

Honglang Wang

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RESEARCH INTERESTS Empirical likelihood method and its applications, statistical analysis for functional and longitudinal data, high dimensional statistical inference and its applications, nonparametric smoothing methods, missing data analysis, statistical genetics/genomics, causal inference and machine learning

EDUCATION **Michigan State University**, East Lansing, MI

Ph.D., Statistics, August 2015

- Thesis Topic: *Empirical Likelihood Based Functional Data Analysis and High Dimensional Inference with Applications to Biology*
- Advisors: Ping-Shou Zhong, Ph.D and Yuehua Cui, Ph.D

Ph.D., Quantitative Biology, August 2015

- Advisors: C. Robin Buell, Ph.D and Yuehua Cui, Ph.D

Zhejiang University, Hangzhou, China

M.S., Mathematics, Jul. 2010

- Topic: *Information Geometry and its Applications*
- Advisor: Kefeng Liu, Ph.D

Tianjin University, Tianjin, China

B.S., Mathematics and Applied Mathematics, Jul. 2007

- Topic: *On Characterization of The Compactness of Composition Operator in Some Spaces*
- Advisor: Zehua Zhou, Ph.D

RESEARCH EXPERIENCE **Research Assistant** Sep. 2014 to May. 2015
Research supported in part by NSF awards DMS-1209112 and IOS-1237969,
Supervisors: Yuehua Cui, Ph.D, Ping-Shou Zhong, Ph.D, and C. Robin Buell, Ph.D.
Research Assistant May 2014 to August 2014
Research Supported by Dissertation Continuation Fellowships from the College of
Natural Science,
Supervisors: Yuehua Cui, Ph.D and Ping-Shou Zhong, Ph.D.
Research Assistant Sep. 2013 to May 2014
Research supported in part by NSF awards DMS-1209112 and IOS-1237969,
Supervisors: Yuehua Cui, Ph.D, Ping-Shou Zhong, Ph.D, and C. Robin Buell, Ph.D.
Research Assistant Jan. 2013 to May 2013
Research supported by NSF awards DMS-1209112,
Supervisors: Yuehua Cui, Ph.D and Ping-Shou Zhong, Ph.D.

PUBLICATIONS 1. **Honglang Wang**, Jingyi Zhang, Kelly L. Klump, S. Alexandra Burt, Yuehua Cui. "Multivariate partial linear varying coefficients model for gene-environment interactions with multiple longitudinal traits." *Statistics in Medicine*, accepted, 2022

2. Wenzhe Jiao, Lixin Wang, **Honglang Wang**, Matthew Lanning, Qing Chang, Kimberly A Novick. “Comprehensive quantification of the responses of ecosystem production and respiration to drought time scale, intensity and timing in humid environments: A FLUXNET synthesis.” *Journal of Geophysical Research - Biogeosciences*, *accepted*, 2022
3. Shuoyang Wang, **Honglang Wang**, Yichuan Zhao, Guanqun Cao, Yingru Li. “Empirical Likelihood Ratio Tests for Varying Coefficient Geo Models.” *Statistica Sinica*, 33(4), 2021.
4. Yusen Yuan, Lixin Wang, **Honglang Wang**, Wenqing Lin, Wenzhe Jiao, Taisheng Du. “A Modified Isotope-based Method for Potential High-Frequency Evapotranspiration Partitioning.” *Advances in Water Resources*, *accepted*, 2021
5. Ruohong Li, **Honglang Wang**, Yi Zhao, Jin Su, Wanzhu Tu. “Robust estimation of heterogeneous treatment effects: an algorithm-based approach.” *Communications in Statistics - Simulation and Computation*, *in press*, 2021
6. Wenzhe Jiao, Lixin Wang, William K. Smith, Qing Chang, **Honglang Wang**. “Increasing water constraint on vegetation productivity over the last three decades.” *Nature Communications*, 12, 3777, 2021
7. Ruohong Li, **Honglang Wang**, Wanzhu Tu. “Robust Estimation of Heterogeneous Treatment Effect using Electronic Health Record Data.” *Statistics in Medicine*, 40 (11), 2713-2752, 2021
8. Yusen Yuan, Taisheng Fu, **Honglang Wang**, Lixin Wang. “Novel Keeling plot based methods to estimate the isotopic composition of ambient water vapor.” *Hydrology and Earth System Sciences*, 24, 4491-4501, 2020
9. Ruohong Li, **Honglang Wang**, Wanzhu Tu. “Gaussian Quadrature.” *Wiley StatsRef-Statistics Reference Online*, 2020
10. **Honglang Wang**, Ping-Shou Zhong, Yuehua Cui, Yehua Li. “Unified empirical likelihood ratio tests for functional concurrent linear models and the phase transition from sparse to dense functional data.” *Journal of the Royal Statistical Society: Series B (Statistical Methodology)*, 80(2):343-364, 2018.
11. **Honglang Wang**, Ping-Shou Zhong, Yuehua Cui. “Empirical Likelihood Ratio Tests for Coefficients in High Dimensional Heteroscedastic Linear Models.” *Statistica Sinica* 28 (2018), 2409-2433
12. **Honglang Wang**, Wanzhu Tu. “Bootstrap Methods: The Classical Theory and Recent Development.” *Wiley StatsRef-Statistics Reference Online*, 2018
13. Samuel Wong, **Honglang Wang**, Robert Tepper, Gregory M Sokol, Rebecca Rose. “Expired Tidal Volume Variation in Extremely Low Birth Weight and Very Low Birth Weight Infants on Volume-Targeted Ventilation.” *The Journal of pediatrics*, 207, 248-251, 2019
14. Fang Han, Hongkai Ji, Zhicheng Ji, **Honglang Wang**. “A Provable Smoothing Approach for High Dimensional Generalized Regression with an Application in Genomics.” *Electronic Journal of Statistics* 2017, Vol. 11, No. 2, 4347-4403.
15. Fang Han, Xi Chen, **Honglang Wang**, Lexin Li, Brain S. Caffo. “Robust Graph Change-point Detection with Application to Brain Evolvment Study.” *Submitted*.
16. Pratik Nalawade, Kate Ansah-Koi, Khairi Reda, Fang Li, **Honglang Wang**, Wei Zheng. “The Effects of Spatial Frequency and Colormap Characteristics on the Perception of 2D Pseudocolor Scalar Fields.” *Submitted*

