# Rui Miao

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## Education

**The George Washington University** — Washington, DC
Ph.D. in Statistics, GPA: 4.00/4.00, Advisor: Xiaoke Zhang — 2022/08 (Expected)

**The George Washington University** — Washington, DC
M.S. in Statistics, GPA: 3.98/4.00 — 2018

**Dalian University of Technology** — Dalian, China
B.S. in Computational Mathematics, GPA: 3.78/4.00 — 2015

## Awards and Scholarships

- ICSA Student Paper Award — 2021
  *International Chinese Statistical Association*
- Minna Mirin Kullback Memorial Prize for Research and Scholarship — 2021
  *Department of Statistics, The George Washington University*
- Full Package of University Scholarship and Graduate Assistantship — 2016, 2018–2023
  *The George Washington University*
- World Rank 14th / US Rank 1st — 2017
  *Data Mining Cup*
- University Merit-based Scholarship — 2012–2015
  *Dalian University of Technology*

## Research Interests

- Reinforcement Learning • Causal Inference • Functional Data Analysis • Wavelet Methods
- Scientific Computing • Precision Medicine • Neuroimaging

## Publications

### Statistical Research

1. **Miao, R.**, Zhang, X., and Wong, R. K. W. (2021+). A Wavelet-Based Independence Test for Functional Data with an Application to MEG Functional Connectivity. *Journal of the American Statistical Association. In press.*
   2021 ICSA Student Paper Award. DOI code
2. **Miao, R.**, Xue, W., and Zhang, X. (2022). Average Treatment Effect Estimation in Observational Studies with Functional Covariates. *Statistics and Its Interface*, 15(2): 237-246. DOI code
3. Qi, Z., **Miao, R.**, and Zhang, X. (2021+). Proximal Learning for Individualized Treatment Regimes under Unmeasured Confounding. *Journal of the American Statistical Association. Resubmitted after major revision.* arXiv code
4. **Miao, R.**, Qi, Z., and Zhang, X. (2022+). Proximal Off-Policy Evaluation in Confounded Markov Decision Processes. *In preparation.*

### Cross-Disciplinary Research

1. Rogers, T., Greenbaum, A. B., Babaliaros, V. C., Foerst, J. R., Khan, J. M., Bruce, C., Stine, A. M., Satler, L. F., Perdoncin, E., Gleason, P. T., Lisko, J. C., Tian, X., **Miao, R.**, Sachdev, V., Chen, M. Y., and Lederman, R. J. (2021+). Transcatheter Mitral Cerclage Ventriculoplasty: From Bench to Beside. *JACC: Cardiovascular Intervention. Resubmitted after minor revision.*

2. Strich, J. R., Warner, S., Tian, X., **Miao, R.**, Ramos-Benitez, M., Reger, R., Chakraborty, M., Wong, S., Saxena, A., McCoy, P. J., Kanthi, Y., Chertow, D. S., Suffredini, A. F., Nathan, S. D., and Childs, R. W. (2022). Fostamatinib Reduces Innate Neutrophil Activation in Hospitalized Patients with COVID-19. *International Conference of the American Thoracic Society. Submitted.*

3. Domanski, M. J., Wu, C. O., Tian, X., Hasan, A., Ma, X., Huang, Y., **Miao, R.**, Reis, J. P., Bae, S., Husain, A., J. Jr., D. R., Allen, N. B., Lee, M.-L. T., Hong, C. C., Farkouh, M., Lloyd-Jones, D. M., and Fuster, V. (2021+). Association of Incident Cardiovascular Disease and Cumulative Exposure to Multiple Risk Factors. *Journal of the American College of Cardiology. Submitted.*

## Teaching

- **Instructor** at The George Washington University — Washington, DC
  - STAT 2112 Business & Econ Statistics II — `ToDo` Summer 2022
- **Teaching Assistant** at The George Washington University — Washington, DC

  Graduate Level:
  - STAT 6201 Mathematical Statistics I — Fall 2018
  - STAT 6202 Mathematical Statistics II — Spring 2020
  - STAT 6225 Survival Analysis — Spring 2021
  - STAT 6227 Longitudinal Data Analysis — Fall 2020
  - STAT 8262 Nonparametric Inference — Spring 2020
  - STAT 8263 Advanced Statistical Theory I — Fall 2019
  - BNU-GWU Summer School, Deep Learning Lab Session — Summer 2019

  Undergraduate Level:
  - STAT 1051 Introduction to Business & Econ Statistics — Fall 2018, Fall 2020, Spring 2021
  - STAT 1053 Introduction to Statistics in Social Science — Fall 2019
  - STAT 2112 Business & Econ Statistics II — Spring 2019
  - STAT 4198 Biostatistical Methods — Spring 2019

## Professional Experience

**National Institute of Health** — Bethesda, MD

Pre-doc Fellow Contracted at NIH/NHLBI/DIR/OCD/OBR — 07/2021–06/2022

- Collaborated with clinical and laboratory investigators on data collection, processing and analysis.
- Led and implemented quality control plans for two clinical database migrations.
- Deployed and tested a new NHLBI computational platform for clinical research collaborations.
- Co-authored three manuscripts submitted to peer reviewed medical journals and conferences, contributing longitudinal and survival data (see Publications/Cross-Disciplinary Research).

**U.S. Food and Drug Administration** — Silver Spring, MD

ORISE Fellow at FDA/CDER/OTS/OB/DBVI — Summer 2020

- Proposed a theoretical framework for comparing C-QTc models of crossover design with different baselines.
- Provided practical guidance for the selection of baseline type in QT studies by numerical comparisons.

## Presentations

- Reinforcement Learning with Unobserved Confounding Factors for Dynamic Treatment Regimes `ToDo` 08/2022
  *2022 Joint Statistical Meeting, Washington DC (Invited).*
- A Wavelet-based Independence Test for Functional Data with An Application to MEG Functional Connectivity 09/2021
  *2021 ICSA Applied Statistics Symposium, Virtual (Invited).*
- A Wavelet-based Independence Test for Functional Data with An Application to MEG Functional Connectivity 03/2021
  *ENAR 2021 Spring Meeting, Virtual (Contributed).*
- C-QTc Modeling on Crossover Design with Different Baselines: A Theoretical View 10/2020
  *FDA OB Science Day Poster, Virtual (Contributed).*
- Multi-Scale B-spline Compressed Sensing and Sparse Approximation 06/2014
  *National College Student Research Conference, Sichuan University, China (Contributed).*

## Services and Memberships

- Committee of International Chinese Statistical Association 2021-2023
  *Member of Archive Committee*
- Member of American Statistical Association
- Member of ENAR

## Skills

- **Programming & Script Languages:** Python • R • C/C++ • MatLab • SAS • SQL • JavaScript • Shellscript • Lisp
- **Machine/Deep Learning Frameworks:** Scikit-learn • Pytorch • Scipy • Pandas
- **Miscellaneous:** Linux Server Administration • Git • Docker • AWS • Emacs • Vim