

# Weixin Yao

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## CONTACT INFORMATION

1337 Olmsted Hall  
Department of Statistics  
University of California, Riverside  
Riverside, CA 92521

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## RESEARCH INTERESTS

Mixture models, Analysis of longitudinal data, High dimensional data analysis, Nonparametric and semiparametric modeling, Robust statistics, Variable selections.

## EDUCATION

### **The Pennsylvania State University-University Park**

Ph.D. in Statistics, August 2007

- Dissertation Topic: “On Using Mixtures and Modes of Mixtures in Data Analysis”
- Advisors: Dr. Bruce G. Lindsay and Dr. Runze Li

### **University of Science and Technology of China**

B.S. in Statistics, July 2002

## PROFESSIONAL EXPERIENCE:

**2014-present:** Associate Professor (tenured), Department of Statistics, University of California, Riverside, CA.

**Previous (2013-2014):** Associate Professor (tenured), Department of Statistics, Kansas State University, Manhattan, KS.

**Previous (2007-2013):** Assistant Professor, Department of Statistics, Kansas State University, Manhattan, KS.

**Previous (2002-2007):** Graduate Research Assistant, Graduate Teaching Assistant, Instructor and Statistical Consultant, The Pennsylvania State University, State College, PA.

## HONORS AND AWARDS

- Faculty Development Awards, Kansas State University, 2013
- The winner of *Journal of Nonparametric Statistics Best Paper Award 2012*
- The William L. Harkness Graduate Teaching Award, 2006
- Vollmer-Kleckner Fellowship, 2004
- Pass with distinction (ranked 1st) in the Ph.D. candidacy examination, 2004
- Pass with distinction (ranked 1st) in the M.S. candidacy examination, 2003

## PUBLICATIONS AND MANUSCRIPTS

*Referred publications or in press*

- Chen, Y. and **Yao, W.** (2016). Unified Inference for Sparse and Dense Longitudinal Data in Time-Varying Coefficient Models. *Scandinavian Journal of Statistics*.
- Shi, J., Yu, N. and Yao, W. **Yao, W.** (2016). Energy efficient building HVAC control algorithm with real-time occupancy prediction. International Conference on Sustainability in Energy and Buildings, 2016.
- Yu, C. and **Yao, W.** (2016). Robust Linear Regression: A Review and Comparison. *Communications in Statistics-Simulation and Computation*.
- Xiang, S., **Yao, W.**, and Seo, B. (2016). Semiparametric Mixture: Continuous Scale Mixture Approach. *Computational Statistics and Data Analysis*.
- Zhou, X., Yu, N., **Yao, W.**, and Johnson, R. (2016). Forecast Load Impact from Demand Response Resources. IEEE Proceedings, Power and Energy Society General Meeting, Boston, USA, 2016. (Best Conference Papers on Electric Vehicles, Energy Storage, Microgrids, and Demand Response.)
- Xiang, S. and **Yao, W.** (2016). A New Information Criterion Based Bandwidth Selection Method for Nonparametric Regressions. *Journal of Statistical Computation and Simulation*.

