

Archer Gong Zhang

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CONTACT INFORMATION

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EDUCATION

2016 – 2022 Ph.D. in Statistics (Degree to be conferred in May 2022)
University of British Columbia (UBC), Vancouver, BC, Canada
Thesis title: “Semiparametric Inferences under a Density Ratio Model”
Supervisor: Dr. Jiahua Chen

2013 – 2016 Honours Bachelor of Science (with high distinction)
University of Toronto, Toronto, ON, Canada
Specialist in Statistical Science and Minor in Mathematics
CUMULATIVE GPA: 3.88/4.00

2012 – 2013 **Simon Fraser University (SFU)**, Burnaby, BC, Canada
(Transferred to University of Toronto)
CUMULATIVE GPA: 3.99/4.33

PUBLICATIONS AND PREPRINTS

- **Archer Gong Zhang**, Guangyu Zhu, Jiahua Chen. “Empirical likelihood ratio test on quantiles under a density ratio model.” *Electronic Journal of Statistics*, 15(2), 6191–6227, 2021. <https://doi.org/10.1214/21-EJS1943>.
- **Archer Gong Zhang** and Jiahua Chen. “Density ratio model with data-adaptive basis function.” *Journal of Multivariate Analysis* (2022): 105043. <https://doi.org/10.1016/j.jmva.2022.105043>
- Qiong Zhang, **Archer Gong Zhang**, and Jiahua Chen. “Gaussian Mixture Reduction with Composite Transportation Divergence.” arXiv preprint arXiv:2002.08410 (2021).
In preparation for submission. Available [here](#).

SCHOLARSHIPS AND AWARDS

2021 General Student Research Presentation Award at Statistical Society of Canada Annual Meeting

2020/2021 Department of Statistics Graduate Teaching Assistant Award (Nominated for the UBC Killam Graduate Teaching Assistant Award)

2020 – 2021 President’s Academic Excellence Initiative Ph.D. Award

2017 – 2021 Four Year Doctoral Fellowship

2016 – 2021 International Tuition Award

2016 – 2020 Faculty of Science Ph.D. Tuition Award

2016 – 2020 Faculty of Science Graduate Award

2016 Anona Thorne and Takao Tanabe Graduate Entrance Scholarship in Statistics

2015 University of Toronto Excellence Award in the Natural Sciences and Engineering

2015 University of Toronto Innis College Exceptional Achievement Award

2013 SFU Vice-President Research-Undergraduate Student Research Award

2013 SFU Undergraduate Open Scholarship

2012 SFU Alumni Scholarship Fund

RESEARCH EXPERIENCE

- 2016 – PRESENT Ph.D. thesis projects at **University of British Columbia**
Supervisor: Dr. Jiahua Chen
Focused on several inference problems related to a semiparametric density ratio model (DRM) to analyze data from multiple populations. Studied the nonparametric empirical likelihood (EL) based inferences under the DRM. Successfully showed that some EL-DRM estimators achieve parametric efficiency in some situations. Explored the use of the EL-based likelihood ratio test for hypotheses concerning population quantiles and proved a Wilks type theorem. Proposed an approach to solve an important open problem regarding a key component in the DRM.
- 2018 – PRESENT Ongoing research project at **University of British Columbia**
Collaborator: Dr. Trevor Campbell
Study the Bernstein-von Mises theorem on posterior normality when both the data generating process and the model are Bayesian. Look into the possibility of weakening the assumptions in the current Bernstein-von Mises theorem. Develop new approaches and techniques based on martingale theory and Stein's method to prove this theorem with a finite-data guarantee.
- 2014 – 2015 Undergraduate research assistant at **University of Toronto**
Supervisor: Dr. Nancy Reid
Conducted experiments with the application of the adjusted likelihood inference to some semiparametric models, such as logistic regression and log-linear Poisson regression models, and compared it with the classical likelihood method. Conducted a number of simulations using various datasets, and particularly investigated the performance of the adjusted likelihood method on a real-world time series data on air pollution and mortality.
- SUMMER 2013 Undergraduate research assistant at **Simon Fraser University**
Supervisor: Dr. Thomas Loughin
Conducted statistical simulation studies using the software R under a nested generalized linear mixed model for the development of a structural wood adhesive testing procedure.