17. Xu Liu, **Honglang Wang**, Yuehua Cui. “Statistical identification of gene-gene interactions triggered by nonlinear environmental modulation.” *Current Genomics*, 2016, 17(5): 388-395.
18. **Honglang Wang**, Tao He, Cen Wu, Ping-Shou Zhong, Yuehua Cui. “A powerful statistical method identifies novel loci associated with diastolic blood pressure triggered by nonlinear gene-environment interaction.” *BMC Proceedings* 2014, 8(Suppl 1):S61 (17 June 2014)

Note: underlined authors are the PhD students under supervision.

PAPERS IN
PREPARATION

1. Yishan Cui, **Honglang Wang**. ”Efficient Semiparametric inference for Longitudinal Data with Application to GAW 18 Data.” (Sep. 2021-present)
2. Xiang Wang, **Honglang Wang**. ”Empirical Likelihood Inference for Functional Mean Models Accounting for Within-Subject Correlation.” (Aug. 2021-present)
3. Ruohong Li, **Honglang Wang**, Yi Zhao, Wanzhu Tu. “A Reinforcement Learning Algorithm for Antihypertensive Treatment Recommendation.” (April. 2020-present)
4. **Honglang Wang**, Ping-Shou Zhong, Yuehua Cui. “Empirical Likelihood in Testing with Longitudinal Data.”
5. **Honglang Wang**, Ping-Shou Zhong, Yuehua Cui. “Integrative Data Analysis under Selective Genotyping.”
6. Abolfazl Safikhani, **Honglang Wang**, Yimin Xiao, Yuzhen Zhou. “The behavior of prediction error for a class of separable space-time model indexed on circle.”

AWARDS

- Purdue Research Foundation Summer Faculty Grant, Purdue University 2019
- Purdue Research Foundation International Travel Grant, Purdue University 2018
- Travel Award for the “20th Meeting of New Researchers in Statistics and Probability”, Institute of Mathematical Statistics (IMS), 2018
- NSF Travel Award for The Nonparametric Statistics Workshop entitled “Integration of Theory, Methods and Applications”, University of Michigan, Ann Arbor 2016
- College of Natural Science US15 Dissertation Completion Fellowship, Michigan State University 2015
- College of Natural Science US14 Dissertation Continuation Fellowship, Michigan State University 2014
- William L Harkness Teaching Award, Michigan State University 2014
- Travel Award of GAW18 2012
- Second-class Award of Honor for Graduate, Zhejiang University 2008
- First Prize in the 13th National Graduate Summer School in Mathematics 2008
- Scholarship for Academic Excellence, Tianjin University 2005–2006
- 6th Outstanding Student of Science and Technology in Tianjin University 2005
- Tianjin University—Yuandong Chunguang Scholarship 2005
- Scholarship for Academic Excellence, Tianjin University 2004

