Yan Dora Zhang

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ACADEMIC POSITIONS

2019–Present   **Assistant Professor**
                Department of Statistics and Actuarial Science
                School of Computing and Data Science
                The University of Hong Kong

2016–2019   **Postdoctoral Fellow** (Mentor: *Dr. Nilanjan Chatterjee*)
                Department of Biostatistics
                Bloomberg School of Public Health
                Johns Hopkins University

EDUCATION

2013–2016   **Ph.D. in Statistics**, North Carolina State University, *NC, USA*
             Thesis: *Bayesian Methods for High-dimensional Data*
             Advisor: *Dr. Howard D. Bondell* & *Dr. Brian J. Reich*
2011–2013   **M.S. in Statistics**, North Carolina State University, *NC, USA*
2007–2011   **B.S. in Statistics**, Nankai University, *Tianjin, China*

PUBLICATIONS

(*Co-first authors. †Co-corresponding authors. Students/supervisees are underlined.)

Peer-Reviewed Articles (as first/corresponding author)

1. Lai D, Wang H, Gu T, Wu S, Liu D, Sham PC, **Zhang YD**. TransferTWAS: A transfer learning framework for cross-tissue transcriptome-wide association study . *The American Journal of Human Genetics*. 2025 Aug 7;112(8):1936-47.

2. Wang X, Wang M, Wang H, Yin G, **Zhang YD**. Drug repurposing for Alzheimer's disease integrating transcriptome-wide association study and biological network analysis. *Journal of Alzheimer's Disease*. 2025 July 22.

3. <u>Wang H</u>, <u>Li X</u>, Li T, Li Z, Sham PC, **Zhang YD**. MAAT: a new nonparametric Bayesian framework for incorporating multiple functional annotations in transcriptome-wide association studies. *Genome Biology.* 2025 Feb 4;26:21.

4. <u>Wang A</u>*, <u>Tian P</u>*, **Zhang YD**. TWAS-GKF: a novel method for causal gene identification in transcriptome-wide association studies with knockoff inference. *Bioinformatics.* 2024 Aug;40(8):btae502.

5. <u>Xiong Z</u>, Thach TQ, **Zhang YD**[†], Sham PC[†]. Improved estimation of functional enrichment in SNP heritability using feasible generalized least squares. *Human Genetics and Genomics Advances.* 2024 Apr 11;5(2).

6. <u>Lai D</u>, <u>Lim D</u>, Lu J, <u>Wang H</u>, Huang T, **Zhang YD**. Risk of myocarditis after three doses of COVID-19 mRNA vaccines in the United States, 2020–2022: A self-controlled case series study. *Journal of Evidence-Based Medicine.* 2024 Mar;17(1):65-77.

7. <u>Li X</u>, Sham PC, **Zhang YD**. A Bayesian fine-mapping model using a continuous global-local shrinkage prior with applications in prostate cancer analysis. *The American Journal of Human Genetics.* 2024 Feb 1;111(2):213-26.

8. <u>Wang X</u>, <u>Wang H</u>, Yin G, **Zhang YD**. Network-based drug repurposing for the treatment of COVID-19 patients in different clinical stages. *Heliyon.* 2023 Mar 1;9(3).

9. Liu Z*, Qin Y*, Wu T, Tubbs JD, Baum L, Mak TS, Li M[†], **Zhang YD**[†], Sham PC.[†] Reciprocal causation mixture model for robust Mendelian randomization analysis using genome-scale summary data. *Nature Communications.* 2023 Feb 28;14(1):1131.

10. <u>Tian P</u>, <u>Hu Y</u>, Liu Z[†], **Zhang YD**[†]. Grace-AKO: a novel and stable knockoff filter for variable selection incorporating gene network structures. *BMC bioinformatics.* 2022 Nov 14;23(1):478.

11. <u>Wang H</u>, <u>Wang X</u>, Li T, <u>Lai D</u>, **Zhang YD**. Adverse effect signature extraction and prediction for drugs treating COVID-19. *Frontiers in Genetics.* 2022 Nov 4;13:1019940.

12. <u>Gan D</u>, Yin G, **Zhang YD**. The GR2D2 estimator for the precision matrices.*Briefings in Bioinformatics.* 2022 Nov;23(6):bbac426.

