conference of International Chinese Statistical Association, Guangzhou, China, 2010
 - Chair a session, titled “Gaussian Process Models, Computer Experiments, Differential Equation Models, and Subsurface Inversion” in the Joint Statistical Meetings, Vancouver, Canada, 2010
 - Organize an invited session, titled “Statistical Method and Theory for High-dimensional Data” in the Symposium of International Chinese Statistical Association, New York City, NY, 2011

PRESENTATIONS

Presentations at Professional Conferences and Meetings

- **Invited.** Rate optimal multiple testing procedure in high-dimensional regression, IMS China International Conference on Statistics and Probability, Yunnan, China 2015
- **Invited.** Rate optimal multiple testing procedure in high-dimensional regression, ICSCA China Statistics Conference, Shanghai, China 2015
- **Contributed.** Rate optimal multiple testing procedure in high-dimensional regression, Joint Statistical Meetings, Boston, MA 2014

- **Invited.** Rate optimal multiple testing procedure in high-dimensional regression, International Workshop on Multiplicity, Shanghai, China 2014
- **Invited.** Optimal Multiple Testing Procedure Under Linear Regression Model, ENAR Conference, Orlando, FL 2013
- **Contributed.** Optimal Multiple Testing Procedure Under Linear Regression Model, Joint Statistical Meetings, San Diego, CA 2012
- **Invited.** Capturing the Severity of Type II Errors in High-Dimensional Multiple Testing, ICSA Applied Statistics Symposium, Boston, MA, 2012
- **Contributed.** On the Credible Interval under the zero-inflated Mixture Prior in High Dimension Inference, Joint Statistical Meetings, Miami, FL, 2011
- **Invited.** On the Generalized Benjamini-Hochberg procedure, IMS-China International Conference on Statistics and Probability, Xi'an, Shanxi, 2011
- **Invited.** On the Generalized Benjamini-Hochberg procedure, ICSA Applied Statistics Symposium, New York City, NY, 2011
- **Invited.** Empirical Bayes Confidence Intervals for Selected Parameters for a Large Number of Normal Populations with Unequal but Estimable Means and Variances, the Eighth ICSA International Conference, Guangzhou, Guangdong, 2010
- **Contributed.** Empirical Bayes Confidence Intervals for Selected Parameters for a Large Number of Normal Populations with Unequal but Estimable Means and Variances, Joint Statistical Meetings, Vancouver, Canada, 2010
- **Contributed.** Empirical Bayes FCR Controlling Confidence Interval, Joint Statistical Meetings, Washington DC, 2009
- **Invited.** Empirical Bayes Confidence Intervals Shrinking Both Means and Variances, the 17-th annual International Chinese Statistical Association Applied Statistics Symposium, Piscataway, NJ, 2008

Presentations at Departmental Colloquia

- A New Approach to Multiple Testing of Grouped Hypotheses, University of Illinois Urbana-Champaign, IL 2016
- A New Approach to Multiple Testing of Grouped Hypotheses, University of Delaware, DE 2015
- Testing Multiple Hypothesis in Big Data Analysis, Southwest Jiaotong University, Chengdou, China 2015
- Testing Multiple Hypothesis in Big Data Analysis, Beihang University, Beijing, China 2015
- Optimal Multiple Testing Methods, Auburn University, AL 2014
- Optimal Multiple Testing Procedure Under Linear Regression Model, Department of Statistics, University of Georgia, GA 2013

- Empirical Bayes Confidence Intervals for Selected Parameters in High dimension, National Institute of Environmental Health Sciences (NIEHS), Research Triangle Park, NC, 2011
- On the Credible Interval under the zero-inflated Mixture Prior in High Dimension Inference, Department of Mathematics, New Jersey Institute of Technology, Newark, NJ, 2011
- Empirical Bayes Confidence Intervals for Selected Parameters for a Large Number of Normal Populations with Unequal but Estimable Means and Variances, Department of Operations Research and Financial Engineering, Princeton University, Princeton, NJ, 2011
- Empirical Bayes Confidence Intervals for Selected Parameters with Unknown and Unequal Variances, Department of Statistics, University of Missouri, Columbia, MO, 2010
- Empirical Bayes Confidence Intervals for Selected Parameters with Unknown and Unequal Variances, Department of Statistics, Nankai University, Tianjin, China, 2010
- Empirical Bayes Confidence Intervals Shrinking Both Means and Variances, Department of Statistics, Temple University, Philadelphia, PA, 2009
- Empirical Bayes Confidence Intervals Shrinking Both Means and Variances, Department of Mathematics, Syracuse University, Syracuse, NY, 2008

HONORS & AWARDS

- Dean's Research Honor Roll, Fox School of Business Management, Temple University, 2014
- High Achievements in Sponsored Projects, Fox School of Business Management, Temple University, 2014
- Raghavarao Publication Award, Temple University, 2014
- Liu Memorial Award, awarded by Cornell University, 2009
- Laha Travel Award, awarded by the Institute of Mathematics Statistics, 2009,
- Batting Award, awarded by the Department of Mathematics, Cornell University, 2008
- Graduate School Travel Award and Fellowship awarded by Cornell University, 2008

Professional Memberships

- Institute of Mathematical Statistics (IMS), 2007 - Present
- American Statistical Association (ASA), 2007 - Present
- International Chinese Statistical Association (ICSA), 2006 - Present
- American Mathematics Society (AMS), 2004 - Present