

## Qihuang Zhang

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CONTACT INFORMATION      1930 Chestnut St.      +1-484-280-4336  
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### EDUCATION      **University of Waterloo**

Ph.D., Statistics, Sep 2017 - Sep 2020

- Thesis: *Inference Methods for Noisy Correlated Responses with Measurement Error*
- Advisor: Grace Y. Yi, Ph.D

M.Math, Biostatistics, Sep 2015 - May 2017

- Thesis: *SIMEX R Package for Mixed Measurement Error and Misclassification in Covariates*
- Advisor: Grace Y. Yi, Ph.D

### **Southwestern University of Finance and Economics**

B.Econ., Financial Statistics and Risk Management, Sep 2011 - Jun 2015

### PROFESSIONAL EXPERIENCE      **Post-doctoral Fellow**

University of Pennsylvania, Philadelphia, PA      Jan 2021 - Present

- Advisor: Mingyao Li, Ph.D and Rui Xiao, Ph.D
- Develop deep learning algorithm in recovering location for sc-RNA data based on spatial transcriptomic data.

University of Western Ontario, London, ON      Sep 2020 - Dec 2020

- Advisor: Grace Y. Yi, Ph.D.
- Participated in establishing COVID-19 dashboard of Canada.
- Conducted sentiment analysis on the Twitter users of Canada regarding COVID-19 and the associated anti-pandemic measures.

### **Lecturer**

University of Western Ontario, London, ON      Sep 2020 - Dec 2020

- Teach the course *Statistical Concepts* (SS 1023A).
- Teach the course *Statistics for Health Science* (SS 2037A).

### **Biostatistics Research Intern**

Princess Margaret Cancer Centre, Toronto, ON      May 2016 - Sep 2016

- Conducted genetic quality control and genotype imputation. Constructed predictive models to study the influence of genetic variation on the association between treatment (Statin and Metformin) and prostate cancer risk.
- Proposed a recursive partitioning method to define subgroups based on genetic data. Constructed a regression tree model split by multiple variables. Proposed a bootstrap pruning algorithm to select the optimal tree
- Supervisor: Wei Xu, Ph.D

## REFEREED JOURNAL PUBLICATIONS

1. **Q. Zhang** and G. Y. Yi (2021). Marginal analysis of bivariate mixed responses with measurement error and misclassification. *Statistical Methods in Medical Research*, 30(5): 1155-1186.
2. N. Stevens, A. Sen, F. Kiwon, P. P. Morita, S. H. Steiner and **Q. Zhang** (2021). Estimating the Effects of Non-Pharmaceutical Interventions (NPIs) and Population Mobility on Daily COVID-19 Cases: Evidence from Ontario. To appear in *Canadian Public Policy*.
3. **Q. Zhang** and G. Y. Yi (2020). Genetic association studies with bivariate mixed responses subject to measurement error and misclassification. *Statistics in Medicine*, 39(26): 3700-3719.
4. L.-P. Chen\*, **Q. Zhang**\*, G. Y. Yi, W. He (2020). Model-based forecasting for Canadian COVID-19 data. *PLOS ONE*, 16(1): e0244536..
5. D. Liu, Y. Du, Y. Charvadeh, J. Cui, L.-P. Chen, G. Deng, **Q. Zhang**, K. Cai, J. He, W. He, G. Y. Yi (2020). A real time and interactive web-based platform for visualizing and analyzing COVID-19 in Canada. *International Journal of Statistics and Probability*, 9(5): 1-23.
6. **Q. Zhang** and G. Y. Yi (2019). R package for analysis of data with mixed measurement error and misclassification in covariates: augSIMEX. *Journal of Statistical Computation and Simulation*, 89, 2293-2315.
7. L.-P. Chen, G. Y. Yi, **Q. Zhang**, W. He (2019). Multiclass analysis and prediction with network structured covariates. *Journal of Statistical Distributions and Applications*, 6(1), 6.
8. L. Eng, D. Alton, Y. Song, J. Su, **Q. Zhang**, J. Che, D. Farzanfar, R. Mohan, O. Krysz, W. Xu, D. Goldstein, M. E. Giuliani, G. Liu (2018). Awareness of the harms of continued smoking among cancer survivors. *Supportive Care in Cancer*, 1-11.
9. O. Faluyi, L. Eng, X. Qiu, J. Che, **Q. Zhang**, D. Cheng, N. Ying, A. Tse, W. Xu, A. Azad, G. Liu (2017). Validation of micro RNA pathway polymorphisms in esophageal adenocarcinoma survival. *Cancer Medicine*, 6(2), 361-373.
10. R. Gama, Y. Song, **Q. Zhang**, M. Brown, J. Wang, S. Habbous, L. Tong, S. Huang, B. O'Sullivan, J. Waldron, W. Xu, D. Goldstein, G. Liu (2017). Body mass index and prognosis in patients with head and neck cancer. *Head and Neck*, 39(6), 1226-1233.
11. V. Jayalath, A. Finelli, M. Komisarenko, N. Timilshina, **Q. Zhang**, W. Xu, N. Fleshner, R. Hamilton (2017). Association between germline genetic variation and progression in men with low-risk prostate cancer on active surveillance. *The Journal of Urology*, 197(4), 516-517.

