Curriculum Vitae of Guojun Gan

Personal Information

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Short Biography

Guojun Gan is an Associate Professor in the Department of Mathematics at the University of Connecticut, where he has been since August 2014. Prior to that, he worked at a large life insurance company in Toronto, Canada for six years and a hedge fund in Oakville, Canada for one year. He received a BS degree from Jilin University, Changchun, China, in 2001 and MS and PhD degrees from York University, Toronto, Canada, in 2003 and 2007, respectively. He is also a Fellow of the Society of Actuaries (FSA). His research interests are in the interdisciplinary areas of actuarial science and data science. He has published several books and papers on a variety of topics, including data clustering, variable annuity, applied statistics, programming, and mathematical finance. He has received several research grants from the Society of Actuaries and has been invited to give talks at several universities and conferences around the world. According to Google Scholar, his work has been cited more than 3,400 times.

Academic Appointments

8/2020 – present	Associate Professor, Department of Mathematics, University of Connecticut, Storrs, CT
8/2014 – 7/2020	Assistant Professor, Department of Mathematics, University of Connecticut, Storrs, CT

Education

9/2003 – 4/2007	*PhD, Applied Mathematics*, York University, Canada
1/2002 – 8/2003	*MS, Applied Mathematics*, York University, Canada
9/1998 – 7/2001	*BS, Computational Mathematics and Applied Software*, Jilin University, China

Professional Designation

3/2018	*FSA (Fellow of the Society of Actuaries)*

Work Experience

7/2010 – 4/2014	Director, Variable Annuity Hedging Research & Development, Global Variable Annuity Hedging Department, Manulife Financial, Toronto, ON, Canada
4/2008 – 7/2010	Manager, Variable Annuity Hedging Research & Development, Global Variable Annuity Hedging Department, Manulife Financial, Toronto, ON, Canada

5/2007 – 4/2008 Quantitative Analyst, Trading Office, Lake Shore Group of Companies, Oakville, ON, Canada

Grants

6/2021 – 5/2022 *Compositional Data Regression in Insurance with Exponential Family PCA*, $17,000, Committee on Knowledge Extension Research (CKER) Individual Grant (PI: Guojun Gan, Co-PI: Emiliano Valdez; my portion: $8,500)

6/2019 – 5/2020 *Analysis of Prescription Drug Utilization with Beta Regression Models*, $16,000, Committee on Knowledge Extension Research (CKER) Individual Grant (PI: Emiliano Valdez, Co-PI: Guojun Gan; my portion: $8,000)

6/2018 – 5/2019 *Valuation of Large Variable Annuity Portfolios with Rank Order Kriging*, $15,000, Committee on Knowledge Extension Research (CKER) Individual Grant (PI: Guojun Gan, Co-PI: Emiliano Valdez; my portion: $7,500)

5/2018 *Educational Institution Grant*, $7,500, Society of Actuaries (This grant was awarded to support the Actuarial Science Program in recognition of my FSA designation)

6/2017 – 5/2018 *Fat-tailed Regression Modeling with Spliced Distributions*, $14,000, Committee on Knowledge Extension Research (CKER) Individual Grant (PI: Emiliano Valdez, Co-PI: Guojun Gan; my portion: $7,000)

4/2017 – 3/2020 *Applying Data Mining Techniques in Actuarial Science*, $157,300, Society of Actuaries (SOA) CAE Grant (PI: Emiliano Valdez, Co-PI: Guojun Gan and Jeyaraj Vadiveloo) PI for the component "Model Efficiency in Variable Annuity Products," which consists of one third of the project (my portion: $52,433)

6/2016 – 5/2017 *Regression Modeling for the Valuation of Large Variable Annuity Portfolios*, $13,000, Committee on Knowledge Extension Research (CKER) Individual Grant (PI: Guojun Gan, Co-PI: Emiliano Valdez; my portion: $6,500)

8/2014 – 8/2017 *Start-up Grant*, $20,000, University of Connecticut

2014 *Measure, Probability, and Mathematical Finance*, $400, Independent Scholar Grant, Canadian Academy of Independent Scholars

2013 *Measure, Probability, and Mathematical Finance*, $350, Independent Scholar Grant, Canadian Academy of Independent Scholars

2012 *Measure, Probability, and Mathematical Finance*, $500, Independent Scholar Grant, Canadian Academy of Independent Scholars

2011 *Data Clustering in C++*, $500, Independent Scholar Grant, Canadian Academy of Independent Scholars