RESEARCH
GRANTS

- Sole PI: LEAPS-MPS: Advancement of Functional Data Inference with Applications to Neuroimaging, NSF, DMS-2212928, \$243,215.00 July 2022-June 2024
- (Subrecipient PI with PTE PI: Dr. C. Robin Buell) Unraveling the Heterozygosity, Allelic Composition, and Copy Number Variation of Potato, \$14,812 2016-2017

PRESENTATIONS

- “Multivariate partial linear varying coefficients model for GxE studies with multiple longitudinal traits”, The Department of Bioinformatics and Biostatistics Seminars, Zoom April 2022
- “Robust Estimation of Heterogeneous Treatment Effect using Electronic Health Record Data”, The 7th National Junior Statisticians’ Workshop, Shanghai University of Finance and Economics or Virtual November, 2021
- “Robust Estimation of Heterogeneous Treatment Effect using Electronic Health Record Data”, The ICSA 2021 Applied Statistics Symposium, Virtual September, 2021
- “Multivariate partial linear varying coefficients model for GxE studies with multiple longitudinal traits”, The ISI World Statistics Congress, Virtual July 2021
- “Robust Estimation of Heterogeneous Treatment Effect using Electronic Health Record Data”, SFASA Seminar, San Francisco Bay Area February, 2021
- “Robust Graph Change-point Detection for Brain Evolvment Study”, AADS AI/ML & Natural Language Processing Community of Practice, Eli Lilly and Company, Indiana February, 2021
- “Multivariate partial linear varying coefficients model for GxE studies with multiple longitudinal traits”, The ICSA 2020 Applied Statistics Symposium, Virtual December 2020
- “Robust Estimation of Heterogeneous Treatment Effect using Electronic Health Record Data”, The October Math Day Symposium, University of North Carolina Charlotte October, 2020
- “Robust Estimation of Heterogeneous Treatment Effect using Electronic Health Record Data”, Department of Statistics Seminar, University of Nebraska-Lincoln September, 2020
- “Robust Estimation of Heterogeneous Treatment Effect using Electronic Health Record Data”, Department of Bioinformatics and Biostatistics Seminar, University of Louisville April, 2020
- “Robust Graph Change-point Detection for Brain Evolvment Study”, ICSA Applied Statistics Symposium, Raleigh, North Carolina June, 2019
- “Robust Graph Change-point Detection for Brain Evolvment Study”, Symposium on Data Science and Statistics, Bellevue, Washington May, 2019
- “Robust Graph Change-point Detection for Brain Evolvment Study”, AMS Sectional Meeting-Special Session on Big Data and Statistical Analytics, San Francisco State University, San Francisco October, 2018
- “Robust Graph Change-point Detection for Brain Evolvment Study”, 2018 ICSA China Conference with the Focus on Data Science, Qingdao July, 2018
- “Empirical Likelihood Ratio Tests for Coefficients in High Dimensional Heteroscedastic Linear Models”, The 8th International Forum on Statistics, Renmin University of China, Beijing July, 2018
- “Robust Graph Change-point Detection for Brain Evolvment Study”, College of Mathematics and Statistics, Hunan Normal University, Changsha June, 2018
- “Robust Graph Change-point Detection for Brain Evolvment Study”, School of Statistics and Management, Shanghai University of Finance and Economics, Shanghai June, 2018
- “Unified empirical likelihood ratio tests for functional linear models and the phase transition from sparse to dense functional data”, DMS Colloquium, Auburn University, Auburn, Alabama April, 2018
- “Empirical Likelihood Ratio Tests for Coefficients in High Dimensional Heteroscedastic Linear Models”, Second Workshop on Higher-Order Asymptotics and Post-Selection Inference, Washington University in St. Louis August, 2017
- “Empirical Likelihood Ratio Tests for Coefficients in High Dimensional Heteroscedastic Linear Models”, 2017 ICSA Applied Statistics Symposium, Chicago June, 2017
- “Unified empirical likelihood ratio tests for functional linear models and the phase