\* Co-first authorship

## SUBMISSIONS FOR PUBLICATIONS

1. **Q. Zhang** and G. Y. Yi (2021). Generalized network structured model in discovering gene network with mixed responses subject to measurement error and misclassification. In revision to *Biometrics*.
2. **Q. Zhang** and G. Y. Yi (2021). Zero-inflated Poisson model with measurement error in response. In revision to *Biometrics*.
3. **Q. Zhang** and G. Y. Yi (2021). Sensitivity analyses of COVID-19 data under autoregressive model with measurement error. In revision to *Journal of Applied Statistics*.
4. **Q. Zhang**, G. Y. Yi, L.-P. Chen, W. He (2021). Text Mining and Sentimental Analysis of COVID-19 Tweets. Submitted. <https://arxiv.org/abs/2106.15354>

# Curriculum Vitae

## MANUSCRIPTS IN PROGRESS

1. **Q. Zhang**, J. Hu, D. Dai, E. Lee, R. Xiao, M. Li (2021). CeLEry: A supervised deep learning method in cell location recovery. *Manuscript available in request.*
2. J. Fan, Y. Lyu, **Q. Zhang**, X. Wang, M. Li, R. Xiao (2021). MuSiC2: cell type deconvolution for multicondition bulk RNA-seq data. *Manuscript available in request.*
3. **Q. Zhang**, R. Xiao, M. Li (2021). Spatially resolved matching algorithm for mass spectrum data in metabolomics. *In progress.*

## ACCEPTED ABSTRACT

1. R. Woo, E. Chan, C. Vanderwater, C. Cho, J Wong., W. Xu, **Q. Zhang** et al. "Quality of life (QOL) in esophageal cancer patients treated with tri-modality therapy: Is the CROSS protocol better?" *2017 Gastrointestinal Cancers Symposium.*
2. E. Tam, J. Chen, **Q. Zhang** et al. "Routine physical function assessment through a Branching Logic Electronic Symptom Survey (BLESS) vs. the 32-combined item HAQ-DI + WHODAS (HW) survey: A quality improvement controlled trial." *2017 ASCO Quality Care Symposium.*

## RESEARCH AWARDS

- **Best Presentation Award** March 2020  
"Generalized Network Structured Model in Discovering Gene Network."  
*Department of Statistics and Actuarial Science, University of Waterloo,  
Waterloo, Ontario, Canada*
- **Winner of Case Study** May 2018  
"Prediction of Popularity of TED Talks: a Comprehensive Text Mining Case Study"  
*The 46<sup>th</sup> Annual Meeting of the Statistical Society of Canada, McGill University,  
Montreal, Quebec, Canada*
- **Best posters of the SSC student conference** May 2016  
"Estimation of Genotyping Misclassification Rate for Pedigree Data: a Bayesian approach"  
*The 44<sup>th</sup> Annual Meeting of the Statistical Society of Canada, Brock University,  
St. Catharines, Ontario, Canada*
- **Outstanding Undergraduate Thesis** May 2015  
"Spatial Association between the Clustering of Start-up Firms and Venture Capital Institutions: a Point Process Approach"  
*Southwestern University of Finance and Economics, Chengdu, China*

## OTHER AWARDS

### University of Waterloo

- Statistics & Actuarial Science Chair's Award Spring 2016, Winter 2017, Fall 2018, Winter 2019, Spring 2019, Fall 2019, Winter 2020
- Statistics & Actuarial Science Doctoral Entrance Award Fall 2017

### Southwestern University of Finance and Economics

- National Scholarship Nov 2012

### Other Award

- Meritorious Winner of 2014 Mathematical Contest in Modeling (top 10%), Mar 2014  
*Consortium of Mathematics and Its Applications, Bedford, MA, US*
- The third prize in 2013 National Statistical Modeling Contest (top 3%), Sep 2013  
*Statistical Education Society of China*