- Yang, L., Xiang, S., **Yao, W.** (2016). Robust Fitting of Mixtures of Factor Analyzers Using the Trimmed Likelihood Estimator. *Communications in Statistics-Simulation and Computation*. In press.
- Wu, Q. and **Yao, W.** (2016). Relabel mixture models via modal clustering. *Communications in Statistics-Simulation and Computation*.
- Li, M., Xiang, S., **Yao, W.** (2016). Robust Estimation of the Number of Components for Mixtures of Linear Regression Models. *Computational Statistics*. In press.
- Kürüm, E., Li, R., Shiffman, S., and **Yao, W.** (2016). Time-Varying Coefficient Models for Joint Modeling Binary and Continuous Outcomes in Longitudinal Data. *Statistica Sinica*, 26, 979-1000.
- Hu, H., Wu, Y., and **Yao, W.** (2016). Maximum Likelihood estimation of mixture of log-concave densities. *Computational Statistics and Data Analysis*, 101, 137-147.
- Wang, S., Huang, M., Wu, X., and **Yao, W.** (2016). Mixture of Functional Linear Models and Its Application to CO<sub>2</sub>-GDP Functional Data. *Computational Statistics and Data Analysis*, 97, 1-15.
- Bai, X., Chen, K., and **Yao, W.** (2016). Mixture of Linear Mixed Models Using Multivariate t Distribution. *Journal of Statistical Computation and Simulation*, 86, 771-787.
- Wu, Q. and **Yao, W.** (2016). Mixtures of quantile regressions. *Computational Statistics and Data Analysis*, 93, 162-176.
- Yu, C., Chen, K., and **Yao, W.** (2015). Outlier Detection and Robust Mixture Modeling Using Nonconvex Penalized Likelihood. *Journal of Statistical Planning and Inference*, 164, 27-38.
- Ma, Y. and **Yao, W.** (2015). Flexible Estimation of A Semiparametric Two-component Mixture Model With One Parametric Component. *Electronic Journal of Statistics*, 9, 444-474.
- Chen, Y., Wang, Q., and **Yao, W.** (2015). Adaptive Estimation for Varying Coefficient Models. *Journal of Multivariate Analysis*, 137, 17-31.
- **Yao, W.** (2015). Label switching and its simple solutions for frequentist mixture models. *Journal of Statistical Computation and Simulation*, 85, 1000-1012.
- **Yao, W.** and Song, W. (2015). Mixtures of linear regression with measurement errors. *Communications in Statistics - Theory and Methods*, 44, 1602-1614.
- Wang, S., Huang, M., and **Yao, W.** (2014). A Note On the Identifiability of Nonparametric and Semiparametric Mixtures of GLMs. *Statistics and Probability Letters*, 93, 41-45.
- Xiang, S., **Yao, W.**, and Wu, J. (2014). Minimum profile Hellinger Distance Estimation for a Semiparametric Mixture Model. *The Canadian Journal of Statistics*, 42, 246-267.
- Huang, M., Li, R., and Wang, H., and **Yao, W.** (2014). Estimating Mixture of Gaussian Processes by Kernel Smoothing. *Journal of Business and Economics Statistics*, 32, 259-270.
- **Yao, W.** and Li, L. (2014). An Online Bayesian Mixture Labeling Method by Minimizing Deviance of Classification Probabilities to Reference Labels. *Journal of Statistical Computation and Simulation*, 84, 310-323.
- **Yao, W.** and Li, L. (2014). A New Regression Model: Modal linear regression. *Scandinavian Journal of Statistics*, 41, 656-671.
- Song, W., **Yao, W.**, and Xing Y. (2014). Robust mixture regression model fitting by laplace distribution. *Computational Statistics and Data Analysis*, 71, 128-137.
- **Yao, W.**, Wei, Y., and Yu, C. (2014). Robust Mixture Regression Using T-Distribution. *Computational Statistics and Data Analysis*, 71, 116-127.
- **Yao, W.** and Li, R. (2013). New local estimation procedure for nonparametric regression function of longitudinal data. *Journal of the Royal Statistical Society, Ser B*, 75, 123-138.
- **Yao, W.** and Wang, Q. (2013). Robust variable selection through MAVE. *Computational Statistics and Data Analysis*, 63, 42-49.
- **Yao, W.** (2013). A Note On EM Algorithm For Mixture Models. *Statistics and Probability Letters*, 83, 519-526.
- **Yao, W.** (2013). A simple solution to Bayesian mixture labeling. *Communication in Statistics-Simulation and Computation*, 42, 800-813.
- **Yao, W.** and Zhao, Z. (2013). Kernel density based linear regression estimates. *Communications in Statistics-Theory and Methods*, 42, 4499-4512.
- Lindsay, B. G. and **Yao, W.** (2012). Fisher Information Matrix: A Tool for Dimension Reduc-

tion, Projection Pursuit, Independent Component Analysis, and More. *The Canadian Journal of Statistics*, 40, 712-730.

