

# Curriculum Vitae

(February 9, 2019)

## 1 Personal Data

### 1.1 Contact Information

# Chengguo Weng

Department of Statistics and Actuarial Science  
Faculty of Mathematics  
University of Waterloo  
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### 1.2 Academic Degrees

- DOCTOR OF PHILOSOPHY (ACTUARIAL SCIENCE), University of Waterloo 2009  
*Dissertation Title:* Optimal Reinsurance Designs: from an Insurer's Perspective.  
*Supervisor:* Professor Ken Seng Tan
- MASTER OF MATHEMATICS (STATISTICS), Zhejiang University 2004  
*Dissertation Title:* Correlation Risk Order and Its Applications.  
*Supervisor:* Professor Yi Zhang
- BACHELOR OF SCIENCE (STATISTICS), Zhejiang University 2001

### 1.3 Areas of Interest

- Dr. Weng's primary research interests lie in Stochastic Optimization and Statistical Learning problems arising from the areas of Quantitative Finance and Insurance. His research involves both dynamic and static models. He is interested in developing both analytical and numerical methodologies for problems in these areas. His team are currently working on the following projects:
  - ◇ Construction of vast portfolios using statistical learning methodologies;
  - ◇ Least square Monte Carlo simulation for dynamic programming;
  - ◇ Predictive analytics for insurance.

### 1.4 Employment History

- ASSOCIATE PROFESSOR Jun. 2016 - Present  
Department of Statistics and Actuarial Science

University of Waterloo, Waterloo, Ontario, Canada

- ASSISTANT PROFESSOR Jun. 2010 - Jun.2016  
Department of Statistics and Actuarial Science  
University of Waterloo, Waterloo, Ontario, Canada
- ASSISTANT PROFESSOR Aug. 2009 - May 2010  
Department of Mathematics  
Towson University, Towson, Maryland, USA
- LECTURER Aug. 2004 - Apr. 2006  
School of Statistics and Mathematics  
Zhejiang Gongshang University, Hangzhou, Zhejiang, China

## 2 Publication and Scholarship

### 2.1 Publication

In the publication list below, authorship by graduate students and postdoctoral fellows are respectively marked by (\*) and (\*\*).

#### 2.1.1 Articles under Review/Revision

1. Guo, D.\*, Phelim B., Weng, C., Wirjanto, T.S. (2018). When does The 1/N rule work?
2. Guo, D.\*, Phelim B., **Weng, C.**, Wirjanto, T.S. (2018). Eigen portfolio selection: A robust approach to Sharpe ratio maximization.
3. Guo, D.\*, **Weng, C.**, Wirjanto, T.S. (2018). Sample eigenvalues adjustment for portfolio performance improvement under factor models.
4. Shen, Z.\*, **Weng, C.** (2017). Pricing bounds and bang-bang analysis of the Polaris variable annuities.
5. Chen S., Liu, Y., **Weng, C.**, (2018). Dynamic risk-sharing game and reinsurance contract design.
6. Lin, H.\*, Saunders, D., **Weng, C.** (2017). Mean-expectile portfolio selection.
7. Zhang, J.\*, Tan, K.S., **Weng, C.** (2017). Optimal dynamic longevity hedge with basis risk
8. Lin, H.\*, Saunders, D., **Weng, C.** (2017). Optimizing performance ratio via martingale approach.

#### 2.1.2 Articles in Referred Journals

9. Zhang, J.\*, Tan, K.S., **Weng, C.** (2019). Optimal index insurance design. *ASTIN Bulletin*. To appear.
10. Shen, Z.\*, Liu, Y., **Weng, C.** (2018). Nonparametric Inference for VaR, CTE and Expectile with High-Order Precision. *The North American Actuarial Journal*. To appear.
11. Diao, L., **Weng, C.** (2018). Regression tree credibility model. *The North American Actuarial Journal*. To appear.
12. Xue, X.\*, Wei, P.\*, **Weng, C.** (2019). Derivatives trading for insurers. *Insurance: Mathematics and Economics* 84, 40-53.