Publications

Working and Submitted Papers

1. **Guojun Gan** and Michael Kwok-Po Ng. k-means clustering with outlier detection. In preparation, 2020

2. **Guojun Gan**. Application of neural networks for imputing missing values in insurance data. In preparation, 2020
3. Himchan Jeong, **Guojun Gan**, and Emiliano A Valdez. Premium optimization with policyholder loyalty. In preparation, 2020
4. Banghee So, **Guojun Gan**, and Emiliano A. Valdez. Data mining techniques for actuaries: An overview. In preparation, 2020
5. Zhiyu Quan, Zhiguo Wang, **Guojun Gan**, and Emiliano Valdez. Hybrid tree-based models for insurance claims. Submitted for publication, 2020
6. Shuang Yin, Dipak Dey, Emiliano A. Valdez, **Guojun Gan**, and Jeyaraj Vadiveloo. Skewed link regression models for imbalanced binary response with applications to life insurance. Submitted for publication, 2020
7. Runhuan Feng, **Guojun Gan**, and Ning Zhang. Variable annuity pricing, valuation, and risk management: A survey. Submitted for publication, 2020

Books

1. **Guojun Gan**, Chaoqun Ma, and Jianhong Wu. *Data Clustering: Theory, Algorithms and Applications*. SIAM Press, Philadelphia, PA, 2nd edition, 2020. URL: https://my.siam.org/Store/Product/viewproduct/?ProductId=32863116
2. **Guojun Gan** and Emiliano A Valdez. *Metamodeling for Variable Annuities*. Chapman & Hall/CRC Press, Boca Raton, FL, 2019. URL: https://www.crcpress.com/Metamodeling-for-Variable-Annuities/Gan-Valdez/p/book/9780815348580
3. **Guojun Gan** and Emiliano Valdez. *Actuarial Statistics with R: Theory and Case Studies*. ACTEX Publications, Winsted, CT, 2018. URL: https://www.actexmadriver.com/product.aspx?id=453143268
4. **Guojun Gan**. *An Introduction to Excel VBA Programming: With Application in Finance and Insurance*. Chapman & Hall/CRC Press, Boca Raton, FL, USA, 2017. URL: http://amzn.to/2q3sBpI
5. **Guojun Gan**, Chaoqun Ma, and Hong Xie. *Measure, Probability, and Mathematical Finance: A Problem-Oriented Approach*. John Wiley & Sons, Inc., Hoboken, NJ, 2014. URL: http://amzn.to/2oBgNJV
6. **Guojun Gan**. *Data Clustering in C++: An Object-Oriented Approach*. Data Mining and Knowledge Discovery Series. Chapman & Hall/CRC Press, Boca Raton, FL, USA, 2011. doi:10.1201/b10814
7. **Guojun Gan**, Chaoqun Ma, and Jianhong Wu. *Data Clustering: Theory, Algorithms and Applications*. ASA-SIAM Series on Statistics and Applied Probability. SIAM Press, Philadelphia, PA, 2007. doi:10.1137/1.9780898718348

Journal Papers

1. Zhiyu Quan, **Guojun Gan**, and Emiliano A Valdez. Tree-based models for variable annuity valuation: Parameter tuning and empirical analysis. *Annals of Actuarial Science*, 2021. Accepted. doi:10.1017/S1748499521000075
2. **Guojun Gan** and Emiliano A. Valdez. Analysis of prescription drug utilization with beta regression models. *North American Actuarial Journal*, 2021. Accepted. doi:10.1080/10920277.2021.1890127