13. <u>Tian P</u>, <u>Chan TH</u>, Wang YF, Yang W, Yin G, **Zhang YD**. Multiethnic polygenic risk prediction in diverse populations through transfer learning. *Frontiers in Genetics.* 2022 Aug 19;13:906965.

14. **Zhang YD**, Naughton BP, Bondell HD, Reich BJ. Bayesian regression using a prior on the model fit: The R2-D2 shrinkage prior. *Journal of the American Statistical Association.* 2022 Apr 3;117(538):862-74.

15. <u>Lai D</u>, <u>Cai Y</u>, <u>Chan TH</u>, <u>Gan D</u>, Hurson AN, **Zhang YD**. How to organise travel restrictions in the new future: lessons from the COVID-19 response in Hong Kong and Singapore.

BMJ global health. 2022 Feb 28;7(2).

16. **Zhang YD**, Hurson AN, Zhang H, Choudhury PP, Easton DF, Milne RL, Simard J, Hall P, Michailidou K, Dennis J, Schmidt MK, ..., Chatterjee N[†], García-Closas M[†]. Assessment of polygenic architecture and risk prediction based on common variants across fourteen cancers. *Nature communications.* 2020 Jul 3;11(1):3353.

17. **Zhang Y**, Qi G, Park JH, Chatterjee N. Estimation of complex effect-size distributions using summary-level statistics from genome-wide association studies across 32 complex traits. *Nature genetics.* 2018 Sep;50(9):1318-26.

18. **Zhang Y**, Bondell HD. Variable selection via penalized credible regions with Dirichlet–Laplace global-local shrinkage priors. *Bayesian Analysis.* 2018 Sep;13(3):823-844.

Peer-Reviewed Articles (as co-author)

19. <u>Chan TH</u>, **Zhang DY**, Yin G, Yu L. Feature Preserving Shrinkage on Bayesian Neural Networks via the R2D2 Prior. *IEEE Transactions on Pattern Analysis and Machine Intelligence.* 2025 May 23.

20. <u>Wang W</u>, Jin H, **Zhang YD**, Yin G. Two-dimensional calibration-free odds design for phase I drug-combination trials. *Frontiers in Oncology.* 2023 Nov 29;13:1294258.

21. <u>Lai D</u>, **Zhang YD**, Lu J. Venous thromboembolism following two doses of COVID-19 mRNA vaccines in the US population, 2020–2022. *Vaccines.* 2022 Aug 15;10(8):1317.

22. Su W, <u>He B</u>, **Zhang YD**, Yin G. C-index regression for recurrent event data. *Contemporary Clinical Trials.* 2022 Jul 1;118:106787.

23. Hong X, Zhang B, Liang L, **Zhang Y**, Ji Y, Wang G, Ji H, Clish CB, Burd I, Pearson C, Zuckerman B. Postpartum plasma metabolomic profile among women with preeclampsia and preterm delivery: implications for long-term health.*BMC medicine.* 2020 Dec;18:1-2.

24. Meisner A, Kundu P, **Zhang YD**, Lan LV, Kim S, Ghandwani D, Choudhury PP, Berndt SI, Freedman ND, Garcia-Closas M, Chatterjee N. Combined utility of 25 disease and risk factor polygenic risk scores for stratifying risk of all-cause mortality. *The American Journal of Human Genetics.* 2020 Sep 3;107(3):418-31.

25. Tubbs JD, **Zhang YD**, Sham PC. Intermediate confounding in trio relationships: The importance of complete data in effect size estimation. *Genetic Epidemiology.* 2020 Jun;44(4):395-9.

26. Pal Choudhury P, Wilcox AN, Brook MN, **Zhang Y**, Ahearn T, Orr N, Coulson P, Schoemaker MJ, Jones ME, Gail MH, Swerdlow AJ. Comparative validation of breast cancer risk prediction models and projections for future risk stratification. *JNCI: Journal of the National Cancer Institute.* 2020 Mar 1;112(3):278-85.

27. Ji Y, Azuine RE, **Zhang Y**, Hou W, Hong X, Wang G, Riley A, Pearson C, Zuckerman B, Wang X. Association of cord plasma biomarkers of in utero acetaminophen exposure with risk of attention-deficit/hyperactivity disorder and autism spectrum disorder in childhood. *JAMA psychiatry.* 2020 Feb 1;77(2):180-9.