13. Xue, X.\*, Zhang, J.\*, Weng, C. (2018). Mean-variance hedging with basis risk. *Applied Stochastic Models in Business and Industry*. In press.
14. Wu, H., **Weng, C.**, Zeng, Y., (2018). Equilibrium consumption and portfolio decisions with stochastic discount rate and time-varying utility functions. *OR Spectrum* 40. 541-582.
15. Zhang, J.\*, Tan, K.S., **Weng, C.**, (2017). Optimal hedging with basis risk under mean-variance criterion. *Insurance: Mathematics and Economics* 75. 1-15.
16. **Weng, C.**, Zhuang, S.C.\*\* (2017). CDF Formulation for solving an optimal reinsurance problem. *Scandinavian Actuarial Journal* 2017(5). 395-418.
17. Han, D.\*, Tan, K.S., **Weng, C.**, (2017). Vine copula models with GLM and sparsity. *Communications in Statistics – Theory and Methods* 46(13), 6358-6381.
18. Lin, H.\*, Saunders, D., **Weng, C.**, (2017). Optimal investment strategies for participating contracts. *Insurance: Mathematics and Economics* 73, 137-155.
19. **Weng, C.**, Porth, L., Tan K.S., and Samaratunga, R.\*, (2017). Modelling the sustainability of the Canadian crop insurance program: A reserve fund process under a public-private partnership model. *Geneva Papers on Risk and Insurance - Issues and Practices* 42(2), 226-246.
20. Sun, H.\*, **Weng, C.**, Zhang, Y., (2017). Optimal multivariate quota-share reinsurance: A nonparametric mean-CVaR framework. *Insurance: Mathematics and Economics* 72, 197-214.
21. Zhao, H., **Weng, C.**, Shen, Y., Zeng, Y., (2016). Time-consistent investment-reinsurance strategies towards joint interests of the insurer and the reinsurer under CEV models. *Science China Mathematics* 60(2), 317-344.
22. Cai, J., **Weng, C.**, (2016). Optimal reinsurance with expectile. *Scandinavian Actuarial Journal* 2016(7), 624-645.
23. Zhuang, S. C.\*\*, **Weng, C.**, Tan, K.S., Assa, H., (2015). Marginal indemnification function formulation for optimal reinsurance. *Insurance: Mathematics and Economics* 67, 65-76.
24. Zhu, Y.\*, Chi, Y., **Weng, C.**, (2014). Multivariate reinsurance designs for minimizing an insurer's capital requirement. *Insurance: Mathematics and Economics* 59, 144-155.
25. Tan, K.S., **Weng, C.**, (2014). Empirical approach for optimal reinsurance design. *North American Actuarial Journal* 18(2), 315-342.
26. Huang, W., **Weng, C.**, Zhang, Y., (2014). Multivariate risk models under heavy-tailed risks. *Applied Stochastic Models in Business and Industry* 30(3), 341-360.
27. Cong, J.\*, Tan, K.S., **Weng, C.**, (2014). Conditional value-at-risk-based optimal partial hedging. *The Journal of Risk* 16(3), 49-83.
28. Huang S.-H., Pang, T.-X., **Weng, C.**, (2014). Limit theory for moderate deviations from a unit root with possibly heavy-tailed innovations. *Methodology and Computing in Applied Probability* 16(1), 187-206.
29. **Weng, C.**, (2013). Constant proportion portfolio insurance under regime switching exponential Lévy process. *Insurance: Mathematics and Economics* 52(3), 508-521.
30. Chi, Y., **Weng, C.**, (2013). Optimal reinsurance subject to Vajda condition. *Insurance: Mathematics and Economics* 53(1), 179-189.
31. Porth, L., Tan, K.S., **Weng, C.**, (2013). Optimal reinsurance analysis from a crop insurer's perspective.

*Agricultural Finance Review* 73(2), 310-328.

32. **Weng, C.**, Zhang, Y., Tan, K.S., (2013). Tail behavior of Poisson shot noise processes under heavy-tailed shocks and actuarial applications. *Methodology and Computing in Applied Probability* 15(3), 655-682.
33. Cong, J.\*, Tan, K.S., **Weng, C.**, (2013). VaR-based optimal partial hedging. *ASTIN Bulletin* 43(3), 271-299.
34. **Weng, C.**, Zhang, Y., (2012). Characterization of multivariate heavy-tailed distribution families via copula. *Journal of Multivariate Analysis* 106, 178-186
35. Tan, K.S., **Weng, C.**, (2012). Enhancing insurer value using reinsurance and Value-at-Risk criterion. *The Geneva Risk and Insurance Review* 37(1), 109-140.
36. Tan, K.S., **Weng, C.**, Zhang, Y. (2011). Optimality of general reinsurance contracts under CTE risk measure. *Insurance: Mathematics and Economics* 49(2), 175-187.
37. Tan, K.S., **Weng, C.**, Zhang, Y. (2009). VaR and CTE criteria for optimal quota-share and stop-loss reinsurance. *North American Actuarial Journal* 13(4), 450-482.
38. **Weng, C.**, Zhang, Y., Tan, K.S., (2009). Ruin probabilities in a discrete time risk model with dependent risks of heavy tail. *Scandinavian Actuarial Journal* 2009(3), 205-218.
39. Zhang, Y., Shen, X.\*, **Weng, C.**, (2009). Approximation of the tail probability of randomly weighted sums and applications. *Stochastic Process and their Applications* 119(2), 655-675.
40. Cai, J., Tan, K.S., **Weng, C.**, Zhang, Y., (2008). Optimal reinsurance under VaR and CTE risk measures. *Insurance: Mathematics and Economics* 43(1), 185-196.
41. Zhang, Y., **Weng, C.**, (2006). An application of the  $\alpha$ -power approximation in multiple life insurance. *Insurance: Mathematics and Economics* 38(1), 98-112.
42. Zhang, Y., **Weng, C.**, (2006). On the correlation order. *Statistics and Probability Letters* 76, 1410-1416.
43. Zhang, Y., Lin, Z., **Weng, C.**, (2006). Some limiting properties on the bounds of present value functions of a life insurance portfolio. *Journal of Applied Probability* 43(4), 1155-1164.