3. Shuang Yin, **Guojun Gan**, Emiliano A. Valdez, and Jeyaraj Vadiveloo. Applications of clustering with mixed type data in life insurance. *Risks*, (3):47, 2021
4. **Guojun Gan** and Emiliano A Valdez. Data clustering with actuarial applications. *North American Actuarial Journal*, 24(2):168–186, 2020. doi:10.1080/10920277.2019.1575242
5. **Guojun Gan** and Emiliano A Valdez. Valuation of large variable annuity portfolios with rank order kriging. *North American Actuarial Journal*, 24(1):100–107, 2020. doi:10.1080/10920277.2019.1617169
6. **Guojun Gan** and Emiliano A Valdez. Fat-tailed regression modeling with spliced distributions. *North American Actuarial Journal*, 22(4):554 – 573, 2018. doi:10.1080/10920277.2018.1462718
7. **Guojun Gan** and Emiliano A Valdez. Nested stochastic valuation of large variable annuity portfolios: Monte Carlo simulation and synthetic datasets. *Data*, 3(3):31, 2018. doi:10.3390/data3030031
8. **Guojun Gan**. Valuation of large variable annuity portfolios using linear models with interactions. *Risks*, 6(3):71, 2018. doi:10.3390/risks6030071
9. Himchan Jeong, **Guojun Gan**, and Emiliano A. Valdez. Association rules for understanding policyholder lapses. *Risks*, 6(3):69, 2018. doi:10.3390/risks6030069
10. **Guojun Gan** and Emiliano A Valdez. Regression modeling for the valuation of large variable annuity portfolios. *North American Actuarial Journal*, 22(1):40–54, 2018. doi:10.1080/10920277.2017.1366863
11. **Guojun Gan** and Emiliano A Valdez. Valuation of large variable annuity portfolios: Monte Carlo simulation and synthetic datasets. *Dependence Modeling*, 5:354–374, 2017. doi:10.1515/demo-2017-0021
12. **Guojun Gan** and Emiliano A Valdez. Modeling partial greeks of variable annuities with dependence. *Insurance: Mathematics and Economics*, 76:118–134, 2017. doi:10.1016/j.insmatheco.2017.07.006
13. Seyed Amir Hejazi, Kenneth R Jackson, and **Guojun Gan**. A spatial interpolation framework for efficient valuation of large portfolios of variable annuities. *Quantitative Finance and Economics*, 1(2):125–144, 2017. doi:10.3934/QFE.2017.2.125
14. **Guojun Gan** and Michael Kwok-Po Ng. k-means clustering with outlier removal. *Pattern Recognition Letters*, 90:8–14, 2017. doi:10.1016/j.patrec.2017.03.008
15. **Guojun Gan** and X. Sheldon Lin. Efficient greek calculation of variable annuity portfolios for dynamic hedging: A two-level metamodeling approach. *North American Actuarial Journal*, 21(2):161–177, 2017. doi:10.1080/10920277.2016.1245623
16. **Guojun Gan** and Emiliano A Valdez. An empirical comparison of some experimental designs for the valuation of large variable annuity portfolios. *Dependence Modeling*, 4(1):382–400, 2016. doi:10.1515/demo-2016-0022
17. **Guojun Gan**, Qiujun Lan, and Shiyang Sima. Scalable clustering by truncated fuzzy c-means. *Big Data and Information Analytics*, 1(2/3):247–259, July 2016. doi:10.3934/bdia.2016007
18. Michelle Carey, Shuang Wu, **Guojun Gan**, and Hulin Wu. Correlation-based iterative clustering methods for time course data: the identification of temporal gene response modules for influenza infection in humans. *Infectious Disease Modelling*, 1(1):28–39, 2016. doi:10.1016/j.idm.2016.07.001

19. **Guojun Gan**, Yuping Zhang, and Dipak K. Dey. Clustering by propagating probabilities between data points. *Applied Soft Computing*, 41:390–399, 2016. doi:10.1016/j.asoc.2016.01.034

20. **Guojun Gan** and Kun Chen. A soft subspace clustering algorithm with log-transformed distances. *Big Data and Information Analytics*, 1(1):93 – 109, 2016. doi:10.3934/bdia.2016.1.93

21. **Guojun Gan** and X. Sheldon Lin. Valuation of large variable annuity portfolios under nested simulation: A functional data approach. *Insurance: Mathematics and Economics*, 62:138–150, 2015. doi:10.1016/j.insmatheco.2015.02.007

22. **Guojun Gan** and Michael Kwok-Po Ng. Subspace clustering with automatic feature grouping. *Pattern Recognition*, 48(11):3703–3713, 2015. doi:10.1016/j.patcog.2015.05.016

23. **Guojun Gan** and Michael Kwok-Po Ng. Subspace clustering using affinity propagation. *Pattern Recognition*, 48(4):1451–1460, 2015. doi:10.1016/j.patcog.2014.11.003

24. **Guojun Gan**. Application of data clustering and machine learning in variable annuity valuation. *Insurance: Mathematics and Economics*, 53(3):795–801, 2013. doi:10.1016/j.insmatheco.2013.09.021

25. **Guojun Gan**, Jianhong Wu, and Zijiang Yang. A genetic fuzzy k-modes algorithm for clustering categorical data. *Expert Systems with Applications*, 36(2):1615–1620, 2009. doi:10.1016/j.eswa.2007.11.045