Peer-Reviewed Conference Papers

28. <u>Wang H</u>, **Zhang YD**, Yin G. Effective sample size estimation based on the concordance between p-value and posterior probability of the null hypothesis. *28th European Conference on Artificial Intelligence (ECAI).* 2025. Volume 413:3210 - 3217.

Book Chapter

29. **Zhang YD**, Yu W, Bondell HD. Variable selection with shrinkage priors via sparse posterior summaries. In *Handbook of Bayesian variable selection* 2021 Dec 24 (pp. 179-198). Chapman and Hall/CRC.

EXTERNAL RESEARCH GRANTS

1. (PI) Research Grants Council (RGC) General Research Fund (GRF) 2024/25, *"Integrating heterogenous data to enhance gene discovery power in transcriptome-wide association studies"*, HK$910,742, 2024-2027

2. (PI) Research Grants Council (RGC) Early Career Scheme (ECS) 2021/22, *"Integrating external knowledge in Bayesian inference with applications in genetics and genomics"*, HK$603,303, 2021-2024

3. (Co-I) Health and Medical Research Fund 2022, *"Establishing normovolemia in heart failure according to the measurement of blood volume and the Frank-Starling Law of the heart"*, HK$1,438,248

TEACHING

– STAT3622 Data visualization, *HKU* (Spring 2026)
– APAI3021 Modern biostatistics, *HKU* (Fall 2025)
– STAT2602, Probability and statistics II, *HKU* (Spring 2025, Fall 2024, Fall 2023, Spring 2023, Fall 2022, Fall 2021)
– STAT3902, Statistical models, *HKU* (Fall 2023, Fall 2022)
– STAT3621, Statistical data analysis, *HKU* (Spring 2021, Spring 2020)
– STAT3604, Design and analysis of experiments, *HKU* (Fall 2020)

TALKS AND PRESENTATIONS

Invited Seminar Talks (from 2025-present)

Dec 2025	Institute of Clinical Medicine, Shanghai Jiao Tong University School of Medicine, *Shanghai, China*
	– Topic: *Causal Gene Mapping in the Post-GWAS Era: Recent Advances in Multi-Ancestry Fine-mapping and TWAS*
Dec 2025	School of Statistics and Data Science, Nankai University, *Tianjin, China*
	– Topic: *Causal Gene Mapping in the Post-GWAS Era: Recent Advances in Multi-Ancestry Fine-mapping and TWAS*
Jan 2026	School of Public Health, Huazhong University of Science and Technology Tongji Medical College, *Wuhan, China*
	– Topic: *Causal Gene Mapping in the Post-GWAS Era: Recent Advances in Multi-Ancestry Fine-mapping and TWAS*

Invited Conference/Workshop Talk

Sep 2025	Croucher Advanced Study Institutes on AI and statistics, Hong Kong Polytechnic University, *Hong Kong SAR, China*
Aug 2025	The 8th International Conference on Econometrics and Statistics (EcoSta 2025), *Tokyo, Japan*
Jul 2025	2025 Academic Conference on Biostatistics, *Chongqing, China*
Jul 2023	2023 Joint Conference on Statistics and Data Science in China, *Beijing, China*
Jul 2023	12th ICSA International Conference, *Hong Kong SAR, China*
Jul 2023	2023 ICSA China Conference, *Chengdu, China*
Apr 2023	Public Lecture Series, Faculty of Science, The University of Hong Kong, *Hong Kong SAR, China*
Apr 2023	The 11th World DNA Day and Bio-pharma Industry Congress 2023, *Dalian, China*
Aug 2022	AI and Big Data Research for Health Improvement Symposium, *Virtual Meeting*
Jun 2022	NSFC/RGC Workshop on Single-Cell Data Science, *Virtual Meeting*
Jun 2022	The 5th International Conference on Econometrics and Statistics (EcoSta 2022), *Virtual Meeting*
Aug 2017	Joint Statistical Meetings (JSM), *Baltimore, MD*

Poster Presentation

Oct 2025	American Society of Human Genetics (ASHG) Conference, *Boston, MA*
Oct 2018	American Society of Human Genetics (ASHG) Conference, *San Diego, CA*
Mar 2018	Eastern North American Region International Biometric Society (ENAR) Conference, *Atlanta, GA*
Oct 2017	American Society of Human Genetics (ASHG) Conference, *Orlando, FL*

MENTORSHIP

(*First position after leaving the lab.#Current position.)

