

Shuoyang Wang

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PROFESSIONAL EXPERIENCE

Assistant Professor (tenure-track) 01/2024 – Present
Department of Bioinformatics and Biostatistics, University of Louisville

Postdoctoral Associate 05/2022 – 12/2023
Department of Biostatistics, Yale University

EDUCATION

Doctor of Philosophy, Mathematics with Concentration in Statistics 05/2022
Auburn University

Master of Science, Statistics 05/2017
University of Wisconsin at Madison

Bachelor of Science, Applied Mathematics 06/2016
Shandong University, China
Hua Loo-Keng Talent Program

AWARDS & HONORS

CBMS Conference Travel Award 2023
National Science Foundation and Texas A&M Institute for Applied Mathematics and Computational Science

UF Winter Workshop Travel Award 2023
Department of Statistics, University of Florida

Graduate School's Distinguished Dissertation Award 2022
Auburn University

IMS Hannan Graduate Student Travel Award 2022
Institute of Mathematical Statistics

Dean's Research Award 2022
College of Sciences and Mathematics, Auburn University

ASA Student and Early Career Travel Award 2022, 2023
Symposium on Data Science and Statistics (SDSS) Conference

COSAM Travel Award 2021, 2022
College of Sciences and Mathematics, Auburn University

ENAR Distinguished Student Paper Award <i>International Biometric Society Eastern North American Region's (ENAR)</i>	2021
Baskervill Endowed Mathematics Fellowship <i>Department of Mathematics and Statistics, Auburn University</i>	2018, 2020, 2021
Emily Haynsworth Endowed Mathematics Fellowship <i>Department of Mathematics and Statistics, Auburn University</i>	2019
Hua Loo-Keng Scholarship <i>Academy of Mathematics and Systems Sciences, China</i>	2015
The Excellency Prize of Hua Loo-Keng Talent Program in Mathematics <i>Shandong University</i>	2015

PUBLICATIONS

1. **Wang, S.**, Cao, G. and Huang, Y. (2024+) “Deep Learning on Interpretable Feature Selection for Functional Data Regression and Its Robustness.” Under review at *Biometrics*.
2. **Wang, S.**, Li, R. and Huang, Y. (2024+) “Inference for Quantile Mediation Effects in the Presence of Complex Confounding.” Under review at *Biometrics*.
3. **Wang, S.**, Cao, G. and Huang, Y. (2024+) “Deep Learning on Unified Classification and Feature Selection for Complex High-dimensional Functional Data.” Under review at *Biometrics*.
4. **Wang, S.**, Zhang, W., Huang, Y. and Cao, G. (2024+) “Functional Data Analysis Using Deep Neural Networks.” Under review at *Wiley Interdisciplinary Reviews: Computational Statistics*.
5. **Wang, S.** and Cao, G. (2024+) “Multiclass Classification for Multidimensional Functional Data through Deep Neural Networks.” Under review at *Electronic Journal of Statistics*, <https://arxiv.org/abs/2305.13349>.
6. **Wang, S.** and Huang, Y. (2024) “DP2LM: Leveraging Deep Learning Approach for Estimation and Hypothesis Testing on Mediation Effects with High-dimensional Mediators and Complex Confounders.” *Biostatistics*, in press.
7. **Wang, S.**, Huang, Y. and Cao, G. (2023) “Review of Functional Data Classification.” *Wiley Interdisciplinary Reviews: Computational Statistics*, in press <https://doi.org/10.1002/wics.1638>.
8. **Wang, S.**, Cao, G. and Shang, Z. (2023) “Deep Neural Network Classifier for Multi-dimensional Functional Data.” *Scandinavian Journal of Statistics*, 50(4), <https://doi.org/10.1111/sjos.12660>.
9. **Wang, S.** and Cao, G. (2022) “Robust Deep Neural Network Estimation for Multi-dimensional Functional Data.” *Electronic Journal of Statistics*, 16(2), 6461–6488, <https://doi.org/10.1214/22-EJS2093>.
10. **Wang, S.**, Shang, Z., Cao, G. and Liu, S. J. (2024) “Optimal Classification for Functional Data.” *Statistica Sinica*, 34(3), <https://doi.org/10.5705/ss.202022.0057>.
11. **Wang, S.** and Shang, Z. (2022) “Minimax Optimal High-Dimensional Classification using Deep Neural Networks.” *Stat*, 11(1), <https://doi.org/10.1002/sta4.482>.