26. **Guojun Gan** and Jianhong Wu. A convergence theorem for the fuzzy subspace clustering (FSC) algorithm. *Pattern Recognition*, 41(6):1939–1947, 2008. doi:10.1016/j.patcog.2007.11.011

27. **Guojun Gan** and Jianhong Wu. Subspace clustering for high dimensional categorical data. *ACM SIGKDD Explorations Newsletter*, 6(2):87–94, 2004. doi:10.1145/1046456.1046468

Conference Papers

1. Bowen Zhao, Xi Xiao, **Guojun Gan**, Bin Zhang, and Shutao Xia. Maintaining discrimination and fairness in class incremental learning. In *2020 IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, pages 13205 – 13214, 2020. doi:10.1109/CVPR42600.2020.01322

2. Bowen Zhao, Xi Xiao, Wanpeng Zhang, Bin Zhang, **Guojun Gan**, and Shutao Xia. Self-paced probabilistic principal component analysis for data with outliers. In *Proceedings of the 45th International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2020. doi:10.1109/ICASSP40776.2020.9054487

3. Xiaojuan Chen, Wei Luo, **Guojun Gan**, and Gang Li. Fast evaluation of large variable annuity portfolios via transfer learning. In *Proceedings of the 16th Pacific Rim International Conference on Artificial Intelligence (PRICAI 2019) Part III*, pages 716 – 728, 2019. doi:10.1007/978-3-030-29894-4_57

4. Xiaojuan Chen, Wei Luo, **Guojun Gan**, and Gang Li. Deep neighbor embedding for accurate evaluation of large portfolios of variable annuities. In *Proceedings of the 12th International Conference on Knowledge Science, Engineering and Management (KSEM 2019)*, pages 472 – 480, 2019. doi:10.1007/978-3-030-29551-6_42

5. **Guojun Gan**, Zhiyu Quan, and Emiliano A Valdez. Machine learning techniques for variable annuity valuation. In *Proceedings of the 4th International Conference on Big Data and Information Analytics*, 2018. doi:10.1109/BigDIA.2018.8632794
6. **Guojun Gan** and Jimmy Huang. A data mining framework for valuing large portfolios of variable annuities. In *Proceedings of the 23rd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, pages 1467–1475, 2017.
   This paper was accepted to KDD 2017 for oral presentation. In 2017, a total of 396 papers were submitted to the Applied Data Science track, of which 35 were accepted for oral presentation and 50 were accepted as posters. doi:10.1145/3097983.3098013
7. Jeyaraj Vadiveloo, Gao Niu, Emiliano A Valdez, and **Guojun Gan**. Unlocking reserve assumptions using retrospective analysis. In *Actuarial Sciences and Quantitative Finance: ICASQF 2016*, volume 214 of *Springer Proceedings in Mathematics & Statistics*, pages 25–48, 2017. doi:10.1007/978-3-319-66536-8_2
8. **Guojun Gan**. Application of metamodeling to the valuation of large variable annuity portfolios. In *Proceedings of the Winter Simulation Conference*, pages 1103–1114, Piscataway, NJ, 2015. IEEE Press. doi:10.1109/WSC.2015.7408237
9. **Guojun Gan**. A multi-asset Monte Carlo simulation model for the valuation of variable annuities. In *Proceedings of the Winter Simulation Conference*, pages 3162–3163, Piscataway, NJ, 2015. IEEE Press. doi:10.1109/WSC.2015.7408450
10. **Guojun Gan**, Jialun Yin, Yulia Wang, and Jianhong Wu. Complex data clustering: From neural network architecture to theory and applications of nonlinear dynamics of pattern recognition. In *Proceedings of the International Symposium on Mathematical and Computational Biology*, pages 85–106. World Scientific, 2013. doi:10.1142/9789814602228_0005
11. Zijiang Yang and **Guojun Gan**. Application of fuzzy classification in bankruptcy prediction. In *Proceedings of the 4th international conference on Intelligent Computing*, pages 921–928, 2008. doi:10.1007/978-3-540-87442-3_113
12. **Guojun Gan**, Jianhong Wu, and Zijiang Yang. A fuzzy subspace algorithm for clustering high dimensional data. In *Proceedings of the second International Conference on Advanced Data Mining and Applications (ADMA)*, pages 271–278. Springer, 2006. doi:10.1007/11811305_30
13. **Guojun Gan**, Jianhong Wu, and Zijiang Yang. PARTCAT: A subspace clustering algorithm for high dimensional categorical data. In *Proceedings of the IEEE International Joint Conference on Neural Networks*, pages 4406–4412, 2006. doi:10.1109/IJCNN.2006.247041
14. **Guojun Gan**, Zijiang Yang, and Jianhong Wu. A genetic k-modes algorithm for clustering categorical data. In *Proceedings of the first International Conference on Advanced Data Mining and Applications (ADMA)*, pages 195–202. Springer, 2005. doi:10.1007/11527503_23