- **Yao, W.**, Lindsay, B. G., and Li, R. (2012). Local modal regression. *Journal of Nonparametric Statistics*, 24, 647-663. The winner of The Journal of Nonparametric Statistics Best Paper Award in 2015.
- Huang, M. and **Yao, W.** (2012). Mixture of regression models with varying mixing proportions: A semiparametric approach. *Journal of the American Statistical Association*, 107, 711-724.
- **Yao, W.** (2012). Model based labeling for mixture models. *Statistics and Computing*, 22, 337-347.
- Bai, X., **Yao, W.**, and Boyer, J. E. (2012). Robust fitting of mixture regression models. *Computational Statistics and Data Analysis*, 56, 2347-2359.
- Zhao, Z. and **Yao, W.** (2012). Sequential design for nonparametric inference. *The Canadian Journal of Statistics*, 40, 362-377.
- **Yao, W.** (2012). A bias corrected nonparametric regression estimator. *Statistics and Probability Letters*, 82, 274-282.
- Wang, Q. and **Yao, W.** (2012). An adaptive estimation of MAVE. *Journal of Multivariate Analysis*, 104, 88-100.
- **Yao, W.** (2012). Bayesian mixture labeling and clustering. *Communications in Statistics - Theory and Methods*, 41, 403-421.
- Cao, J. and **Yao, W.** (2012). Semiparametric mixture of binomial regression with a degenerate component. *Statistica Sinica*, 22, 27-46.
- Song, W. and **Yao, W.** (2011). A lack-of-fit test in Tobit errors-in-variables regression models. *Statistics and Probability Letters*, 81(12), 1792-1801.
- **Yao, W.** (2010). A profile likelihood method for normal mixture with unequal variance. *Journal of Statistical Planning and Inference*, 140, 2089-2098.
- **Yao, W.** and Lindsay, B. G. (2009). Bayesian mixture labeling by highest posterior density. *Journal of the American Statistical Association*, 104, 758-767.
- Song, W., Wang H., and **Yao, W.** (2009). On the robust modal local polynomial regression. *International Journal of Statistical Science*, 9, 217-231.

*Under revision or review:*

- Xiang, S. and **Yao, W.** (2015). Semiparametric Mixtures of Nonparametric Regressions. *Annals of the Institute of Statistical Mathematics*.
- Cacho, A., **Yao, W.**, and Cui, X. (2016). Base-calling using a random effects mixture model on next-generation sequencing data. *Statistics in Biosciences*.
- Hu, H., Wu, Y., and **Yao, W.** (2015). An EM-type Algorithm for Log-concave Mixture Regressions. *Computational Statistics and Data Analysis*
- Xiang, S. and **Yao, W.** (2015). Semiparametric Mixtures of Regressions with Single-index. *Journal of Machine Learning Research*.
- **Yao, W.** and Xiang, S. (2016). A New Nonparametric Regression Model Based On Modal Regression. *Journal of Econometrics*.
- Wang, M., **Yao, W.**, Wang, S., and Chen, Y. (2016). Statistical Inference and Applications of Mixture of Varying Coefficient Models. *Scandinavian Journal of Statistics*.
- Yu, C., Yao, W., and Chen, K. (2016). A New Method for Robust Mixture Regression. *The Canadian Journal of Statistics*.

GRANT PROPOSALS *Funded:*

APPLIED

- Yao, W. Co-PI (2015). Leveraging Industry Research to Educate a Future Electric Grid Workforce. Award No: 10006272. Sponsors: Department of Energy. Timeline: 04/2016-03/2019. PI: Nanpeng Yu. Total amount: \$250,000.
- Yao, W. PI (2014). National Science Foundation. Collaborative Research: Information Matrix Analysis for Nonparametric Multivariate Problems. Collaborator: Bruce G. Lindsay, Department of Statistics, the Pennsylvania State University. The total requested funding is \$360,000 with \$120,000 requested for Yao. Timeline: 07/30/2014-07/31/2017. DMS-1461677.
- Yao, W. Co-PI. Egg lutein prevents inflammation through activating AMP-activated protein

kinase in hepatic mitochondria. Egg Nutrition Center (ENC), 2013-2014, PI: Dingbo Lin (Kansas State University), \$112,000.