12. **Wang, S.**, Wang, H., Zhao, Y., Cao, G. and Li, Y. (2023) “Empirical Likelihood Ratio Tests for Varying Coefficient Geo Models.” *Statistica Sinica*, 33(4), <https://doi.org/10.5705/ss.202021.0233>. (IMS Hannan Graduate Student Travel Award 2022)
13. Li, Y., **Wang, S.**, Cao, G., Li, D. and Ng, B. (2021) “Disentangling Racial/Ethnic and Income Disparities of Food Retail Environments: Impacts on Adult Obesity Prevalence.” *Applied Geography*, 137, 102607, <https://doi.org/10.1016/j.apgeog.2021.102607>.
14. **Wang, S.**, Cao, G. and Shang, Z. (2021) “Estimation of the Mean Function of Functional Data via Deep Neural Networks.” *Stat*, 10(1), <https://doi.org/10.1002/sta4.393>. (ENAR Distinguished Student Paper Award 2021)
15. Cao, G., **Wang, S.** and Wang, L. (2020) “Estimation and Inference for Functional Linear Regression Models with Partially Varying Regression Coefficients.” *Stat*, 9(1), <https://doi.org/10.1002/sta4.286>.
16. Sandage, M., **Wang, S.** and Cao, G. (2019) “Upper Airway Thermoregulation During Singing Warm up.” *Journal of Voice*, 35(1), pp.157.e1-157.e6, <https://doi.org/10.1016/j.jvoice.2019.08.020>.

MANUSCRIPTS

1. **Wang, S.**, Sun, Y. and Huang, Y. (2024+) “Subgroups and Multiple Changepoints Detection of Natural Disease History for Huntington’s Disease.” To be submitted.
2. Wang, S., **Wang, S.** and Huang, Y. (2024+) “Huntington’s Disease Biomarker Changepoint Estimation in Survival Models.” In preparation.

CONFERENCE PRESENTATIONS

- Invited talk, 7th International Conference on Econometrics and Statistics 2024 07/2024
“*Inference on High-dimensional Mediation Analysis with Convolved Confounding via Deep Neural Networks*”
- Invited talk, Joint Statistical Meetings 2023 08/2023
“*High-dimensional Mediation Analysis via Deep Neural Networks*”
- Invited talk, 6th International Conference on Econometrics and Statistics 2023 08/2023
“*Quantile Mediation Analysis with Convolved Confounding Effects via Deep Neural Networks*”
- Invited talk, 64th ISI World Statistics Congress 07/2023
“*High-dimensional Mediation Analysis via Deep Neural Networks*”
- Invited talk, ICSA 2023 Applied Statistics Symposium 06/2023
“*Multiclass Classification for Multidimensional Functional Data through Deep Neural Networks*”
- Invited talk, 36th New England Statistics Symposium 06/2023
“*Multiclass Classification for Multidimensional Functional Data through Deep Neural Networks*”
- Refereed presentation, Symposium on Data Science & Statistics 06/2023
“*High-dimensional Quantile Mediation Analysis via Deep Neural Networks*”
- Contributed talk, Eastern North American Region Spring Meeting 03/2023
“*High-dimensional Mediation Analysis via Deep Neural Networks*”
- Poster, Statistics Annual Winter Workshop 2023 01/2023
“*Subgroups and Multiple Changepoints Detection of Natural Disease History for Huntington’s Disease*”
- Refereed presentation, Symposium on Data Science & Statistics 06/2022
“*Deep Neural Network Classifier for Multi-Dimensional Functional Data*”