Other Publication

1. **Guojun Gan**. Data and systems. In Edward W. Frees, editor, *Loss Data Analytics*, chapter 13. Open Actuarial Textbooks, 2018. URL: https://ewfrees.github.io/Loss-Data-Analytics/

Presentations

Invited Talks

1. *Analysis of Prescription Drug Utilization with Beta Regression Models*, Department of Financial Mathematics in the School of Mathematics, Jilin University, Virtually, July 15, 2021
2. *Analysis of Prescription Drug Utilization with Beta Regression Models*, Business School, University of New South Wales, Virtually, June 9, 2021
3. *Self-Paced Probabilistic Principal Component Analysis for Data with Outliers*, Casualty Actuaries of The Northwest (CANW) Spring meeting, Virtually, June 4, 2021
4. *Self-Paced Probabilistic Principal Component Analysis for Data with Outliers*, UCSB InsurTech Summit, Virtually, January 29, 2021
5. *Analysis of Prescription Drug Utilization with Beta Regression Models*, SOA Annual Meeting Session 011: Recent Advances in Healthcare Analytics, Virtually, October 26, 2020
6. *Self-Paced Probabilistic Principal Component Analysis for Data with Outliers*, AMS Sectional Meeting Special Session on High-Frequency data analysis and applications, Virtually, September 13, 2020
7. *Variable Annuity Valuation: Challenges and Potential Solutions*, Department of Statistics and Actuarial Science, University of Iowa, Iowa City, IA, October 10, 2019
8. *Nested Stochastic Valuation of Large Variable Annuity Portfolios: Monte Carlo Simulation and Synthetic Datasets*, the 4th ICSA (International Chinese Statistical Association) Canada Chapter Symposium, Kingston, Canada, August 11, 2019
9. *Kriging metamodeling for Variable Annuity Valuation*, Python Boot Camp for Actuaries, Chatham Financial, Denver, CO, May 23, 2018
10. *Valuation of Large Variable Annuity Portfolios: Monte Carlo Simulation and Synthetic Datasets*, AFIR (Actuarial Approach for FInancial Risks) Webinar, the International Actuarial Association (IAA), March 16, 2018
11. *Valuation of Large Variable Annuity Portfolios: Past and Recent Developments*, Bowles Symposium 2017: Predictive Analytics and Risk Analytics, Robinson College of Business, Georgia State University, Atlanta, GA, November 9, 2017
12. *Valuation of Large Variable Annuity Portfolios: Challenges and Potential Solutions*, Department of Mathematics, University of Illinois at Urbana–Champaign, Champaign, IL, October 3, 2017
13. *Valuation of Large Variable Annuity Portfolios: Challenges and Potential Solutions*, ISBA-ISFA Workshop on Data sciences applied to Insurance and Finance, Université catholique de Louvain, Belgium, September 15, 2017
14. *Scalable Clustering by Truncated Fuzzy c-means*, the 2nd International Conference on Big Data and Information Analytics, Changsha, Hunan, P.R. China, October 22, 2016
15. *Regression Modeling for the Valuation of Large Variable Annuity Portfolios*, School of Business Administration, Hunan University, Hunan, P.R. China, October 19, 2016
16. *Metamodeling and Its Applications in Variable Annuity*, School of Business Administration, Hunan University, Hunan, P.R. China, October 18, 2016
17. *Metamodeling and Its Applications in Variable Annuity*, Université du Québec à Montréal, Montreal, Canada, September 16, 2016
18. *Some Computational Issues in Variable Annuity*, Morningside Center of Mathematics, Chinese Academy of Sciences, Beijing, P.R. China, August 20, 2015