## 2.2 Invited Talks and Conference Presentations

1. February 27, 2019. Department of Statistics and Actuarial Science, Hong Kong University.  
Title: *Eigen Portfolio Selection: A Robust Approach to Sharpe Ratio Maximization* (Invited)
2. February 25, 2019. Sun Yat-Sen University.  
Title: *Eigen Portfolio Selection: A Robust Approach to Sharpe Ratio Maximization* (Invited)
3. August 11, 2018. The Actuarial Research Conference 2018. London, Ontario, Canada.  
Title: *Index Insurance Design* (Contributed)
4. August 20, 2017. The 3rd ICSA - Canada Chapter Symposium. Vancouver, Canada.  
Title: *Regression tree credibility model* (Invited)
5. July 29, 2017. The 2017 Actuarial Research Conference. Atlanta, USA.  
Title: *Regression tree credibility model* (Contributed)
6. July 6, 2017. School of Mathematics and Statistics, Northeast Normal University, Changchun, China.  
Title: *Improved Global Minimum Variance Portfolio via Tail Eigenvalues Amplification* (Invited)
7. June 27, 2017. China Institute For Actuarial Science, Central University of Finance and Economics, Beijing,

- China.  
 Title: *Improved Global Minimum Variance Portfolio via Tail Eigenvalues Amplification* (Invited)
8. June 24, 2017. School of Mathematics, Zhejiang University, Hangzhou, China.  
 Title: *Improved Global Minimum Variance Portfolio via Tail Eigenvalues Amplification* (Invited)
  9. June 23, 2017. School of Data Sciences, Zhejiang University of Finance and Economics, Hangzhou, China.  
 Title: *Regression tree credibility model* (Invited)
  10. June 22, 2017. School of Statistics and Mathematics, Zhejiang Gongshang University, Hangzhou, China.  
 Title: *Regression tree credibility model* (Invited)
  11. June 19, 2017. School of Statistics and Information, Shanghai University of International Business and Economics, Shanghai, China.  
 Title: *Regression tree credibility model* (Invited)
  12. May 25, 2017. Department of Statistical and Actuarial Sciences, Western University, London, Canada.  
 Title: *Regression tree credibility model* (Invited)
  13. Dec 22, 2016. The 10th ICSA International Conference, Shanghai Jiao Tong University, Shanghai, China.  
 Title: *Regression tree credibility model* (Invited)
  14. Dec 18, 2016. The International Workshop on Engineering Statistics, East China Normal University, Shanghai, China  
 Title: *Regression tree credibility model* (Invited)
  15. July 29th, 2016. The 51st Annual Actuarial Research Conference. Twin Cities, USA.  
 Title: *Confidence Interval Estimation for VaR via Empirical Likelihood* (Contributed)
  16. July 26th, 2016. The 20th International Congress on Insurance: Mathematics and Economics. Atlanta, USA.  
 Title: *Group Weighted Principal Component Analysis for Quasi-Monte Carlo Simulation* (Contributed)
  17. May 31st, 2016. The 58th CORS Annual Conference. Banff, Canada.  
 Title: *CDF formulation for an optimal reinsurance problem* (Invited)
  18. Apr. 20, 2016. Department of Mathematics, Zhejiang University, Hangzhou, China.  
 Title: *CDF Formulation for an Optimal Reinsurance Problem* (Invited)
  19. Nov. 9th, 2015. Department of Mathematics, University of Connecticut, Storrs, USA.  
 Title: *Optimal reinsurance design: expectile and distortion risk measure based models* (Invited)
  20. Jul. 5th, 2015. International Conference on Financial and Insurance Risk Management. Beijing, China.  
 Title: *Marginal indemnification and CDF formulations for optimal reinsurance design* (Invited)
  21. Jul. 3rd, 2015. 2015 IMS-China International Conference on Statistics and Probability. Kuming, China.  
 Title: *Optimal multivariate quota-share reinsurance: A nonparametric mean-CVaR framework* (Invited)
  22. Jun. 17, 2015. The 43rd Annual Meeting of the Statistical Society of Canada. Halifax, Canada.  
 Title: *Optimal reinsurance design* (Invited)
  23. Mar. 11, 2015. Department of Mathematics, University of Illinois at Urbana-Champaign, Champaign, USA.  
 Title: *Optimal reinsurance design* (Invited)
  24. Oct. 6, 2014. Department of Mathematical Sciences, Lakehead University, Thunder Bay, Canada.  
 Title: *Optimal reinsurance design* (Invited)
  25. May 26, 2014. The 42nd Annual Meeting of the Statistical Society of Canada. Toronto, Canada.  
 Title: *CPPI under regime switching and transaction cost* (Contributed)

