# Wei Jin

Postdoctoral Fellow
Department of Applied Mathematics and Statistics
Johns Hopkins University

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## EDUCATION

**Johns Hopkins University, Baltimore, MD**
Ph.D. in Applied Mathematics and Statistics 2018 - 2022
Advisor: Yanxun Xu
Dissertation Title: *Novel Bayesian Methods for Precision Medicine in HIV*
**(Winner of the Leonard J. Savage Dissertation Award)**
M.S.E in Computer Science 2019 - 2021
M.S.E in Applied Mathematics and Statistics 2016 - 2018
Cumulative GPA: 4.00/4.00

**Sichuan University, Chengdu, China**
B.S. in Mathematics and Applied Mathematics 2012 - 2016
Honor Degree in Wu Yuzhang Honors College
Advisor: Nanjing Huang
Cumulative GPA: 3.72/4.00 (Rank: 1/37)

## EMPLOYMENT

**Postdoctoral Fellow** 2022 - Present
Department of Applied Mathematics and Statistics
Johns Hopkins University, Baltimore, MD

**Research Scientist Intern** Summer 2022
Eli Lilly and Company, Indianapolis, IN

**Research Assistant** 2018 - 2022
Department of Applied Mathematics and Statistics
Johns Hopkins University, Baltimore, MD

## RESEARCH INTERESTS

- **Theory and Methods**
  Bayesian Nonparametrics, Dynamic Treatment Regimes, Reinforcement Learning, Causal Discovery, Graphical Models, Longitudinal Data Analysis
- **Applications**
  Electronic Health/Medical Record Data, Precision Medicine in HIV, Early Detection of Alzheimer's Disease, Proportional Reasoning in Cognitive Science

## PUBLICATIONS

1. **Jin, W.**, Ni, Y., Spence, A.B., Rubin, L.H., and Xu, Y. (2024) *"A Bayesian Approach for Investigating the Pharmacogenetics of Combination Antiretroviral Therapy in People with HIV."* **Biostatistics**, kxae001.
2. Parra-Rodriguez, L., O'Halloran, J., Wang, Y., **Jin, W.**, Dastgheyb, R., Spence, A.B., Sharma, A., Gustafson, D., Milam, J., Weber, K., Adimora, A.A., Ofotokun, I., Fischl, M., Konkle-Parker, D., Maki, P.M., Xu, Y., and Rubin, L.H. (2024) *"Common Antiretroviral Combinations are Associated with Somatic Depressive Symptoms in Women with HIV."* **AIDS**, 38(2), 167-176.

3. **Jin, W.**, Ni, Y., O'Halloran, J., Spence, A.B., Rubin, L.H., and Xu, Y. (2023) *"A Bayesian Decision Framework for Optimizing Sequential Combination Antiretroviral Therapy in People with HIV."* **Annals of Applied Statistics**, 17(4), 3035-3055. **(Winner of the Conference on Advances in Bayesian and Frequentist Statistics Poster Award)**
4. Rubin, L.H., Maki, P.M., Dastgheyb, R., Steigman, P., Burke-Miller, J., Xu, Y., **Jin, W.**, Sosanya, O., Gustafson, D., Merenstein, D., Milam, J., Weber, K., Springer, G., and Cook, J. (2023) *"Trauma Across the Lifespan and Multisystem Morbidity in Women with HIV."* **Psychosomatic Medicine**, 85(4), 341-350.
5. **Jin, W.**, Ni, Y., Rubin, L.H., Spence, A.B., and Xu, Y. (2022) *"A Bayesian Nonparametric Approach for Inferring Drug Combination Effects on Mental Health in People with HIV."* **Biometrics**, 78(3), 988-1000. **(Winner of the Joint Statistical Meetings Student Paper Award, Mental Health Statistics Section)**
6. Gouet, C., **Jin, W.**, Naiman, D.Q., Peña, M., and Halberda, J. (2021) *"Bias and Noise in Proportion Estimation: A Mixture Psychophysical Model."* **Cognition**, 213, 104805.
7. Fitzgerald, K.C., Maki, P.M., Xu, Y., **Jin, W.**, Dastgheyb, R., Williams, D.W., Springer, G., Anastos, K., Gustafson, D., Spence, A.B., Adimora, A.A., Waldrop, D., Vance, D.E., Bolivar, H., Valcour, V.G., and Rubin, L.H. (2020) *"Factors Predicting Detrimental Change in Declarative Memory Among Women with HIV: A Study of Heterogeneity in Cognition."* **Frontiers in Psychology**, 11, 548521.
8. Xie, F., **Jin, W.**, and Xu, Y. (2019) *"Rates of Contraction with Respect to $L_2$-Distance for Bayesian Nonparametric Regression."* **Electronic Journal of Statistics**, 13(2), 3485-3512.