- transition from sparse to dense functional data”, Nonparametric Statistics Workshop, University of Michigan, Ann Arbor October, 2016
- “Testing Low-dimensional Coefficients in High Dimensional Heteroscedastic Linear Models”, Joint Statistical Meetings, Chicago August, 2016
- “Testing Low-dimensional Coefficients in High Dimensional Heteroscedastic Linear Models”, China Statistics Conference, Qingdao, China June, 2016
- “Testing Low-dimensional Coefficients in High Dimensional Heteroscedastic Linear Models”, School of Public Health, Shangxi Medical University, Taiyuan, China June, 2016
- “Unified empirical likelihood ratio tests for functional linear models and the phase transition from sparse to dense functional data”, Institute of Statistics, Zhejiang University, Hangzhou, China June, 2016
- “Unified empirical likelihood ratio tests for functional linear models and the phase transition from sparse to dense functional data”, Institute of Statistics, Nankai University, Tianjin, China June, 2016
- “Unified empirical likelihood ratio tests for functional linear models and the phase transition from sparse to dense functional data”, Big Statistics & Data Science Joint Conference, Renmin University of China, Beijing, China , May, 2016
- “Unified empirical likelihood ratio tests for functional linear models and the phase transition from sparse to dense functional data”, School of Mathematical Sciences, Shanghai Jiaotong University, Shanghai, China, May, 2016
- “Provable Smoothing Approach in High Dimensional Generalized Regression Models”, ENAR, Austin, Texas March, 2016
- “Provable Smoothing Approach in High Dimensional Generalized Regression Models”, Statistics Seminar, Department of Mathematical Sciences, IUPUI, February, 2016
- “Unified empirical likelihood ratio tests for functional linear models and the phase transition from sparse to dense functional data”, Joint Biostatistics Seminar, Department of Biostatistics, IUPUI, September, 2015
- “Testing Low-dimensional Coefficients in High Dimensional Heteroscedastic Linear Models”, Statistics Seminar, Department of Mathematical Sciences, IUPUI, September, 2015
- “Unified empirical likelihood ratio tests for low dimensional inference in high dimensional linear models”, ENAR, Miami, Florida March, 2015
- “Empirical Likelihood Meets Functional Data”, Statistics Student Seminar, Michigan State University, October, 2014
- Statistics in Applications Forum (Poster), East Lansing, MI October 2013
- Quantitative Biology Graduate Program (Poster), East Lansing, MI August 2013
- “Empirical Likelihood for Testing Functions Constraint with Functional Data”, Joint Statistical Meetings, Montreal, QC, Canada August, 2013
- “A powerful statistical method identifies novel loci associated with diastolic blood pressure triggered by nonlinear gene-environment interaction”, Genetic Analysis Workshop (GAW18), Stevenson, WA October, 2012

TEACHING
EXPERIENCE

Instructor at IUPUI	
Introduction to Statistics (STAT35000-10577)	Summer 2022
Statistical Inference (STAT51700-19440)	Spring 2022
Introduction to Statistics (STAT35000-20482)	Spring 2022
Statistical Computing (STAT52100-34676)	Fall 2021
Statistical Modelling Using R and SAS (STAT42100-37059)	Fall 2021
Introduction to Statistics (STAT35000-38466)	Fall 2021
Introduction to Statistics (STAT35000-11056)	Summer 2021
Statistical Inference (STAT51700-21962)	Spring 2021
Introduction to Statistics (STAT35000-22554)	Spring 2021
Statistical Computing (STAT52100-24694)	Fall 2020

Statistical Modelling Using R and SAS (STAT42100-27317)	Fall 2020
Introduction to Statistics (STAT35000-28998)	Fall 2020
Introduction to Statistics (STAT35000-11121)	Summer 2020
Statistical Inference (STAT51700-20616)	Spring 2020
Statistical Theory (STAT41700-20611)	Spring 2020
Introduction to Statistics (STAT35000-21296)	Spring 2020
Statistical Computing (STAT52100-24302)	Fall 2019
Statistical Modelling Using R and SAS (STAT42100-27207)	Fall 2019
Introduction to Statistics (STAT35000-30888)	Fall 2019
Statistical Inference (STAT51700-21724)	Spring 2019
Introduction to Statistics (STAT35000-22480)	Spring 2019
Statistical Computing (STAT52100-22838)	Fall 2018
Statistical Modelling Using R and SAS (STAT42100-26037)	Fall 2018
Introduction to Statistics (STAT35000-25873)	Fall 2018
Statistical Inference (STAT51700-22537)	Spring 2018
Introduction to Statistics (STAT35000-23995)	Spring 2018
Statistical Computing (STAT52100-22940)	Fall 2017
Statistical Modelling Using R and SAS (STAT42100-26466)	Fall 2017
Introduction to Statistics (STAT35000-26266)	Fall 2017
Advanced Statistical Inference—Nonparametric Regression (STAT62800-31654)	Spring 2017
Applied Regression Analysis (STAT51200-21329)	Fall 2016
Introduction to Statistics (STAT35000-22433)	Fall 2016
Introduction to Statistics (STAT35000-24592)	Spring 2016
Introduction to Statistics (STAT35000-23646 and STAT35000-24842)	Fall 2015
Instructor at MSU	
Intro-Stats (STT200)	Summer 2012
Intro Prob & Stat for Business (STT315)	Summer 2013
Teaching Assistant at MSU	
Intro-Stats (STT200)	Fall 2012
Intro Prob & Stat for Business (STT315)	Fall 2013