26. Jan. 08, 2014. Department of Mathematics, Zhejiang University, Hangzhou, China.  
Title: *CPPI under regime switching and transaction cost* (Invited)
27. Jan. 04, 2014. International Workshop on High-Dimensional Dependence and Copulas: Theory, Modeling, and Applications. Beijing, China.  
Title: *Sparse vine copulas* (Invited)
28. Sep. 20, 2013. School of Finance and Statistics, East China Normal University, Shanghai, China.  
Title: *Optimal partial hedging by minimizing VaR and CVaR* (Invited)
29. Sep. 10, 2013. Department of Mathematics, Zhejiang University, Hangzhou, China.  
Title: *Optimal partial hedging by minimizing VaR and CVaR* (Invited)
30. Aug. 23, 2013. School of Mathematics and Physics, The University of Queensland, Brisbane, Australia.  
Title: *Optimal partial hedging by minimizing VaR and CVaR* (Invited)
31. May 31, 2013. Lingnan College, Sun Yat-Sen University, Guangzhou, China.  
Title: *Optimal partial hedging by minimizing VaR and CVaR* (Invited)
32. May 30, 2013. Center for Financial Engineering and Risk Management, Sun Yat-Sen University, Guangzhou, China.  
Title: *Constant proportion portfolio insurance* (Invited)
33. May 27, 2013. Institute of Mathematical Science, University of Malaya, Kuala Lumpur, Malaysia.  
Title: *Constant proportion portfolio insurance* (Invited)
34. Jul. 7, 2012. China Institute For Actuarial Science, Central University of Finance and Economics, Beijing, China.  
Title: *Optimal reinsurance and partial hedging* (Invited)
35. Jun. 30, 2012. The 16th International Congress on Insurance: Mathematics and Economics. Hong Kong, China.  
Title: *Constant proportion portfolio insurance under trading cost: adaptive revision versus discrete revision* (Contributed)
36. Jul. 3, 2012. International Conference on Quantitative Finance and Risk Management. Changchun, China.  
Title: *Constant proportion portfolio insurance under regime switching exponential Lévy process* (Invited)
37. Jun. 5, 2012. The 40th Annual Meeting of the Statistical Society of Canada. Guelph, Canada.  
Title: *Constant proportion portfolio insurance under regime switching exponential Lévy process* (Contributed)
38. May 31, 2012. IMS FPS 2012: Workshop on Probability and Statistics in Finance. Berkeley, USA.  
Title: *Constant proportion portfolio insurance under regime switching exponential Lévy process* (Invited)
39. Feb. 14, 2012. Department of Mathematics, Zhejiang University, Hangzhou, China.  
Title: *An adaptive constant proportion portfolio insurance strategy* (Invited)
40. Jul. 3, 2011. STATISTICS 2011 CANADA / IMST 2011-FIM XX. Montreal, Canada.  
Title: *An adaptive constant proportion portfolio insurance strategy* (Contributed)
41. Sep. 3, 2010. Department of Mathematics, Zhejiang University, Hangzhou, China.  
Title: *Optimal reinsurance designs: from an insurer's perspective* (Invited)
42. Jun. 18, 2010. The 14th International Congress on Insurance: Mathematics and Economics. Toronto, Canada.  
Title: *Empirical-based optimal reinsurance models* (Contributed)
43. Aug. 1, 2009. The 44th Actuarial Research Conference. Madison, USA.  
Title: *An empirical-based approach to optimal reinsurance* (Contributed)

44. Aug. 14, 2008. The 43rd Actuarial Research Conference. Regina, Canada.  
Title: *Optimality of general reinsurance contracts under CTE risk measure* (Contributed)
45. Aug. 11, 2007. The 42nd Actuarial Research Conference. Moon Township, USA.  
Title: *Enhancing insurer value using reinsurance and Value-at-Risk criterion* (Contributed)
46. Aug. 10, 2006. The 41st Actuarial Research Conference. Montreal, Canada.  
Title: *Optimal reinsurance under VaR and CTE risk measures* (Contributed)

## 2.3 Research Grants

Year	Granting Agency	Title	Amount
2019-2020	Manulife Financial	Predicting Disability Claims	\$85000 (With Liqun Diao, and Yaoliang Yu)
2018-2021	Society of Actuaries	Maintaining Financial Stability in an Era of Changing Climate and Demographics	US\$297,000 (With Li, J.S.H., Feng, B., Kolkiewicz, A., Landriault, D., Li, B., Middleton, L., Saunders, D., Tan, K.S., Thistlethwaite, J., Wang, R., Wirjanto, T., Yang, F.)
2016-2021	NSERC Discovery Grant	Risk Prioritization in Actuarial Risk Management	\$18,000/year
2015	Society of Actuaries	Recursive Partitioning Methods for Credibility Theory	US\$11,000 (With Diao, L.)
2013-2017	Society of Actuaries	Integrated Risk Management: with Applications to Insurance Companies and other Financial Institutions	US \$495,000 (With Bernard, C., Boyle, P.P., Hardy, M.R., Kolkiewicz, A.W., Li, J.S.H., Saunders, D., Tan, K.S., and Wirjanto, T.S.)
2011-2016	NSERC Discovery Grant	Optimal Reinsurance Designs and Related Problems	\$12,000/year
2011-2016	NSERC	Early Career Research Supplement	\$5,000/year
2011	WatRISQ	Optimal Reinsurance	\$5,000
2010-2013	University of Waterloo	Start-up Grant	\$35,000

## 3 Teaching Activities

### 3.1 Courses Delivered

#### 3.1.1 Graduate Courses

Course Code, Enrolment, Course Title, Term

- ACTSC 611, 17 Financial Mathematics 1, Fall 2018
- ACTSC 631, 14 Financial Mathematics 3, Spring 2018

- ACTSC 971, 20 Finance 2 Winter 2018
- ACTSC 634, 18 Quantitative Risk Management Spring 2016
- ACTSC 964, 16, Topics in Actuarial Science: Quantitative Risk Management, Winter 2016
- ACTSC 611, 14, Financial Mathematics I, Fall 2014
- ACTSC 991, 12, Topics in Actuarial Science: Quantitative Risk Management, Spring 2014
- ACTSC 631, 14, Financial Mathematics III, Spring 2013
- ACTSC 991, 21, Topics in Actuarial Science: Quantitative Risk Management, Spring 2013
- ACTSC 611, 14, Financial Mathematics I, Fall 2012
- ACTSC 991, 12, Topics in Actuarial Science: Quantitative Risk Management, Spring 2012
- ACTSC 611, 17, Financial Mathematics I, Fall 2011