## WORKING PAPERS

9. **Jin, W.**, Ni, Y., Spence, A.B., Rubin, L.H., and Xu, Y. *"Directed Cyclic Graphs for Simultaneous Discovery of Time-Lagged and Instantaneous Causality from Time-Series Data."* **Journal of Machine Learning Research**, Under Revision.
10. **Jin, W.**, Gao, Q., and Xu, Y. *"BayTetra: A Bayesian Semiparametric Approach for Testing Trajectory Differences."* Submitted.
11. **Jin, W.**, Xu, Y., and Wang, Z. *"Modeling Alzheimer's Disease Biomarkers' Trajectory in the Absence of a Gold Standard using a Bayesian Approach."* Submitted.
12. Yao, D., **Jin, W.**, Zhao, Y., Parra-Rodriguez, L., O'Halloran, J., Dastgheyb, R., Qi, Z., Hanna, D., Levine, S., Spence, A.B., Price, J., Shorer, E., Gange, S., Floris-Moore, M., Mehta, C., Fischl, M., Hickman, A., Ho, K., Mimiaga, M.J., Palella, F., Rubin, L.H., and Xu, Y. *"HIV-AICare: A Domain Knowledge-Guided Reinforcement Learning Approach for Optimizing Antiretroviral Therapy in People with HIV."* In Preparation.
13. **Jin, W.**, Ni, Y., and Xu, Y. *"Robust Bayesian Learning for Individualized Treatment Rules Under Unmeasured Confounding and Data Partial Coverage."* In Preparation.

## INVITED TALKS

- ISBA World Meeting, Venice, Italy — July 2024
  Title: *Novel Bayesian Methods for Precision Medicine in HIV*
- ICSA Applied Statistics Symposium, Nashville, TN — June 2024
  Title: *A Bayesian Decision Framework for Optimizing Sequential Combination Antiretroviral Therapy in People with HIV*
- Division of Biostatistics, Department of Population Health — December 2023
  New York University Grossman School of Medicine, New York, NY
  Title: *A Bayesian Decision Framework for Optimizing Sequential Combination Antiretroviral Therapy in People with HIV*
- ICSA Applied Statistics Symposium, Ann Arbor, MI — June 2023
  Title: *Long-Short-Term Cyclic Structural Causal Model for Time-Series Causal Discovery*