SERVICE

- Conference Session Organization and Chairing
- "High Dimensional Statistical Modelling of Genetics/Genomics", ICSA 2019 Applied Statistics Symposium at Raleigh in NC
 - "Recent Advances in Functional Data Analysis", ICSA 2019 Applied Statistics Symposium at Raleigh in NC
 - "Statistical Learning Advancement for Inference in Big Data Age", ICSA 2019 Applied Statistics Symposium at Raleigh in NC
 - "Methodological Advancement in High Dimensional Data Analysis", ICSA 2019 International Conference at Hangzhou in China
 - "Methodological Advances and Applications of Nonparametric Data Analysis", 2018 ICSA China Conference at Qingdao in China.
- Committee member of Data Science Master Program at IUPUI Fall 2019 – present
- Exam committee member for the Applied Statistics Master comprehensive exam and Biostatistics PhD qualify exam at IUPUI Fall 2015 – present
- Contribute exam problems in probability, mathematical statistics and regression
 - Grade theory exam
 - Evaluate oral presentation
- Organizer of Statistics Seminar at IUPUI Spring 2018 – present
- Invite speakers from statistics related departments on campus or nearby universities, industries and governments
 - Make schedule for the seminars
 - Chair seminars

Faculty advisor of IUPUI ASA Student Chapter Fall 2018 – present
• Advise and help organize all events for the chapter such as networking event and Lilly submit

Chairman of Statistics Student Seminar, Department of Statistics and Probability, Michigan State University Sep. 2011 – Dec. 2013

- Design the website and maintained it
- Propose seminar topics, such as Graphical Models
- Invite speakers including professors and graduate students from various departments on campus and nearby universities

Reviewer for the following journals

- Bioinformatics
- Biostatistics & Epidemiology
- BMC Genomics
- BMC Medical Research Methodology
- BMC Genomic Data
- Brain and Behavior
- Brazilian Journal of Probability and Statistics
- Communication in Statistics-Simulation and Computation
- Computational Statistics and Data Analysis
- Econometrics and Statistics
- Electronic Journal of Statistics
- Evolving Systems
- Frontiers in Genetics
- Frontiers in Systems Biology
- IEEE Transactions on Cybernetics
- Journal of the American Statistical Association
- Journal of Applied Statistics
- Journal of Computational and Applied Mathematics
- Journal of Korean Statistical Society
- Journal of Nonparametric Statistics
- Journal of Probability and Statistics
- Journal of Statistical Planning and Inference
- PLOS ONE
- Stat
- Statistica Sinica
- Statistics and Probability Letters
- Statistical Analysis and Data Mining
- The Canadian Journal of Statistics

WORKSHOPS

- “2021 NISS Writing Workshop for Junior Researchers”, Aug. 6, 13, 2021, Virtual via Zoom.
- “Opening Workshop on Deep Learning”, Aug. 12-16, 2019, SAMSI.
- “Applied Bioinformatics Workshop Intermediate”, Jul.-Aug., 2013, Michigan State University.
- “Doing Bayesian Data Analysis Workshop”, Sep. 14, 15, 2012, Michigan State University.
- “The 1000 Genomes Project Community Meeting”, Jul. 12-13, 2012, University of Michigan.
- Bioinformatics Workshop for MSU Plant Breeding, Genetics, & Biotechnology Program, May 24-31, 2012, Michigan State University.
- “Introduction to the HPCC” and “Making Your Research Go Faster: Advanced HPCC”, May 8-9, 2012, Michigan State University.

- COMPUTER SKILLS
- Statistical Software: R, Matlab, SAS, and Minitab
 - Data and processing: Excel, Python and Latex
 - Language: C, C++
 - Operating system: Linux and Windows

- MEMBERSHIP
- American Statistical Association
 - Institute of Mathematical Statistics
 - International Chinese Statistical Association
 - International Biometric Society