### 3.1.2 Undergraduate Courses

#### Course Code<sup>1</sup> Enrolment<sup>2</sup>, Course Title Term

- ACTSC 445/845, 53/3, Enterprise Quantitative Risk Management, Fall, 2018
- ACTSC 446/846, 66/2, Mathematics of Financial Markets, Spring, 2018
- ACTSC 445/845, 35/11, Quantitative Enterprise Risk Management, Fall, 2017
- ACTSC 446/846, 81/11, Mathematics of Financial Markets, Fall 2017
- ACTSC 446/846, 104/11, Mathematics of Financial Markets, Fall 2016
- ACTSC 431/831, 81/4, Loss Model 1, Fall 2016
- ACTSC 446/846, 92/3, Mathematics of Financial Markets, Winter 2016
- ACTSC 431/831, 72/9, Loss Model 1, Fall 2015
- ACTSC 431/831, 113/4, Loss Model 1, Fall 2014
- ACTSC 446/846, 115/16, Mathematical Models in Finance, Fall 2012
- ACTSC 431/831, 184/5, Loss Model 1, Spring 2012
- ACTSC 232, 145, Introduction to Actuarial Mathematics, Fall 2011
- ACTSC 231, 185, Mathematics of Finance, Winter 2011
- ACTSC 231-001, 219, Mathematics of Finance, Fall 2010
- ACTSC 231-002, 124, Mathematics of Finance, Fall 2010
- ACTSC 232, 77, Introduction to Actuarial Mathematics, Spring 2008

### 3.2 Undergraduate Courses Taught at Towson University

#### Course Code, Enrolment, Course Title, Term

- Math 312, 18, Theory of Interest, Spring 2010
- Math 211-003, 29, Calculus for Applications, Spring 2010
- Math 211-101, 30, Calculus for Applications, Spring 2010
- Math 312, 16, Theory of Interest, Fall 2009
- Math 273, 21, Calculus I, Fall 2009

<sup>1</sup>Courses of 400 level are also cross-listed with graduate courses of 800 level

<sup>2</sup>number of undergraduate students / number of graduate students.



### 3.3 Student Supervision

#### 3.3.1 Postdoctoral Fellow Supervision

- **Xiaole Xue**
  - ◇ Feb. 2019 - Jan. 2020
  - ◇ Research topic: *optimal control problems in finance and insurance*
- **Zhihan Gao**
  - ◇ Sep. 2015 - Aug. 2016
  - ◇ Research topic: *Optimal decision problems in actuarial science and finance*
  - ◇ Zhihan is currently working as a Senior Data Scientist at the Royal Bank of Canada (RBC), Toronto.

#### 3.3.2 Doctoral Thesis Supervision

- **Xiaoxue Deng** (co-supervised with Ken Seng Tan)
  - ◇ Ph.D. Candidate in Actuarial Science
  - ◇ Sep. 2018 - Present
  - ◇ Thesis title: *To be determined*
  - ◇ Research topic: *To be determined*
- **Yechao Meng** (co-supervised with Liqun Diao)
  - ◇ Ph.D. Candidate in Actuarial Science
  - ◇ May. 2018 - Present
  - ◇ Thesis title: *To be determined*
  - ◇ Research topic: *Predictive Analytics for Insurance and Financial Applications*
- **Zhiyi (Joey) Shen**
  - ◇ Ph.D. Candidate in Actuarial Science
  - ◇ Sep. 2016 - Present
  - ◇ Thesis title: *To be determined*
  - ◇ Research topic: *Least-Squares Monte Carlo simulation and applications in finance and insurance*
- **Danqiao Guo** (co-supervised with Tony S. Wirjanto)
  - ◇ Ph.D. candidate in Statistics
  - ◇ Sep. 2015 - Present
  - ◇ Thesis title: *A statistical response to challenges in vast portfolio selection*
  - ◇ Research topic: *Portfolio construction in high-dimensional settings.*
- **Hongcan Lin** (co-supervised with David Saunders)
  - ◇ Ph.D. in Actuarial Science
  - ◇ Sep. 2014 - Oct. 2018
  - ◇ Thesis title: *Applications of Stochastic Control to Portfolio Selection Problems*
  - ◇ First position: Senior Analyst at TD bank, Toronto
- **Jingong Zhang** (co-supervised with Ken Seng Tan)
  - ◇ Ph.D. in Actuarial Science
  - ◇ Sep. 2013 - Jun. 2018
  - ◇ Thesis title: *Risk management with basis risk*
  - ◇ Jingong was selected as one of the five new Society of Actuaries Hickman Scholars for 2015-2016 and 2016-2017
  - ◇ First position: tenure-track Assistant Professor at Nanyang Business School, Nanyang Technological University, Singapore
- **Dezhao Han** (co-supervised with Ken Seng Tan)

- ◇ Ph.D. in Actuarial Science
- ◇ Sep. 2012 - Dec. 2016
- ◇ Thesis title: *Sparse Models in High-dimensional Dependence Modelling and Index Tracking*
- ◇ First position: Senior Analyst at Scotial bank, Toronto