- Poster, 9th Annual Thomas R Ten Have Symposium on Statistics in Mental Health 06/2022
“Robust Deep Neural Network Estimation for Multi-dimensional Functional Data”
- Contributed talk, Eastern North American Region Spring Meeting 03/2022
“Deep Neural Network Classifier for Multi-Dimensional Functional Data”
- Invited talk, ICSA 2021 Applied Statistics Symposium 09/2021
“Optimal Classification for Functional Data”
- Contributed talk, Joint Statistical Meetings 08/2021
“Optimal Classification for Functional Data”
- Refereed presentation, Symposium on Data Science & Statistics 06/2021
“Estimation of the Mean Function of Functional Data via Deep Neural Networks”
- Contributed talk, Eastern North American Region Spring Meeting 03/2021
“Estimation of the Mean Function of Functional Data via Deep Neural Networks”
- Invited talk, ICSA 2020 Applied Statistics Symposium 12/2020
“Empirical Likelihood Ratio Tests for Varying Coefficient Geo Models”

INVITED COLLOQUIUM & SEMINAR TALKS

- Department of Mathematics and Statistics, Auburn University 04/2024
“Inference on High-dimensional Mediation Analysis with Convolved Confounding via Deep Neural Networks”
- Department of Mathematics and Statistics, Texas Tech University 12/2023
“Subgroups and Multiple Changepoints Detection of Natural Disease History for Huntington’s Disease”
- Department of Bioinformatics and Biostatistics, University of Louisville 09/2023
“Inference on High-dimensional Mediation Analysis with Convolved Confounding via Deep Neural Networks”
- Department of Mathematics and Statistics, Texas Tech University 04/2023
“High-dimensional Quantile Mediation Analysis via Deep Neural Networks”
- Department of Mathematics and Statistics, Auburn University 10/2021
“Optimal Classification for Functional Data”
- Department of Mathematical Sciences, Indiana University -Purdue University Indianapolis 09/2021
“Functional Data Regression via Deep neural networks”
- Statistics and Data Science Seminar, DMS, Auburn University 02/2021
“Estimation of the Mean Function of Functional Data via Deep Neural Networks”
- Department of Mathematics and Statistics, Auburn University 02/2021
“Estimation of the Mean Function of Functional Data via Deep Neural Networks”

TEACHING EXPERIENCE

- Department of Bioinformatics and Biostatistics, University of Louisville 2024 – present
 - * Instructor
 - Spring 2024
PHST 662, Mathematical Statistics (50%)
PHST 684, Categorical Data Analysis (50%)
- Department of Mathematics and Statistics, Auburn University 2017 – 2022
 - * Instructor

- *STAT 3611, Probability and Statistics II Lab*
- *STAT 2510, Statistics for Biological and Health Sciences*
- *MATH 1120, Pre-Calculus Algebra*
- *MATH 1000, College Algebra*
- * Teaching Assistant
 - *STAT 3600, Probability and Statistics I*
 - *Math 1610, Calculus I*

JOURNAL REFEREE SERVICES

- Computational Statistics & Data Analysis
- Discrete Dynamics in Nature and Society
- Journal of Nonparametric Statistics
- Mathematics
- PLOS ONE
- Scientific Reports
- Stat
- Statistical Analysis & Data Mining
- Sustainability

PROFESSIONAL SERVICES

- Contributed Session Co-organizer, Joint Statistical Meetings 08/2024
- Invited Session Chair, 6th International Conference on Econometrics and Statistics 08/2023
- Poster judge, Eastern North American Region Spring Meeting 03/2023
- Lightening Session Chair, Symposium on Data Science & Statistics 06/2021
- Contributed Session Chair, Eastern North American Region Spring Meeting 03/2021

VOLUNTEER EXPERIENCE

Alabama State Science Olympiad Tournament 03/2022

PROFESSIONAL MEMBERSHIPS

American Statistical Association 2017 – present
 Institute of Mathematical Statistics 2020 – present
 International Biometric Society Eastern North American Region's 2020 – present
 International Chinese Statistical Association 2019 – present
 New England Statistical Society 2023 – present