19. *Subspace Affinity Propagation*, Communication University of China, Beijing, China, August 19, 2015
20. *Subspace Clustering Using Affinity Propagation*, National University of Defense Technology, Changsha, Hunan, China, July 13, 2015
21. *Clustering by Propagating Probabilities between Data Points*, Joint 24th ICSA Applied Statistics Symposium and 13th Graybill Conference, Fort Collins, CO, June 17, 2015
22. *A metamodeling approach to the valuation of large variable annuity portfolio under nested simulation*, The 29th New England Statistical Symposium, University of Connecticut, April 25, 2015
23. *Efficient Greek Calculation of Variable Annuity Portfolios for Dynamic Hedging: A Two-Level Metamodeling Approach*, Department of Statistics and Actuarial Science, the University of Hong Kong, March 19, 2015
24. *Valuation of Large Variable Annuity Portfolios under Nested Simulation: A Functional Data Approach*, Department of Mathematics, Hong Kong Baptist University, March 17, 2015
25. *Valuation of Large Variable Annuity Portfolios under Nested Simulation: A Functional Data Approach*, Department of Mathematics, University of Texas at Dallas, Dallas, TX, February 20, 2015
26. *Clustering by Propagating Probabilities between Data Points*, Department of Statistics, University of Connecticut, Storrs, CT, January 28, 2015
27. *Subspace Clustering Using Affinity Propagation*, ISG Networking Workshop, University of Connecticut, Farmington, CT, December 15, 2014

Contributed Talks

1. *Analysis of Prescription Drug Utilization with Beta Regression Models*, the 24th International Congress on Insurance: Mathematics and Economics, Virtually, July 9, 2021
2. *Nested Stochastic Valuation of Large Variable Annuity Portfolios: Monte Carlo Simulation and Synthetic Datasets*, the 33rd New England Statistics Symposium, Hartford, CT, May 15-17, 2019
3. *Machine Learning Techniques for Variable Annuity Valuation*, the 4th International Conference on Big Data and Information Analytics (BigDIA-18), Houston, TX, December 19, 2018
4. *Machine Learning and Its Application in Variable Annuity Valuation*, First SDM (SIAM International Conference on Data Mining) Workshop on Artificial Intelligence in Insurance, San Diego, CA, May 5, 2018
5. *An Introduction to Data Clustering with Actuarial Applications*, the 2017 Advances in Predictive Analytics (APA) conference, Waterloo, Ontario, Canada, December 1, 2017
6. *Valuation of Large Variable Annuity Portfolios: Monte Carlo Simulation and Benchmark Datasets*, the 2017 ASTIN/AFIR Colloquium, Panama City, Panama, August 21, 2017
7. *A Data Mining Framework for Valuing Large Portfolios of Variable Annuities*, the 23rd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, Halifax, NS, Canada, August 16, 2017
8. *Regression Modeling for the Valuation of Large Variable Annuity Portfolios*, the 20th International Congress on Insurance: Mathematics and Economics, Atlanta, GA, July 26, 2016

9. *Application of Metamodeling to the Valuation of Large Variable Annuity Portfolios*, Winter Simulation Conference, Huntington Beach, CA, December 7, 2015
10. *Efficient Greek Calculation of Variable Annuity Portfolios for Dynamic Hedging: A Two-Level Metamodeling Approach*, CMO Workshop 15w5021 Recent Advances in Actuarial Mathematics, Oaxaca, Mexico, October 26, 2015
11. *Application of Metamodeling in Variable Annuity Portfolio Valuation*, the 19th International Congress on Insurance: Mathematics and Economics, Liverpool, UK, June 26, 2015
12. *Valuation of Large Variable Annuity Portfolios under Nested Simulation: A Functional Data Approach*, Department of Mathematics, University of Connecticut, Storrs, CT, September 3, 2014
13. *A Novel Approach to Speed Up Nested Simulation*, Investment Symposium, Society of Actuaries, New York, NY, March 14, 2014
14. *A Novel Method for Pricing Large Variable Annuity Portfolios*, Department of Actuarial Science, Risk Management and Insurance, University of Wisconsin - Madison, Madison, WI, February 12, 2014
15. *A Novel Method for Pricing Large Variable Annuity Portfolios*, Department of Mathematics, University of Connecticut, Storrs, CT, January 27, 2014
16. *Machine Learning and Its Application in Variable Annuity Hedging*, School of Business Administration, Hunan University, Hunan, P.R. China, June 24, 2013
17. *Machine Learning and Its Application in Variable Annuity Hedging*, Institute of Applied Mathematics, Chinese Academy of Sciences, Beijing, P.R. China, June 13, 2013
18. *Variable Annuity Clustering and Interpolation*, Manulife Financial, Toronto, ON, Canada, February 27, 2013
19. *A High-Dimensional Interpolation Problem*, A guest lecture for the course "Practicum in Industrial and Applied Mathematics," Department of Mathematics and Statistics, York University, Toronto, ON, Canada, March 19, 2012
20. *PARTCAT: A Subspace Clustering Algorithm for High Dimensional Categorical Data*, The 2006 International Joint Conference on Neural Networks, Vancouver, BC, Canada, July 20, 2006
21. *A Genetic k-Modes Algorithm for Clustering Categorical Data*, The 1st International Conference on Advanced Data Mining and Applications, Wuhan, Hubei, P.R. China, July 23, 2005
22. *Subspace Clustering for High Dimensional Categorical Data Sets*, The Southern Ontario Statistical Graduate Students Seminar Days, London, ON, Canada, May 26, 2003

