Jieru Shi

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https://herashi.github.io/

EDUCATION

Ph.D. in Biostatistics, University of Michigan *Aug 2020–Aug 2023*
Supervised by Dr. Walter Dempsey and Dr. Zhenke Wu.

M.S. in Biostatistics, University of Michigan *Aug 2018–Apr 2020*

B.S. in Statistics Sichuan University *Sep 2014–Jun 2018*
- Exchange student, Statistics, City University of Hong Kong *Jan–May 2016*

ACADEMIC APPOINTMENTS

Senior Research Fellow, **University College London** *Jul 2025 – present*
Working with Prof. Karla Diaz Ordaz at Dept of Statistical Science on causal machine learning

Postdoctoral Research Associate, **University of Cambridge** *Sep 2023– Jul 2025*
Supervised by Prof. Qingyuan Zhao at StatsLab, Department of Pure Mathematics and Mathematical Statistics (DPMMS) on causal inference

Graduate Research Assistant, **University of Michigan** *May 2022–May 2023*
Principal Investigators: Brahmajee K. Nallamothu & Jessica R. Golbus
- The Virtual AppLication-Supported ENvironment To INcrease Exercise During Cardiac Rehabilitation Study (VALENTINE) Study

Graduate Student Consultant, **University of Michigan** *Sep 2021–May 2022*
Director: Kerby Shedden
- Consulting for Statistics, Computing and Analytic Research (CSCAR)

Graduate Research Assistant, **University of Michigan** *Aug 2020–Aug 2021*
Principal Investigators: Srijan Sen & Amy Bohnert
- The PROviding Mental health Precision Treatment (PROMPT) Precision Health Study

TEACHING

Lecturer, University of Cambridge *Jan–Mar 2025*
- *Causal inference*, a Part III 16-lecture class.

Supervisor, University of Cambridge *Jan–Mar 2024*
- *Statistics*, Part IB Supervision.

Guest lecturer, University of Cambridge *Jan 2024*
- *Graphical Models: Statistical Learning and Causal Inference* in Part III Systems Biology, Modelling, and Analysis of Networks.

Example Class Instructor, University of Cambridge. *Oct–Dec 2023*
- *Causal Inference*, Part III Example Class in DPMMS.

Supervisor, University of Cambridge *Oct–Dec 2023*
- *Statistical Modeling*, Part II Supervision.

Guest lecturer, University of Michigan. *Nov 2022*
- *Time-Varying Causal Effect Estimation in Mobile Health Studies* in BIOS 653, Department of Biostatistics.

PUBLICATIONS

[1] **J Shi**, Z Wu, W Dempsey, "Assessing time-varying causal effect moderation in the presence of cluster-level treatment effect heterogeneity and interference". *Biometrika*, Volume 110, Issue 3, 2023, Pages 645–662, doi: 10.1093/biomet/asac065.

[2] Golbus, J. R., Gupta, K., Luff, E., **Shi, J.**, Dempsey, W., ... & Nallamothu, B. K. "A randomized trial of a mobile health intervention to augment cardiac rehabilitation". 2023, *npj Digit. Med.* 6, 173. doi: 10.1038/s41746-023-00921-9.

[3] Gupta, K., **Shi, J.**, Dempsey, W., Mukherjee, B., Kheterpal, S., Klasnja, P., ... & Golbus, J. 2023, "Contextually tailored text messages to augment cardiac rehabilitation: the Virtual AppLication-supported ENvironment To INcrease Exercise (VALENTINE) study". *Cardiovascular Digital Health Journal, 4(5), S4-S5.* doi: 10.1016/j.cvdhj.2023.08.010

[4] Golbus, Jessica R., **Jieru Shi**, Kashvi Gupta, Rachel Stevens, V.Swetha E. Jeganathan, Evan Luff, Thomas Boyden, et al. 2024, "Text Messages to Promote Physical Activity in Patients With Cardiovascular Disease: A Micro-Randomized Trial of a Just-In-Time Adaptive Intervention". *Circulation: Cardiovascular Quality and Outcomes*, e010731. doi: 10.1161/CIRCOUTCOMES.123.010731.

[5] Huch, E., **Shi, J.**, Abbott, M. R., Golbus, J., Moreno, A., & Dempsey, W.. 2024, "RoME: A Robust Mixed-Effects Bandit Algorithm for Optimizing Mobile Health Interventions." *Advances in Neural Information Processing Systems, 37, 128280-128329.*

[6] **J Shi**, Z Wu, W Dempsey, "Incorporating auxiliary variables to improve the efficiency of time-varying treatment effect estimation". 2025, *Journal of the American Statistical Association*, doi: 10.1080/01621459.2025.2516197.

[7] **J Shi**, W Dempsey, "A meta-learning method for estimation of causal excursion effects to assess time-varying moderation". 2025, *Biometrics*, doi: 10.1093/biomtc/ujaf129.

[8] Gupta K, Atluri N, Basu T, Luff E, **Shi J**,..., Golbus J. "Characteristics of Tailored Text Messages that Maximize Physical Activity amongst Cardiac Rehabilitation Enrollees". 2025, *JMIR mHealth and uHealth*, doi: 10.2196/preprints.79792.

Preprints

[9] **J Shi**, Z Wu, W Dempsey, "Estimating time-varying direct and indirect causal excursion effects for binary outcomes". 2022, *arXiv*: 2212.01472 [stats.ME]

[10] H Lei, **J Shi**, H Cao, Q Zhao, "Heritability: a counterfactual perspective". 2025, *manuscript available*, (**submitted to *Biometrika***).

Working Papers

[11] **J Shi**, R Shah, "Conditional Independence Testing for Time Series". 2025+.