# Curriculum Vitae

## PRESENTATIONS

1. **Q. Zhang** "CeLEry: Cell Location Recovery based on Spatial Transcriptomics Data." May 2021  
*University Statistical and Translational Genomics Laboratory Meeting, University of Pennsylvania, Philadelphia, Pennsylvania, USA*
2. **Q. Zhang** "Generalized Network Structured Model in Discovering Gene Network." March 2019  
*University Presentation Day, University of Waterloo, Waterloo, Ontario, Canada*
3. **Q. Zhang** and G.Y. Yi "Analysis of Bivariate Responses in Genetic Association Studies with Measurement Error and Misclassification" May 2019  
*The 48<sup>th</sup> Annual Meeting of the Statistical Society of Canada, University of Calgary, Calgary, Alberta, Canada*
4. **Q. Zhang** "Statistical Learning in Hidden Markov Model" March 2019  
*Grace-Wenqing Data Science Research Group Meeting, Waterloo, Ontario, Canada*
5. **Q. Zhang** "High-throughput Sequencing, RNA-seq Data Analysis and Zero-Inflated Poisson Model" Nov 2018  
*Grace-Wenqing Data Science Research Group Meeting, Waterloo, Ontario, Canada*
6. **Q. Zhang** and L.-P. Chen "Prediction of Popularity of TED Talks: a Comprehensive Text Mining Case Study" June 2018  
*The 46<sup>th</sup> Annual Meeting of the Statistical Society of Canada, McGill University, Montreal, Quebec, Canada*
7. **Q. Zhang** "Introduction of Genome-wide Association Study." March 2018  
*Grace-Wenqing Data Science Research Group Meeting, Waterloo, Ontario, Canada*
8. **Q. Zhang** and W. Xu "The Influence of Genetic Variation on the Association between Statin and Prostate Cancer Risk: a Genome-wide Association Study" Aug 2016  
*Cancer Outcomes Medicine Biostatistics Informatics Epidemiology Laboratory, Toronto, ON, Canada*
9. **Q. Zhang** and G.Y. Yi . "Estimation of Genotyping Misclassification Rate for Pedigree Data: a Bayesian approach" May 2016  
*The 44<sup>th</sup> Annual Meeting of the Statistical Society of Canada, Brock University, St. Catharines, Ontario, Canada*

## ACADEMIC SERVICE

### Conference Organization and Service

- Conference Organizing Co-Chair,* Nov 2019  
The 1<sup>st</sup> Waterloo Student Conference in Statistics, Actuarial Science and Finance
- Keynote Session Chair,* Nov 2019  
The 1<sup>st</sup> Waterloo Student Conference in Statistics, Actuarial Science and Finance
- Conference Volunteer,* Jul 2013  
IMS-China International Conference on Statistics and Probability

# Curriculum Vitae

## Conference Organization and Service

*Student Representative,* Sep 2019  
The student and recent graduate committee of the Society of Statistics Canada

*Data Investigator,* Mar 2012  
School of statistics, Southwestern University of Finance and Economics

## Editorial Service

*Journal Referee,*

- Journal of Applied Statistics
- Journal of the American Medical Informatics Association
- Bioinformatics
- Statistics in Biosciences

PROFESSIONAL DEVELOPMENT Workshop: *Fundamental University Teaching,* 2019  
Teaching Center, University of Waterloo

Workshop: *Statistical Analysis of Large Administrative Health Databases: Emerging Challenges and Strategies,* 2018  
Banff International Research Station

Workshop: *Informatics and Statistics for Metabolomics,* 2018  
Bioinformatics Education Programs in Canada

Microbiome Summer School: *Big Data Analytics for Omics Science,* 2017  
Bioinformatics Education Programs in Canada

TEACHING EXPERIENCE **Instructor,** University of Western Ontario

- SS 1023: Statistical Concepts
- SS 2037: Statistics for Health Science

**Teaching Assistant,** University of Waterloo

- STAT 230 - Probability Fall 2018
- STAT 330 - Mathematical Statistics Winter 2019, Winter 2020
- STAT 331 - Applied Linear Model Winter 2016, Fall 2017
- STAT 333 - Applied Probability Fall 2015, Fall 2018
- STAT 337 - Introduction to Biostatistics Fall 2015
- STAT 340 - Computer Simulation of Complex Systems Fall 2018
- STAT 431 - Generalized Linear Model Winter 2017, Spring 2018, Spring 2019
- STAT 441 - Statistical Learning Winter 2017
- STAT 845 - Statistical Concepts for Data Science Winter 2019, Winter 2020

**Microteaching Session,** Teaching Centre, University of Waterloo

- Convex Set Nov 2019

ACADEMIC MEMBERSHIP *Society of Statistics Canada* 2016-present  
*American Statistical Association* 2021-present

PROGRAMMING SKILLS SAS, R, C++, Perl, UNIX shell scripting, Python