Curriculum Vitae

Qihuang Zhang

CONTACT INFORMATION
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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
- Developed a deep learning algorithm in recovering location for sc-RNA data based on spatial transcriptomic data.
- Developed an efficient alignment algorithm for mass spectrometry data in metabolomics.

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 anti-pandemic measures.

Lecturer

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

- Taught the course *Statistical Concepts* (SS 1023A).
- Taught 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 (2022). Generalized network structured model with mixed responses subject to measurement error and misclassification. To appear in *Biometrics*. https://doi.org/10.1111/biom.13623
2. **Q. Zhang** and G. Y. Yi (2022). Sensitivity analyses of COVID-19 data under autoregressive model with measurement error. To appear in *Journal of Applied Statistics*.
3. **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.
4. 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. *Canadian Public Policy*. e2021022.
5. **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.
6. L.-P. Chen*, **Q. Zhang***, G. Y. Yi, W. He (2020). Model-based forecasting for Canadian COVID-19 data. *PLOS ONE*, 16(1): e0244536.
7. 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.
8. **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.
9. 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.
10. L. Eng, D. Alton, Y. Song, J. Su, **Q. Zhang**, J. Che, D. Farzanfar, R. Mohan, O. Krys, 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.
11. 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.
12. 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.
13. 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 (2022). Zero-inflated Poisson model with measurement error in response. Second round revision invited by *Biometrics*.
2. **Q. Zhang**, G. Y. Yi, L.-P. Chen, W. He (2022). Text Mining and Sentimental Analysis of COVID-19 Tweets. Submitted. https://arxiv.org/abs/2106.15354
3. J. Fan, Y. Lyu, **Q. Zhang**, X. Wang, M. Li, R. Xiao (2022). MuSiC2: cell type deconvolution for multicondition bulk RNA-seq data. Submitted.

Manuscripts in Progress

1. **Q. Zhang**, J. Hu, D. Dai, E. Lee, R. Xiao, M. Li (2022). CeLEry: A supervised deep learning method in cell location recovery. *Manuscript available in request*.
2. **Q. Zhang**, R. Xiao, M. Li (2022). Spatially resolved matching algorithm for mass spectrum data in metabolomics. *In progess*.

Software Development

1. **Q. Zhang** and G. Y. Yi (2021). ZIPBayes: Bayesian Methods in the Analysis of Zero-Inflated Poisson Model. *R package version 1.0.1*. https://CRAN.R-project.org/package=ZIPBayes
2. **Q. Zhang** and G. Y. Yi (2020). GeneErrorMiss: Addressing Measurement Error and Misclassification in Bivariate Response Models. *R package version 1.0.0*. https://github.com/QihuangZhang/GeneErrorMis
3. **Q. Zhang** and G. Y. Yi (2019). augSIMEX: Analysis of Data with Mixed Measurement Error and Misclassification in Covariates. *R package version 3.7.4*. https://CRAN.R-project.org/package=augSIMEX

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^{th} 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^{th} 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

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 2020
   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^{th} 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^{th} 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^{th} 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 1st Waterloo Student Conference in Statistics, Actuarial Science and Finance

Keynote Session Chair, Nov 2019
The 1st Waterloo Student Conference in Statistics, Actuarial Science and Finance

Conference Volunteer, Jul 2013
IMS-China International Conference on Statistics and Probability

Statistical Community 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

Lecturer, 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

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

References

Grace Y. Yi
Professor in Statistics
Canada Research Chair (Tier 1)
Department of Statistical and Actuarial Sciences,
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