- Yao, W. PI (2013). Simons Foundation. Project Title: Nonparametric and Semiparametric models. Award Number: 318403. Total amount: \$35,000. Awarded but declined by PI due to the conflict of another funded grant. Timeline: 09/01/2014-08/31/2019.

*Unfunded:*

- Yao, W. PI (2015). A New Regression Model: Modal Regression. \$178,424, 09/01/15-08/31/18. Submitted to NSF but not funded.
- Yao, W. PI (2012). Information Matrix Analysis for Nonparametric Multivariate Problems. \$201,844, 2013-2016. Submitted to NSF but not funded. Collaborator: Bruce G. Lindsay, Department of Statistics, the Pennsylvania State University. The total requested funding is \$520,011 with \$201,844 requested for Yao.
- Yao, W. Co-PI (2010). Responses of U.S. carbon flux to climate extremes and seasonal stress through upscaling from tower sensors to satellite sensors. \$173,204, 2011-2013. Submitted to US Department of Energy, 2010 but not funded. Principal Investigator: Chuixiang Yi, Queens College at CUNY; Co-Principal Investigator: George Hendrey, Queens College at CUNY; Co-Principal Investigator: Xiangming Xiao, University of Oklahoma; Co-Principal Investigator: Weixin Yao, Kansas State University.
- Yao, W. PI (2010). CMG Collaborative Research: Responses of U.S. carbon flux to climate extremes and seasonal stress through upscaling from tower sensors to satellite sensors. \$207,262, 2011-2013. Submitted to NSF, 2010 but not funded. Collaborators: Yi, Chuixiang and Hendrey, George, from Queens College, City University of New York, and Xiao, Xiangming, from University of Oklahoma. The total requested funding is \$984,476, with \$207,262 requested for Yao.
- Yao, W. Single PI (2009). New Directions in Modal Regression. \$140,830, 2010-2013. Submitted to NSF but not funded.
- Yao, W. Single PI (2008) Adaptive Robust Regression. \$134,050, 2009-2012. Submitted to NSF but not funded.

PRESENTATIONS

- Invited talk “Robust mixture modeling by mean shift parameters”, The 22nd International Conference on Computational Statistics, Oviedo, Spain, August 23-26, 2016.
- Invited talk “Robust mixture regression using the idea of variable selection”, 2016 ICSA China Statistics Conference, Qingdao, China, June 24-25, 2016.
- Invited talk “Robust mixture regression by EM algorithm”, 2016 ICSA Applied Statistics Symposium, Atlanta, GA, USA, June 12-15 2016.
- Invited talk but unable to go “Robust Mixture Regression”, The 10th ICSA International Conference on Global Growth of Modern Statistics in the 21st Century, Shanghai, China, December 19-22, 2016.
- Invited talk “Robust Mixture Regression and Outlier Detection via Penalized Likelihood”. 9th Conference of the Asian Regional Section of the IASC (IASC-ARS 2015), Singapore, December 17-19, 2015.
- Invited talk, “Robust Mixture Regression and Outlier Detection via Penalized Likelihood”. University of California, Los Angeles, November 04, 2015.
- Invited talk, “Robust Mixture Regression and Outlier Detection via Penalized Likelihood”. McGill University. Montréal, QC, Canada, October 23, 2015.
- Invited talk, “Robust Mixture Regression and Outlier Detection via Penalized Likelihood”. ICSA-Canada Chapter Symposium 2015. University of Calgary, Calgary, Alberta, Canada, August 04-06, 2015.
- “Robust Mixture Regression and Outlier Detection via Penalized Likelihood”, 2015 IMS-China International Conference on Statistics and Probability, Kunming, China, July 01-04, 2015.
- Invited talk, “Robust Mixture Regression and Outlier Detection via Penalized Likelihood”. Nankai University. Tianjin, China. June 26, 2015.
- Invited talk, “Robust Mixture Regression and Outlier Detection via Penalized Likelihood”. Jinan University, Guangzhou, China. Presented on June 23, 2015.