Postdoctoral Fellows

2021–2023	Xin Wang, Associate Professor at Northeastern University (China)#

2021–2023   Han Wang, Associate Professor at China Agricultural University*

Doctoral Students

2025–Present   Liyu Cao, Department of Statistics and Actuarial Science, HKU

2023–Present   Yu Yun, Department of Statistics and Actuarial Science, HKU

2021–2026   Xiang Li, Department of Statistics and Actuarial Science, HKU
– Thesis: *Novel Bayesian methods for genetic fine-mapping*

2020–2025   Daoyuan Lai, Department of Statistics and Actuarial Science, HKU
– Thesis: *Statistical methods for incorporating external information into current study*

2020–2025   Zewei Xiong *(co-supervised with Dr. Pak Sham)*, Department of Psychiatry, HKU
– Thesis: *Exploring statistical methods for estimating heritability, functional enrichment and polygenic risk score using summary GWAS data in complex traits*
– Lecturer at Department of Mathematics, Hong Kong Baptist University*

2022–2024   Anqi Wang, Department of Statistics and Actuarial Science, HKU
– Thesis: *Statistical methods for causal inference and bias correction in genetic studies*
– Postdoc at Columbia University*

2020–2024   Peixin Tian, Department of Statistics and Actuarial Science, HKU
– Thesis: *Development of bioinformatic tools for enhanced prediction and variable selection in genetic studies*
– Data scientist at AIVI*

Master Students

2024.9–2025.3   Yilan Liang (RA), HKU

2022.9–2023.8   Wenliang Wang, HKU, Data Scientist at Quantum Life*
– Thesis: *Two-dimensional calibration-free odds (2dCFO) design for phase I drug-combination trials*

2020.9–2022.8   Hanning Chen, HKU, PhD student at University of Melbourne*
– Thesis: *Two-step transfer learning methods with R2D2 shrinkage prior and instance weighting transfer using gene expression data*

2020.9–2020.12   Yiqian Hu (RA), HKU, Quantitative Modeller at Credit Suisse[#]

Undergraduate Research Assistants

2023.6–2023.12   Siqi Wu, HKU, graduate student at Columbia University*

2021.7–2022.5   Dickson Lim, HKU, graduate student at University of Exeter*

2020.12–2021.5   Dailin Gan, HKU, graduate student at University of Notre Dame*

2020.6–2021.4   Yuxi Cai, HKU, graduate student at HKU*

2020.6–2021.2   Tsai Hor Chan, HKU, graduate student at HKU*

Visiting Scholars

2026.1–   Yifan Kong, School of Public Health, Huazhong University of Science and Technology Tongji Medical College

2025.2–2025.5   Xinyue Xu, School of Statistics and Data Science, Nankai University
2020.1–2020.8   Baihua He, School of Mathematics and Statistics, Wuhan University

Doctoral Dissertation Committee Member

2025   Hoi Man Chun (MPhil), School of Biomedical Sciences, HKU (Supervisor: Dr. Yuanhua Huang)

2024   Xinyi Lin, School of Biomedical Sciences, HKU (Supervisor: Dr. Joshua Wing Kei Ho and Dr. Yuanhua Huang)

2023   Yunpeng Zhou, Department of Statistics and Actuarial Science, HKU (Supervisor: Dr. KC Yuen)

2023   Siqi Xu, Department of Statistics and Actuarial Science, HKU (Supervisor: Dr. Wing Kam FUNG)

2023   Wen Ma , Department of Paediatrics and Adolescent Medicine, HKU (Supervisor: Dr. Yulung Lau and Dr. Wanling Yang)

2022   Xingtian Yang, Department of Paediatrics and Adolescent Medicine, HKU (Supervisor: Dr. YL Lau and Dr. WL Yang)

2022   Yidi Qu, Department of Statistics and Actuarial Science, HKU (Supervisor: Dr. Jinfeng Xu and Dr. K.C. Yuen)

2022   Jiaqi Gu, Department of Statistics and Actuarial Science, HKU (Supervisor: Dr. Guosheng Yin)

2022   Huaqing Jin, Department of Statistics and Actuarial Science, HKU (Supervisor: Dr. Guosheng Yin)

2022   Tian Wu, Department of Psychiatry, HKU (Supervisor: Dr. Pak Sham)

Selected Mentee's Awards

2026   Xiang Li, Student Paper Award of the Section on Statistics in Genomics and Genetics (SSGG) of the American Statistical Association (ASA)