- **Chao Qiu** (co-supervised with Mary R. Hardy)

- ◇ Ph.D. in Actuarial Science
- ◇ Sep. 2010 - Jan. 2013
- ◇ Thesis title: *Option Pricing and Hedging Analysis under Regime-switching Models*
- ◇ First position: *Instructor (tenure-track), University of Calgary, Calgary, Canada*

### 3.3.3 Visiting Doctoral Student Supervision

- **Ying Zou** (from Zhejiang University, Hangzhou, China)

- ◇ Visit University of Waterloo under my supervision during Oct. 2018 - Sep. 2019

- **Chuilu Kong** (from Shandong University, Jinan, China)

- ◇ Visit University of Waterloo under my supervision during Sep. 2017 - Aug. 2018
- ◇ Work on optimal control with partial information

- **Xiaole Xue** (from Shandong University, Jinan, China)

- ◇ Visit University of Waterloo under my supervision during Sep. 2016 - Aug. 2017
- ◇ Work on actuarial/finance applications of backward stochastic differential equations

- **Haoze Sun** (from Zhejiang University, Hangzhou, China)

- ◇ Visit University of Waterloo under my supervision during Nov. 2015 - Apr. 2016
- ◇ Work on statistical inference for empirical optimization models in finance and insurance

- **Yunzhou Zhou** (from Zhejiang University, Hangzhou, China)

- ◇ Visit University of Waterloo under my supervision during Nov. 2012 - Jun. 2013
- ◇ Work on the topic of optimal reinsurance design

### 3.4 Master Thesis Supervision

**Year, Name Essay Title**

1. 2019, Ruitong Jiang, in progress

### 3.5 Master Essay Supervision

**Year, Name Essay Title**

1. 2019, Zixin Xu, in progress
2. 2019, Chi Zhang, in progress
3. 2018, Hailin Yang, A Review: Cyber Risk Management and Cyber Insurance
4. 2017, Yechao Meng, Residual estimation error in capital adequacy
5. 2017, Shuying Yan, Regression credibility model
6. 2016, Di Ai, Matching quantiles estimation and index tracking
7. 2016, Tianshi Yao, Dynamic longevity hedging with q-forwards and CBD model
8. 2016, Chenjing Cui, A hypothesis test for threshold selection in peak-over-threshold extreme value models

9. 2016, Tiantian Yang, Hedging longevity/mortality risk with mortality immunization
10. 2016, Xinle Sheng, Estimation of operational risk capital
11. 2016, Yiming Wang, Inflation forecasting with ARIMA and GARCH models
12. 2015, Bing Wang, Optimal reinsurance design under expectile risk measure
13. 2015, Chi Zhang, Portfolio selection with expectiles
14. 2015, Ya Yu, Robust portfolio selection in estimation errors
15. 2015, Yi Zhang, Pricing California earthquake catastrophe bond by Gamma approximation
16. 2014, Ning Chang, An empirical optimal reinsurance under Dutch premium principle
17. 2014, Jing Lin, Minimize tracking error using nonnegative-lasso
18. 2014, Hongcan Lin, CPPI with regime switching multiplier
19. 2014, Guanglin Chen, Empirical optimal reinsurance model
20. 2013, Siying Wei, A non-parametric approach for optimal sparse mean-CVaR portfolio selection
21. 2013, Wenrui Chen, Discrete-time CPPI with proportional trading cost and exposure cap
22. 2013, Ye Dong, Dependence modelling using vine copulas
23. 2013, Wanxuan Wang, Two tests on time-varying dependence structure
24. 2013, Wenjing Miao, Discrete CPPI strategy with regime switching
25. 2013, Rui Xu, Life contingent option pricing under double-exponential jump-diffusion models
26. 2013, Anderson St. Hill, Modeling insurance claims by combining mixture Erlang and the generalized Pareto distributions
27. 2012, Ryan Samaratunga, Uncovering the value of private reinsurance using a federal-provincial reserve fund process for crop insurance in Canada
28. 2012, Tianmeng Jiang, Sensitivity analysis for an investment-consumption optimization problem
29. 2012, Hanhui Xie, Effectiveness of discrete time CPPI under skewed distributions
30. 2012, Yan Wang, Discrete CPPI and adaptive CPPI with jump diffusion
31. 2012, Qiang Fu, Adaptive discrete-time and continuous-time CPPI method with proportional transaction costs

### 3.6 Thesis/Essay Examination

#### 3.6.1 Member of a Doctoral Thesis Committee

1. **Junsen Tang**, 2018, Ph.D. in Actuarial Science, University of Waterloo  
Thesis title: *Pricing and Hedging of Path-dependent Products in Finance and Insurance*
2. **Saisai Zhang**, 2018, Ph.D. in Actuarial Science, University of Waterloo  
Thesis title: *Optimal Retirement Planning: Scenario Generation, Preferences and Objectives*
3. **Xiaobai Zhu**, Thesis Proposal. 2018, Ph.D. in Actuarial Science, University of Waterloo  
Thesis title: *Risk Sharing in Hybrid Pension Plans*
4. **Shahram Heydari**, 2017, Ph.D. in Civil and Environmental Engineering, University of Waterloo  
Thesis title: *Bayesian Nonparametric Dirichlet Process Mixture Modeling in Transportation Safety Studies*
5. **Ying Wang**, 2016, Ph.D. in Actuarial Science, University of Waterloo  
Thesis title: *Risk Measures and Capital Allocation Principles for Risk Management*
6. **Yanxin Liu**, 2016, Ph.D. in Actuarial Science, University of Waterloo  
Thesis title: *Modeling and Managing Longevity Risk: Models and Applications*
7. **Jianfa Cong**, 2013, Ph.D. in Actuarial Science, University of Waterloo  
Thesis title: *Risk Measure Approaches to Partial Hedging and Reinsurance*
8. **Xiugang Wu**, 2013, Ph.D. in Electrical and Computer Engineering, University of Waterloo  
Thesis title: *Coding Schemes for Multiple-Relay Channels*