- Invited talk “Semiparametric Extensions of Mixture Models”, University of California, Riverside, May 15, 2015.
- Invited talk but unable to go. “Outlier Detection and Robust Mixture Modeling”. International Conference on Robust Statistics 2015. Indian Statistical Institute, Kolkata, India, January 12-16, 2015.
- Invited talk “Semiparametric Mixture Models and Their Applications”, University of Calgary, Mar 21, 2014.
- Invited talk “Semiparametric Mixture Models”, The Ninth ICOSA International Conference: Challenges of Statistical Methods for Interdisciplinary Research and Big Data, December 20-23, 2013, Hong Kong Baptist University.
- Invited talk “Finite mixture models and some of their extensions” North Carolina State University, Raleigh, NC, Nov 22, 2013.
- Invited talk “Finite mixture models and some of their extensions” University of Connecticut, Nov 20, 2013.
- Invited talk “Semiparametric Mixture Models”, Capital Normal University, Beijing, China, January 08, 2013.
- Invited talk “Semiparametric Mixture Models and Longitudinal Data Analysis”, Beijing Normal University, Beijing, China, January 04, 2013.
- Invited talk “Semiparametric Mixture Models and Longitudinal Data Analysis”, Sungkyunkwan University, Seoul, Korea, November 23, 2012.
- Invited talk “Mixture of Regression Models with Varying Mixing Proportions: A Semiparametric Approach”. The 2nd Institute of Mathematical Statistics Asia Pacific Rim Meeting, Tsukuba, Japan, July 1-4, 2012.
- Model-Based Labeling for Mixture Models. Invited for the topic contributed session “Clustering and Machine Learning”, Joint Statistical Meeting, Miami Beach, FL, July 30-August 04, 2011.
- Invited talk “Model Based Labeling for Mixture Models.” Purdue University, West Lafayette, IN, April 29, 2011.
- Invited talk “Adaptive Mixtures of Regressions.” East Carolina University, Greenville, NC, November 05, 2010.
- Invited talk “Mixtures of Regressions With Unknown Error Density.” Simon Fraser University, Burnaby, BC, Canada, August 06, 2010.
- Mixtures of Regressions With Unknown Error Density. Joint Statistical Meeting, Vancouver, BC, Canada, July 31-August 05, 2010.
- Bayesian Mixture Labeling. Twelfth Meeting of New Researchers in Statistics and Probability, Johns Hopkins, July 28-31, 2009.
- Bayesian Mixture Labeling by Highest Posterior Density. Innovation and Inventiveness in Statistics Methodologies, Statistics Workshop at Yale University, May 14-18, 2009.
- Invited talk “Bayesian Mixture Labeling by Highest Posterior Density.” Department of Statistics, University of Saskatchewan, Saskatoon, Saskatchewan, Canada, November 2008.
- Bayesian Mixture Labeling by Highest Posterior Density. Joint Statistical Meeting, Denver, CO, August 2008.
- Local Linear Regression by Mixture. Joint Statistical Meeting, Seattle, WA, August 2006.

#### JOURNAL REFEREE

- Advances in Data Analysis and Classification (2013(2))
- Advances and Applications in Statistics (2014)
- Australian & New Zealand Journal of Statistics (2015)
- The American Statistician (2015(2))
- Annals of Applied Statistics (2009, 2014(2))
- Annals of Statistics (2011, 2015(2))
- Bernoulli (2014, 2015)
- Biostatistics (2015)
- Canadian Journal of Statistics (2012, 2014)
- Colombian Journal of Statistics (2011, 2012(2))
- Communications in Statistics-Theory and Methods (2012(3), 2015(5), 2016(2))
- Communications in Statistics-Simulation and Computation (2015, 2016)

- Computational Statistics (2014, 2015(2))
- Computational Statistics and Data Analysis (2012, 2014(2))
- Electronic Journal of Statistics (2012, 2013(3))
- Geophysical Research Letters (2010)
- Hacettepe Journal of Mathematics and Statistics (2013(2))
- Journal of Applied Statistics (2015(2))
- Journal of Business & Economic Statistics (2013)
- Journal of Computational and Graphical Statistics (2013 (2), 2014, 2015(2))
- Journal of Multivariate Analysis (2016(2))
- Journal of Statistical Computation and Simulation (2014, 2015(3))
- Journal of Statistical Planning and Inference (2009, 2012(2), 2014)
- Journal of the American Statistical Association (2012(2), 2013, 2014(4),2015(2),2016(2))
- Journal of Nonparametric Statistics (2008, 2009(2), 2012)
- Journal of the Royal Statistical Society, Ser B. (2012, 2013(3), 2014(2))
- Journal of the Korean Statistical Society (2014(2))
- Stat (2014,2015)
- Statistics and Computing (2013(2))
- Statistical Papers (2013(2), 2014)
- Statistica Sinica (2010, 2012,2015)
- Statistics and Probability Letters (2012, 2014(2))
- Test (2015(3))
- The American Statistician (2011, 2012)