2025   Daoyuan Lai, Poster Award for poster "Statistical Methods for Incorporating External Information into Current Study", International Chinese Statistical Association (ICSA) China Conference

2024   Xiang Li, Outstanding Student Poster Award for poster "A Bayesian fine-mapping model using a continuous global-local shrinkage prior with applications in prostate cancer analysis" – First Prize, EAC-ISBA Conference (Eastern Asia Chapter of the International Society for Bayesian Analysis) at EduHK

2021–2023   Daoyuan Lai/Anqi Wang/Peixin Tian, Excellent Research Award, Department of Statistics and Actuarial Science, HKU

HONORS & AWARDS

2017   Honorable Mention for poster Estimating effect-size distribution from summary-level statistics for large genome-wide association studies" , Genetics Research Day, The Maryland Genetics, Epidemiology, and Medicine Training Program (MD-GEM)

2013   Nomination for the University Outstanding Teaching Assistant Award, NCSU

2013   Mu Sigma Rho Statistics Society Honor, NCSU

2011   Outstanding Graduates Honor, Nankai University, China

2010	Excellent Student Leader Honor, Nankai University, China
2010	Tianjin Municipal People's Government Scholarship, China
2009	National Scholarship, China
2008	Hong Kong and Shang Hai Banking Corporation Scholarship, China

PROFESSIONAL SERVICES

Faculty Level

2020–Present	Faculty Academic Advisor – Provided academic advising to first-year undergraduate students, meeting with each advisee 1-2 times per academic year. – Played a key role in implementing a comprehensive university-wide Academic Advising System to support students' academic and personal goals. – Advised a total of 30 students, including graduates, on course selection, academic planning, and career development.
2022–2025	Summer Research Fellowship Supervisor for undergraduate students – Siyu Ye (2022-23), Qingyang Lyu (2024-25), Zilan Qin (2024-25).

School Level

2024–Present	Member, Human Resource Advisory Committee, School of Computing and Data Science, HKU
2024–2025	Member, Research Postgraduate (RPG) Admission Committee, School of Computing and Data Science, HKU

Department Level

2025–Present	Member, MStat & MDASC Admission & Promotion Committee, Department of Statistics and Actuarial Science, HKU
2021–Present	Member, BSc (Bioinformatics) Curriculum Committee, School of Biomedical Sciences, LKS Faculty of Medicine
2021–2024	Member (Student Exchange) of the BSc(Bioinformatics) Curriculum Committee, School of Biomedical Sciences, LKS Faculty of Medicine, HKU
2023–2024	Member, MStat & MDASC Admission & Promotion Committee, Department of Statistics and Actuarial Science, HKU
2022–2023	Member, MDASC Admission & Promotion Committee; Mainland China Affairs (Statistics), Department of Statistics and Actuarial Science, HKU
2021–2023	BSc Course Selection Advisor , Department of Statistics and Actuarial Science, HKU
2017–2018	Committee Representative of Department of Biostatistics, School of Public Health, Johns Hopkins Postdoctoral Association
2013–2014	Student Seminar Representative, Department of Statistics, NCSU
2013–2014	Executive of STATCOM - NCSU Chapter, a student-run volunteer organization supported by ASA

Professional Memberships

2025–Present	International Genetic Epidemiology Society (IGES)
2024–Present	American Society of Human Genetics (ASHG)
2017–2020	American Society of Human Genetics (ASHG)
2016–2017	International Chinese Statistical Association (ICSA) Community
2012–2016	American Statistical Association (ASA) Community

Editorial Activities

2026–Present	*Human Genetics and Genomics Advances* (Associate Editor)
2023–Present	*Journal of Heart and Lung Transplantation* (Section Editor)
2020–2020	*PLOS Computational Biology* (Guest Editor)

Journal Referee

American Journal of Human Genetics; Bayesian Analysis; BMJ Global Health; Cancer Epidemiology, Biomarkers & Prevention; Cell Genomics; Communications in Statistics – Theory and Methods; Computational Statistics; Electronic Journal of Statistics; HGC Advances; Human Genetics and Genomics Advances; Human Heredity; International Journal of Biostatistics; Journal of Heart and Lung Transplantation; Journal of the American Statistical Association; Journal of the Royal Statistical Society: Series B; Nature Communications; Nature Genetics; Scientific Reports; Statistics in Medicine