Teaching Experience

University of Connecticut

- Math3550 Programming for Actuaries (Spring 2016, Spring 2017)
- Math3621 Actuarial Statistics (Fall 2014, Spring 2015, Fall 2015, Spring 2016, Fall 2016, Spring 2017, Fall 2017, Spring 2018)
- Math3636 Actuarial Statistical Modeling I (Spring 2019, Fall 2019, Spring 2020, Fall 2020, Spring 2021, Fall 2021)
- Math3637 Actuarial Statistical Modeling II (Fall 2018, Fall 2019)

- Math3639 Actuarial Loss Models (Fall 2018)

Advising

Main PhD advisor for

- Peter Fedah, PhD in Mathematics with Thesis in Actuarial Science, University of Connecticut, 08/2020 – Present
- Jinkai Xu, PhD in Mathematics with Thesis in Actuarial Science, University of Connecticut, 08/2018 – Present

Associate PhD advisor for

- Qintian Sun, PhD in Mathematics, University of Connecticut, 2019 (Dissertation: Kalman Filter and Its Application in Dynamic Financial Planning)
- Zhiyu Quan, PhD in Mathematics, University of Connecticut, 2019 (Dissertation: Predictive Actuarial Analytics Using Tree-Based Models)
- Jiatian Xu, PhD in Mathematics, University of Connecticut, 2018 (Dissertation: Quantile Optimization in Stochastic Financial Planning Model)
- Gao Niu, PhD in Mathematics, University of Connecticut, 2016 (Dissertation: Actuarial Applications of Agent-Based Modeling)
- Seyed Amir Hejazi, PhD in Computer Science, University of Toronto, 2016 (Dissertation: Efficient Valuation of Large VA Portfolios)
- Rozita Ramli, PhD in Mathematics, University of Connecticut, 2015 (Dissertation: Generalized Linear Model Approach to Adjusting Expected Assumptions of Long Term Care Incidence Rates)
- Wenyuan Zheng, PhD in Mathematics, University of Connecticut, 2015 (Dissertation: Portfolio Choice with Life Annuities under Probability Distortion)

Advisor for

- Peter Busa, Individualized major in data science, Spring 2021 - Spring 2022
- Christopher Werner, Undergraduate in Actuarial Science, University of Connecticut, Spring 2018 (Honors thesis: Analysis of Pharmaceutical Drug Utilization in the United States)
- Peter Ruthenberg, Undergraduate in Mathematics and Statistics, University of Connecticut, Spring 2018 (Honors thesis: Data Clustering: An Application to Financial Data)
- Yizhuo Han, Undergraduate in Statistics, University of Connecticut, Spring 2017 (Independent study on data mining applied to finance)
- Justin Moy, Undergraduate in Actuarial Science, University of Connecticut, Spring 2017 (Honors thesis: Data Mining in the Field of Actuarial Science)
- Maxwell Aliapoulios, Undergraduate in Applied Mathematics, University of Connecticut, Fall 2015 - Spring 2016 (Senior thesis: Object Oriented Spectral Clustering of the Russel-2000 Index)

Service Activities

Committees

- Member of the CLAS Committee on Curricula and Courses (Fall 2020 - Spring 2021)

- Member of the Undergraduate Program Committee (UPC) (Fall 2020 - Spring 2021)
- Member of the Graduate Program Committee (GPC) (Fall 2020 - Spring 2021)
- Member of the Task Force on Teaching Excellence (Spring 2019)
- Member of the Graduate advisory committee (Fall 2017 - Spring 2018)
- Member of the Graduate admissions subcommittee (Fall 2016 - Spring 2018)
- Member of the committee for initiating individualized data science major at UConn (Fall 2016)