#### ACTIVITIES

- President of Kansas-Western Missouri Chapter of the American Statistical Association (04/2013-04/2014)
- Vice President of Kansas-Western Missouri Chapter of the American Statistical Association (04/2012-04/2013)
- Co-organizer of Symposium on “Innovations in Design, Analysis, and Dissemination: Frontiers in Biostatistical Methods”, Kansas city, MO, April 2013
- Editor of the Proceeding of Conference on Applied Statistics in Agriculture, Manhattan KS, May 2011.
- Organizer of the Topic-Contributed session “Statistical Inference for Mixture Models”, Joint Statistical Meeting, Miami Beach, FL, August 2011
- Organizer of the Topic-Contributed session “Recent Development in Mixture Models and Applications”, Joint Statistical Meeting, Vancouver, BC, Canada, August 2010
- Faculty Coordinators of Conference on Applied Statistics in Agriculture 2008-2010
- Chair of Mixtures Models and Their Applications Session. Joint Statistical Meeting, Salty Lake city, UT, August 2007
- Member of the American Statistical Association
- Life Member of Institute of Mathematical Statistics

#### SERVICES TO DEPART- MENT/UNIVERSITY

- Serve on the statistics panel discussion, 05/19/2016.
- Career day
- Graduate advisor, 07/2015-
- Develop and teach a short course for the Graduate Quantitative Methods Training Program (GradQuant) in Spring 2015.
- Judge for 2015 Riverside Unified School District’s Science and Engineering Fair
- CNAS Discovery Day 02/28/2015.
- Search committee chair (09/2014-05/2015)
- Graduate director (2013)
- Committee on 2025 Strategic Plan (2012)
- Assessment committee for Bachelors (2012)
- Editor of the Proceeding of Conference on Applied Statistics in Agriculture, Manhattan KS, May 2011.

- Committee on revising the departmental document for Annual Evaluation and Promotion and Tenure Guidelines (2011)
- Undergraduate advising (2009-2012)
- Statistics in Agriculture-Program chair (2009-2010)
- Departmental computing committee (2009-2010)
- Graduate Certificate assessment committees (2008-2010)
- Graduate student progress committee (2009)
- Department computing committee (2008-2009)
- Faculty search committee (2009, 2012)
- Committee of Qualifying Examination (2008-2009)
- Seminar chair of Spring 2009

STUDENTS  
SUPERVISED

*Ph.D. students*

- Chen Lin, Statistics, University of California, Riverside, co-advisor: Shizhong Xu
- Supawadee Wichitchan, Statistics, University of California, Riverside,
- Edward Schuberg, Statistics, University of California, Riverside, co-advisor: Shujie Ma
- Ashley Cacho, Statistics, University of California, Riverside, co-advisor: Xinpeng Cui
- Xiaoyang Zhou, Statistics, University of California, Riverside
- Xiuqin Bai (2014), Statistics, Kansas State University, co-advisor: Kun Chen
- Yixin Chen (2014), Statistics, Kansas State University
- Chun Yu (2014), Statistics, Kansas State University, co-advisor: Kun Chen
- Sijia Xiang (2014), Statistics, Kansas State University

*Master students*

- Meng Li (2014), Statistics, Kansas State University
- Li Yang (2014), Statistics, Kansas State University
- Xue Bai (2012), Statistics, Kansas State University
- Wei Yan (2012), Statistics, Kansas State University
- Sijia Xiang (2012), Statistics, Kansas State University
- Xiuqin Bai (2010), Statistics, Kansas State University