PROFESSIONAL EXPERIENCE

- 2014/08 – 2014/09 Summer Intern at **AIA China–Life Insurance–AIA Group Limited (Shanghai, China)**
Department: Marketing and Product Design Department
Used the programming language SQL to manage the company's database of profiles of policy holders and life assurance policies.

TEACHING EXPERIENCE

Sessional Lecturer at University of British Columbia

- 2020/01 – 2020/04 STAT 302 Introduction to Probability

Teaching Assistant at University of British Columbia

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| 2021/09 – 2021/12 | STAT 302 | Introduction to Probability |
| 2021/01 – 2021/04 | STAT 302 | Introduction to Probability |
| 2020/09 – 2020/12 | STAT 203 | Statistical Methods |
| 2019/01 – 2019/04 | STAT 302 | Introduction to Probability |
| 2018/09 – 2018/12 | STAT 306 | Finding Relationships in Data |
| 2018/01 – 2018/04 | STAT 461/561 | Statistical Theory II |
| 2017/09 – 2017/12 | STAT 460/560 | Statistical Theory I |
| 2017/01 – 2017/04 | STAT 302 | Introduction to Probability |
| 2016/09 – 2016/12 | STAT 302 | Introduction to Probability |

PROFESSIONAL ACTIVITIES

- 2022/06 Research presentation at **Statistical Society of Canada 2022 Annual Meeting**
Title: “Estimation Efficiency under a Two-Sample Density Ratio Model”.
- 2021/11 Lightning talk at **2021 Canadian Statistical Sciences Institute (CANSSI) Showcase**
Title: “Density ratio model with data-adaptive basis function”.
- 2021/06 Research presentation at **Statistical Society of Canada 2021 Annual Meeting**
Title: “Empirical Likelihood Ratio Test on Quantiles under a Density Ratio Model”.
Winner of the General Student Research Presentation Award
- 2020/08 Contributed talk at **2020 Joint Statistical Meeting**
Title: “Learning the Basis Function in a Semiparametric Density Ratio Model”.
- Summer 2020 Team leader in a project to support the statistics department’s move to online teaching
Roles of the team: preparing teaching materials including lab materials and questions for the in-class activities and quizzes, and meeting with the course instructors and our supervisors.
- 2018 – 2019 Graduate student liaison to the search for assistant professor in biostatistics at **UBC Department of Statistics**
Roles: leading the discussion of graduate students with the candidates, collecting graduate students’ opinions, and reporting back to the Search Committee.
- 2017 – 2019 Organizer of the graduate student seminars at **UBC Department of Statistics**
- 2018/12 Research presentation at **SFU-UBC Forest Products Stochastic Modeling Group 2018 Annual Meeting at FPInnovations**
Title: “Empirical Likelihood Ratio Test on Quantiles under a Density Ratio Model”.
- 2018/08 Case study poster session at **2018 Joint Statistical Meeting**
Joint work with: Ho Yin Ho, Boyi Hu & Yu Wang
Title: “Uncertainty Quantification of Weather Forecasts”.
- 2017/08 Volunteer at **International Chinese Statistical Association-Canada Chapter 2017 Symposium**
- 2016/05 Case study poster session at **Statistical Society of Canada 2016 Annual Meeting**
Joint work with: Tommy Guo, Mufan Li, Harris Quach & Yanbo Tang
Title: “On the Predictive Characteristics for Sustainability of Canadian Charities”.
- 2014/05 Volunteer at **Statistical Society of Canada 2014 Annual Meeting**