9. **Subodha Hettiachchi Gunawardena**, 2013, Ph.D. in Electrical and Computer Engineering, University of Waterloo  
Thesis title: *Modeling and Analysis of Voice and Data in Cognitive Radio Networks*

### 3.6.2 Member of a Master Thesis Committee

1. **Xiyue Han**, 2018. Master of Mathematics in Actuarial Science Thesis title: *On the Extrema of Functions in the Takagi Class*
2. **Xinghao Wang**, 2016. Master of Mathematics in Actuarial Science  
Thesis title: *Conditional Scenario Generation with a GVAR Model*
3. **Wai Man Ng**, 2016. Master of Quantitative Finance  
Thesis title: *Bias in the Estimate of a Mean Reversion Parameter for a Fractional Ornstein-Uhlenbeck Process*
4. **Xin Hu**, 2015. Master of Quantitative Finance  
Thesis title: *A Copula-based Quantile Risk Measure Approach to Hedging under Regime Switching*
5. **Pak Keung Chan**, 2015. Master of Quantitative Finance  
Thesis title: *Pricing Asian Options by the Method of Moments Matching*
6. **Chang Liu**, 2015. Master of Quantitative Finance  
Thesis title: *Optimal Execution Strategies: A Computational Finance Approach*
7. **David Melkuev**, 2014. Master of Quantitative Finance  
Thesis title: *Asset Return Correlations in Episodes of Systemic Crises*
8. **Xiao Jiang**, 2013. Master of Mathematics in Actuarial Science  
Thesis title: *Bounds on Aggregate Assets*
9. **Michael Yin-Hei Cheng**, 2013. Master of Quantitative Finance  
Thesis title: *Pricing Derivatives by Gram-Charlier Expansions*
10. **Anyi Zhu**, 2013. Master of Quantitative Finance  
Thesis title: *Implied Volatility Modelling*
11. **Ziqun Ye**, 2013. Master of Mathematics in Actuarial Science  
Thesis title: *The Black-Scholes and Heston Models for Option Pricing*
12. **Mingyu Fang**, 2012. Master of Mathematics in Actuarial Science  
Thesis title: *Lognormal Mixture Model for Option Pricing with Applications to Exotic Options*
13. **Hyunjong Jin**, 2011. Master of Quantitative Finance  
Thesis title: *Optimal Portfolio Rule: When There Is Uncertainty in the Parameter Estimates*

### 3.6.3 Second Reader for Master Essay

- **11 Essays in 2018:** Ming Da, Fan Xie, Kibeom Lee, Jing Tu, Jiayi (Jessie) Du, Shiyi Zhao, Xueqiao Li, Kun Zhang, Tianyi Liu, Rui Jie, Thi Quynh Trang Bui
- **10 Essays in 2017:** Daiwen Dai, Lin Gan, Hiu Yan Szeto, Jiangxue Wu, Xiaoxuan Zhao, Zeying Song, Payal Jhonsa, Yifei Song, Yiqin Chen, Yuqing, Jin
- **11 Essays in 2016:**  
Ernest Agyemang Duah, Chong Chen, Hongfeng Chen, Terry Fung, Hanling Liao, Xinyue Liu, Anqi Lu, Dongheng Lu, Xiangtao (Eddy) Liu, Guanqi Pan, Ye Yang, Chenrong Ye, Zhengzheng Yang, Jiabin Zhang, Tianli Zhang
- **13 Essays in 2015:** Shaoxuan Mo, Yun (Eric) Long, Leiguang Chen, Guanqi (Jody) Pan, Shijun Fan, Chunyi Shan, Chenzhe Liu, Shuai (Alex) Yang, Xiaoran (Mandy) Chen, Xin Chen, Zhanyu (Joe) Ning, Shui Wang, Hanzhen Zheng

- **8 Essays in 2014:** Changwu Chen, Doan Doan, Jiandi Dong, Kevin Granville, Steve Hobbs, Anusha Kirupanathan, Yufei Li, Zeyu Wang
- **16 Essays in 2013:** Xinxin Gao, Yang Hu, Qianyi Huang, Sejong Lee, Qiuqing Li, Nian Liu, Qianru Liu, Volodymyr Lozynskyy, Xingwen Lu, Siyuan Sheng, Craig Silnieks, Wenjia Tan, Zi Tian, Sangsang Tu, Yu Wang, Yanhui Wu
- **8 Essays in 2012:** Dan Chen, Yingying Chen, Elaine Yin Guo, Yanxin Liu, Di Xu, Lei Wan, Yuxi Wang, Xun Wei
- **5 Essays in 2011:** Jiale Li, Xin Ma, Khary Redwood, Dapeng Wang, Jiajia Wang
- **2 essays in 2010:** Shuo Lu, Yitian Qin