Seminars

- Co-Organizer (with Bin Zou) for *Actuarial Science Seminars* at the Department of Mathematics, University of Connecticut (Fall 2017 - Spring 2020)
- Organizer for *Actuarial Science Seminars* at the Department of Mathematics, University of Connecticut (Fall 2014 - Spring 2017)
- Co-Organizer (with Emiliano Valdez and Oleksii Mostovyi) for *Special Semester in Actuarial and Financial Mathematics*, Department of Mathematics, University of Connecticut (Fall 2016)

PhD prelim exams

- Co-Writer and Co-Grader (with Iddo Ben-Ari and Fabrice Baudoin) for *the probability prelim exam for actuarial PhD students* (8/2015, 1/2016, 8/2016, 1/2017, 1/2018, 1/2019, 7/2020, 12/2020, 8/2021)

Letter writer

- Tenure letter writer (8/2021)

Outreach activities

- Faculty advisor of the MathCounts program at the Mansfield Middle School (Spring 2016 - Fall 2019, attend the MathCounts program on Tuesdays from 2:50pm-4:10pm.)

Professional activities

- Volunteer for the investment subgroup of the SOA job analysis project (Spring 2021)
- Grader for the PA (Predictive Analytics) Exam administrated by the Society of Actuaries (2/2019, 8/2019, 2/2020, 8/2020)
- Grader for the QFI-Core/QFI-QF exam administrated by the Society of Actuaries (12/2018, 6/2019, 12/2019, 8/2020, 12/2020, 6/2021)
- Question writer for the QFI-QF exam administrated by the Society of Actuaries (8/2018(2 questions), 7/2019(2), 6/2020(3))

Conferences

- Session chair for the session "A2-8: Machine Learning Survey and Applications" for the 2021 IME (Insurance: Mathematics and Economics) Congress (Virtual, July 6, 2021)
- Program Committee member of the Thirty-Fifth AAAI Conference on Artificial Intelligence (AAAI-21) (Virtual, February 2-9, 2021)
- Program Committee member of the 6th International Conference on Big Data and Information Analytics (Shenzhen, China, December 2020)

- Scientific Committee member of the 2019 Insurance Data Science Conference (Zurich, Switzerland, June 2019)
- Organizer of the session "Data Science in Actuarial Science" and IBM Student Paper Committee member for the 33rd New England Statistics Symposium (Hartford, CT, May 2019)
- Publicity Chair of the 14th International Conference on Advanced Data Mining and Applications (ADMA) (Nanjing, China, November 2018)
- Organizer of the session "Insurance and Financial Applications" for the 31st New England Statistics Symposium (Storrs, CT, April 2017)
- Program committee member of the General and Scientific Applications track of the 2016 Winter Simulation Conference (Washington, DC, December 2016)

Editorial activities

- Associate editor for *Annals of Actuarial Science*, 2021 - Present
- Topics Board Editor for *Risks*, 2021 - Present
- Associate editor for *Quantitative Finance and Economics*, 2016 - Present
- Associate editor for *Big Data and Information Analytics*, 2014 - Present
- Guest editor for a special issue (Data Mining in Actuarial Science: Theory and Applications) of Risks, Spring 2020
- Guest editor for a special issue (Finance and Data Science) of Quantitative Finance and Economics, Fall 2019
- Volume editor for the proceedings of the 14th International Conference on Advanced Data Mining and Applications (ADMA 2018)
- Guest editor for a special issue (Recent Developments in Risk Management of Equity-Linked Annuities) of Risks, Fall 2018

Referee activities (2007(1), 2008 (1), 2013(3), 2014(6), 2015(12), 2016(29), 2017(22), 2018(28), 2019(40), 2020(40), 2021(38))

Honors and Scholarships

- *Nominee for the Star of Excellence*, Manulife Financial, 2011
- *First Prize in CMCM (Chinese Mathematical Contest in Modeling) in Jilin Province*, 2001
- *First Prize in CMCM (Chinese Mathematical Contest in Modeling) in Jilin Province and Second Prize in China*, 2000
- *First-Class Excellent Student Scholarship*, 1999, 2000
- *Wang Xianghao Scholarship*, 1999, 2000
- *CAS (Chinese Academy of Sciences) Scholarship*, 2000

September 14, 2021