## CONTRIBUTED PRESENTATIONS

- Statistics in the Age of AI — May 2024
  George Washington University, Washington, DC (Poster Session)
  Title: *A Bayesian Decision Framework for Optimizing Sequential Combination Antiretroviral Therapy in People with HIV*
- The 9th Workshop on Biostatistics and Bioinformatics — May 2024
  Georgia State University, Atlanta, GA (Poster Session)
  Title: *A Bayesian Decision Framework for Optimizing Sequential Combination Antiretroviral Therapy in People with HIV*
- Joint Statistical Meetings, Toronto, ON, Canada — August 2023
  Title: *Long-Short-Term Cyclic Structural Causal Model for Time-Series Causal Discovery*
- ENAR Spring Meeting, Nashville, TN — March 2023
  Title: *A Bayesian Decision Framework for Optimizing Sequential Combination Antiretroviral Therapy in People with HIV*
- Bayesian Seminar, Eli Lilly and Company, Indianapolis, IN — July 2022
  Title: *A Bayesian Nonparametric Approach for Inferring Drug Combination Effects on Mental Health in People with HIV*
- Conference on Advances in Bayesian and Frequentist Statistics — April 2022
  Rutgers University, New Brunswick, NJ (Poster Session)
  Title: *A Bayesian Decision Framework for Optimizing Sequential Combination Antiretroviral Therapy in People with HIV*
- Joint Statistical Meetings, Virtual — August 2021
  Title: *A Bayesian Nonparametric Approach for Inferring Drug Combination Effects on Mental Health in People with HIV*
- ISBA World Meeting, Virtual — June 2021
  Title: *A Bayesian Tree Model for Inferring Longitudinal Drug Combination Effects on Depression in People with HIV*
- ICSA Applied Statistics Symposium, Virtual (Poster Session) — December 2020
  Title: *A Bayesian Nonparametric Approach for Inferring Drug Combination Effects on Mental Health in People with HIV*
- Applied Mathematics and Statistics Student Seminar — October 2020
  Johns Hopkins University, Baltimore, MD
  Title: *A Bayesian Nonparametric Approach for Inferring Drug Combination Effects on Mental Health in People with HIV*
- Applied Mathematics and Statistics Student Seminar — October 2017
  Johns Hopkins University, Baltimore, MD
  Title: *Mathematical Models of Proportional Reasoning in Cognitive Science*

## HONORS AND AWARDS

- Leonard J. Savage Dissertation Award — 2024
  *International Society for Bayesian Analysis*
- ISBA New Researcher Travel Award — 2024
  *International Society for Bayesian Analysis*
- Statistics in the Age of AI Travel Award — 2024
  *Department of Statistics, George Washington University*
- The 9th Workshop on Biostatistics and Bioinformatics Travel Award — 2024
  *Department of Mathematics and Statistics, Georgia State University*

- Junior Participant Travel Award 2023
  CBMS Conference - Foundations of Causal Graphical Models and Structure Discovery
  *Department of Statistics, Texas A&M University*
- Rufus P. Isaacs Graduate Fellowship 2022
  *Department of Applied Mathematics and Statistics, Johns Hopkins University*
- Student Travel Award and Poster Award 2022
  Conference on Advances in Bayesian and Frequentist Statistics
  *Department of Statistics, Rutgers University*
- Joint Statistical Meetings Student Paper Award 2021
  *American Statistical Association, Mental Health Statistics Section*
- Acheson J. Duncan Fund for the Advancement of Research in Statistics 2017
  *Department of Applied Mathematics and Statistics, Johns Hopkins University*
- First Class Scholarship for Undergraduate Study 2015
  *School of Mathematics, Sichuan University*
- Honorable Mention of Mathematical Contest in Modeling 2014
  *Consortium for Mathematics and its Applications*

## TEACHING AND MENTORING

- **Teaching Assistant**
  Johns Hopkins University, Baltimore, MD
  - EN.553.602 Research and Design in Applied Mathematics Spring 2020
  - EN.553.636 Data Mining/Introduction to Data Science Fall 2018, Spring 2019, Spring 2020
  - EN.553.720 Probability Theory I Fall 2019
  - EN.553.731 Statistical Theory II Spring 2018, Spring 2019
  - EN.553.782 Statistical Uncertainty Quantification Fall 2018
- **Student Advising**
  Johns Hopkins University, Baltimore, MD
  - Qiuxin Gao, Ph.D. Student, Applied Mathematics and Statistics 2023 - Present

## ACADEMIC SERVICES

- **Professional Memberships**
  - American Statistical Association (ASA)
  - Eastern North American Region (ENAR) International Biometric Society
  - International Chinese Statistical Association (ICSA)
  - International Society for Bayesian Analysis (ISBA)
- **Journal Reviewer**
  - Annals of Applied Statistics (1)
  - Biometrics (2)

## TECHNICAL SKILLS

- Proficient in R, Python, C++, SQL, Linux, LaTeX