## 4 Service

### 4.1 External Committees

- Jul. 2018 - Jun. 2020, Academic Research Committee, Canadian Institute of Actuaries
- Jul. 2015 - Jun. 2018, Academic Research Subcommittee, Canadian Institute of Actuaries

### 4.2 Internal Committees

- Jul. 2018 - Jun. 2019, Department Ph.D. Comprehensive Exam Committee (Chair)
- Sep. 2017 - Jun. 2019, University Ph.D. Chairs Pool
- Jul. 2017 - Jun. 2018, Department Ph.D. Comprehensive Exam Committee
- Jul. 2017 - Jun. 2018, Master of Quantitative Finance Admissions Committee
- Jul. 2016 - Jun. 2017, Department Appointments Committee
- Jul. 2016 - Jun. 2017, Master of Quantitative Finance Admissions Committee
- Jul. 2016 - Jun. 2017, Department Ph.D. Comprehensive Exam Committee
- Jul. 2015 - Jun. 2016, Master of Quantitative Finance Admissions Committee
- Sep. 2015 - Feb. 2016, Department Seminar Committee
- Jul. 2014 - Jun. 2015, Department Ph.D. Comprehensive Exam Committee
- Jul. 2012 - Jun. 2013, Department Web Committee
- Jul. 2011 - Jun. 2013, Department Seminar Committee
- Jul. 2011 - Jun. 2014, Department Library Representative

### 4.3 Other University Service

- Sep 2017 - Aug 2019. PhD Chairs Pool  
Role: *Chair some Ph.D. external thesis examinations out of the Faculty of Mathematics*
- May 2014 - Present. Actuarial Mentorship Program  
Role: *Provide mentorship to three 4th year undergraduate actuarial students per term on average*

- Sep. 2015 - Present. Optimal Control Seminar  
Role: *Co-organize (with Bin Li) weekly seminars on the topic of Optimal Control.*
- May 2011 - Jul. 2011. Graduate Student Seminar  
Role: *Organize weakly graduate student seminars on the topic of Asymptotic Statistics; Delivered two seminars on Stochastic Convergence to an audience of about ten Ph.D. students and three department faculty members.*
- Chair Ph.D. Thesis Proposal and Defense for  
Tianxiang Shi (Dec. 7, 2011), Min Chen (Apr. 25, 2013), Kai Liu (Apr. 28, 2015), Mirabelle Huynh (May 7, 2015)

## 5 Professional Activities

### 5.1 Conference Organization

- Organizing Committee member, The 2017 Advances in Predictive Analytics Conference, University of Waterloo, December 1-2, 2017.
- Organizing Committee member, The 6th Canadian Symposium on Teaching and Research Excellence (CanSTARE VI), University of Waterloo, September 2-3, 2017.
- Organizer and chair for the session “ Risk Prioritization for Financial Risk Management ” of The 58th CORS Annual Conference, Banff, Canada. May 31, 2016.
- Organizing Committee member, The 4th Workshop on Insurance Mathematics With a Special Session on Longevity and Pension Risks, University of Waterloo, Waterloo, Canada. Feb. 5 - 6, 2016.
- Sessional Chair for the session “Actuarial Science and Finance 3” of The 42nd Annual Meeting of the Statistical Society of Canada. May 28, 2014
- Sessional Chair for Quantitative Behavioural Finance Conference, University of Waterloo, Apr. 5, 2013
- WatRISQ Sessional Chair of University of Waterloo Grad Conference, Apr. 26, 2011

### 5.2 Refereeing for Scholarly Journals

◆ ASTIN Bulletin ◆ Applied Mathematics and Computation ◆ Applied Mathematics and Optimization ◆ Applied Mathematics: A Journal of Chinese Universities ◆ Communications in Statistics - Theory and Methods ◆ Communications in Statistics - Simulation and Computation ◆ Economic Modelling ◆ ESAIM Probability and Statistics Journal ◆ Extremes ◆ European Journal of Operational Research ◆ Intelligent Systems in Accounting, Finance and Management ◆ International Journal of Control ◆ Insurance: Mathematics and Economics ◆ Journal of Multivariate Analysis ◆ Journal of Applied Probability and Statistics ◆ Journal of Risk and Financial Management ◆ Journal of Theoretical Probability ◆ Journal of Systems Science and Complexity ◆ Managerial Finance ◆ Mathematics and Financial Economics ◆ Mathematical and Computer Modelling ◆ Nonlinearity ◆ North American Actuarial Journal ◆ North American Journal of Economics and Finance ◆ Optimal Control Applications and Methods ◆ Risks ◆ SIAM Journal on Financial Mathematics ◆ Statistics and Risk Modeling ◆ Scandinavian Actuarial Journal ◆ Science China Mathematics ◆ Statistics and Probability Letters ◆ Tbilisi Mathematical Journal ◆ European Actuarial Journal

### **5.3 Refereeing for Grants**

1. 2018. Review one grant application for Natural Sciences and Engineering Research Council of Canada - Discovery Program.
2. 2015. Review one grant application for National Security Agency (NSA) Mathematical Sciences Grants Program (USA).