[12] **J Shi**, Z Gan, Q Zhao, J Wang, "Empirical Bayes Transfer Learning in Genome-Wide Association Studies". 2025+.

[13] L Bell, **J Shi**, "Principled adjustment for endogenous time-varying covariates in longitudinal average treatment effect estimation". 2025+.

Talks and Presentations

[1] *Joint Statistical Meeting, virtual* (contributed talk, Aug 2021), "Assessing time-varying causal effect moderation in the presence of cluster-level treatment effect heterogeneity".

[2] *American Causal Inference Conference (ACIC)* (poster, May 2022), "Assessing time-varying causal effect moderation in the presence of cluster-level treatment effect heterogeneity".

[3] *Joint Statistical Meeting, Washington D.C.* (contributed talk, Aug 2022), "Assessing time-varying causal effect moderation in the presence of cluster-level treatment effect heterogeneity".

[4] *e-HAIL Symposium: Artificial Intelligence and Health, University of Michigan* (poster, Sep 2022), "The Virtual AppLication-Supported ENvironment To INcrease Exercise (VALENTINE) during cardiac rehabilitation study".

[5] *ENAR Spring Meeting* (contributed talk, Mar 2023), "Estimating time-varying direct and indirect causal excursion effects for binary outcomes".

[6] *Michigan Student Symposium for Interdisciplinary Statistical Sciences (MSSISS)* (contributed talk, Mar 2023), "A meta-learning method for estimation of causal excursion effects to assess time-varying moderation".

[7] *American Causal Inference Conference (ACIC)* (poster, May 2023), "A meta-learning method for estimation of causal excursion effects to assess time-varying moderation".

[8] *International Conference of Statistics and Data Science (ICSDS)* (contributed talk, Dec 2023), "A meta-learning method for estimation of causal excursion effects to assess time-varying moderation".

[9] *Enhancing models with machines? – Causal machine learning in economics, statistics and computer science* (invited talk, July 2024), "A novel method for assessing time-varying moderation".

[10] *Joint Statistical Meeting* (contributed talk, Aug 2024), "A meta-learning method for estimation of causal excursion effects to assess time-varying moderation".

[11] *International Conference of Statistics and Data Science (ICSDS)* (contributed talk, Dec 2024), "Incorporating auxiliary variables to improve the efficiency of time-varying treatment effect estimation".

[12] *UCL Statistical Science Seminar* (invited talk, Feb 2025), "Conditional Independence testing in time series".

[13] *Seminar of Statistics at MAP5, Université Paris Cité* (invited talk, April 2025), "Conditional Independence testing in time series".

[14] *European Causal Inference Meeting (EuroCIM)* (poster, April 2025), "Conditional independence testing in time series".

[15] *KCL Trials Methodology Seminar* (invited talk, July 2025), "Smarter Mobile Interventions: What Micro-Randomized Trials Can Tell Us".

[16] *Southampton Statistical Sciences Research Institute (S3RI) seminar* (invited talk, Oct 2025), "Conditional Independence testing in time series".

[17] *Young Biometrician Award showcase of the British and Irish Region of the International Biometric Society* (invited talk, Dec 2025), "Auxiliary Variables: Rethinking Efficiency in Time-Varying Effects".

[18] *IMS International New Researchers Conference* (participant, Dec 2025), "Causality in Longitudinal Data".

[19] *International Conference of Statistics and Data Science (ICSDS)* (contributed talk, Dec 2025), "Conditional independence testing in time series".

[20] *"Causality and Machine Learning", Tsinghua Sanya International Mathematics Forum (TSIMF)* (invited talk, Jan 2026), "Conditional Independence testing in time series".

GRANT PREPARATION

Medical Research Council (MRC) Career Development Award

- Statistical foundations for trustworthy precision medicine: robust dynamic treatment regimes and causal evaluation in complex longitudinal settings.
- Planned submission date: 27 January 2026 to 21 April 2026.

EDITORIAL SERVICE

Ad-Hoc Reviewer

- Biometrics $\times 2$
- Journal of the American Statistical Association $\times 1$
- Biostatistics $\times 1$
- Nature Communications $\times 1$

EXTERNAL PROFESSIONAL ACTIVITIES

Invited Participant *Jan 2026*

- Causal inference: From theory to practice and back again, long-residency programme at the Isaac Newton Institute for Mathematical Sciences, Cambridge.

Local Organization Committee Member *Jun 2023*

- International Chinese Statistical Association (ICSA) 2023 Applied Statistics Symposium

Organizer *Sep 2022–Apr 2023*

- Graduate Student Working Group in the Biostatistics Department, University of Michigan

Program Committee Member *Dec 2021*

- Causal Inference Challenges in Sequential Decision Making Workshop at NeurIPS

Program Co-Organizer *Dec 2020*

- Machine Learning for Mobile Health Workshop at NeurIPS

AWARDS

Honorable Mention *Mar 2023*
- The oral presentation session, 2023 Michigan Student Symposium for Interdisciplinary Statistical Sciences (MSSISS) at Ann Arbor, MI.

Student Travel Award Recipient *Jan 2023*
- 2023 the 14th International Conference on Health Policy Statistics (ICHPS) at Scottsdale, AZ.

Junior Researcher Travel Grant *May 2022*
- American Causal Inference Conference (ACIC) at Berkeley, CA.

Rackham Travel Grant
- Joint Statistics Meeting (JSM) at Washington, D.C. *Aug 2022*
- Joint Statistics Meeting (JSM), virtual. *Aug 2021*

LANGUAGES

Mandarin Chinese (*native*), **English** (*working proficiency*)