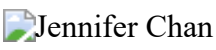
Jennifer So-kuen Chan

Professor in the School of Mathematics and Statistics at the University of Sydney.



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Research Interests

Generalized linear mixed models, Geometric process models, Likelihood and Bayesian methods, Drop-out models, Heavy tail and asymmetric distributions, Scale mixtures distributions, Loss reserving insurance models, Medical, finance and insurance applications.

I am a member of the Statistics group.

General Information

Jennifer Chan obtained her BSc Degree with a major in Mathematics and minor in Statistics in 1986 and Diploma in Education in 1990 from The Chinese University of Hong Kong (CUHK). She was also awarded the MPhil in 1992 from the CUHK. She did her PhD at The University of New South Wales, Sydney and was graduated in 1997. During 1996-2006, she lectured at the Department of Statistics and Actuarial Science in The University of Hong Kong. She joined the School of Mathematics and Statistics, The University of Sydney in 2006 and was promoted to Senior Lecturer in 2010 and Associate Professor in 2017.

External links

- Google scholar
- Research Gate
- ORCiD
- Faculty of Science

Teaching

Before 2022

- MATH1015: Biostatistics, 2007, 2011-13
- MATH1005: Thinking with Data, 2018-19
- STAT2012: Statistical Tests, 2007-16
- STAT3014: Applied Statistics (Sample survey), 2008-9, 2015
- STAT3012,3022: Applied Linear Models, 2016, 2020-21

- MSH3: Fundamentals of Statistical Consulting, 2016-19
- MSH6: Generalized Linear Models, 2009-13, 2015-19
- STAT4026: Statistical Consulting 2020-22
- STAT4027: Advanced Statistical Models, 2020-22

2023

- STAT4026: Statistical Consulting
- STAT4027: Advanced Statistical Models

Awards

1. The second prize (Third Contributor) of The Natural Science Award of the Ministry of Education, People Republic of China in 2008 based on her work in "Geometric Process" with the University of Hong Kong being the second completion institute.
2. The National Drug Strategy (NDS) Research Scholarship from Commonwealth Department of Human Services and Health, Australia in 1994-1996.

Honorary positions

1. Research associate in the Actuarial Research Center of the University of Haifa, Israel from April 2016.
2. Adjunct professor in the Institute of Statistical Mathematics, Tokyo, Japan from August 2016.

Publications

Book chapters

1. Yatigammana, R.P., Choy, S.T.B. and **Chan, J.S.K.** (2016) Autoregressive conditional duration model with an extended Weibull error distribution. *Causal Inference in Econometrics*, Volume 622 of the series Studies in Computational Intelligence, 83-107.
2. **Chan, J.S.K.**, Lam, C.P.Y. and Choy, S.T.B. (2014) An innovative financial time series model: the Geometric Process Model. *Modeling Dependence in Econometrics, Advances in Intelligent Systems and Computing*, **251**, 81-99.

Machine Learning conference papers

2021

3. Wong, S.Y.K., **Chan, J.S.K.**, Azizi, Lamiae, Xu, Richard Y.D. Supervised Temporal Autoencoder for Stock Return Time-series Forecasting. *2021 IEEE 45th Annual Computers, Software, and Applications Conference (COMPSAC)*, doi:10.1109/compsac51774.2021.00259 arxiv.
4. Zhicong Chen, Alice Dong, Gareth Peters, **Chan, J.S.K.** (2025) Advancing AI-Enhanced financial Security: A reiew of facial, voice, and medical Biometrics for identity verification, *IEEE SMC 2025* conference proceeding.

Journal papers

2025

5. Lam, F. and **Chan, J.S.K.** Temporal Mixture Density Networks for Enhanced Investment Modeling. To appear in *Expert Systems with Applications*.

6. Yan, H., Peters. G.W., Bagnarosa, G. and **Chan, J.S.K.**, Futures Open Interest and Speculative Pressure Dynamics via Bayesian Models of Long Memory Count Processe. To appear in *Journal of Forecasting*.

2024

7. Usman, Farha, **Chan, J.S.K.**, Makov, Udi. E., Wang Yang and Dong, Alice X.D.. Claim prediction and premium pricing for telematics auto insurance data using Poisson regression with lasso regulatisation. *Risks*, 12(9), 137. SSRN
8. Wong, S.Y.K., **Chan. J.S.K.** and Azizi, L. Quantifying neural network uncertainty under volatility clustering, *Neurocomputing*, **614**, 128816.

2023

9. Nitithumbundit, T. and **Chan, J.S.K.** Maximum leave-one-out likelihood method for the location parameter of variance gamma distribution with unbounded density. *Journal of Statistical Computation and Simulation*, **93**(15), 2642-2671. arxiv
10. Nick James, Max Menzies, **Chan, J.S.K.** Semi-metric portfolio optimisation: a new algorithm reducing simultaneous asset shocks. *Econometrics*, **11(1)**, 8. arxiv

2022

11. Tan, S.K., Ng, K.H. and **Chan, J.S.K.** Predicting Returns, Volatilities and Correlations of Stock Indices Using Multivariate Conditional Autoregressive Range and Return Models. *Mathematics*, **11**(1), 13.
12. Yan, H. Peters, G.W. and **Chan, J.S.K.** Model Risk in Mortality Linked Contingent Claims Pricing *Journal of Risk Model Validation*, **16**(3).
13. Usman, F **Chan, J.S.K.** New loss reserve models with persistence effects to forecast trapezoidal losses in run-off triangles. *ASTIN bulletin*, **52**(3), 877-920.
14. Nitithumbundit, T. and **Chan, J.S.K.** Covid-19 impact on Cryptocurrencies market using Multivariate Time Series Models. SSRN *Quarterly Review of Economics and Finance*, **86**, 365-375.
15. Wong, Steven Y.K., **Chan, J.S.K.**, Azizi, Lamiae, Xu, Richard Y.D. Time-varying neural network for stock return prediction. Arxiv. *Intelligent Systems in Accounting, Finance and Managementon*, **29**(1), 3-18.
16. **Chan, J.S.K.**, Boris Choy, Udi Makov, Arik Shamir, Vered Shapovalov. Variable selection algorithm for a mixture of Poisson regression for handling overdispersion in claims frequency modeling using telematics car driving data. *Risks*, **10**(4), 83.

2021

17. Peters, G.W., Yan, H. and **Chan, J.S.K.** Statistical features of persistence and long memory in mortality data. *Annals of Actuarial Science*, **15**(2), 291-317.
18. Wang, J.J.J. and **Chan, J.S.K.** Stochastic Modelling of Volatility and Inter-relationships in the Australian Electricity Markets. *Communications in Statistics - Simulation and Computation*, **52**(8), 3877-3896, doi:10.1080/03610918.2021.1949469
19. Tan, S.K., **Chan, J.S.K.** and Ng, K.H., Modelling and Forecasting Stock Volatility and Return: A New Approach based on Quantile Rogers-Satchell Volatility Measure with Asymmetric Bilinear CARR Model. *Studies in Nonlinear Dynamics & Econometrics*, **26**(3), 437-474.
20. Nitithumbundit, T. and **Chan, J.S.K.** ECM algorithm for estimating vector ARMA model with variance gamma distribution and possible unbounded density. *Australian and New Zealand Journal of Statistics*, **63**(3), 485-516.
21. Yan, H., Peters, G.W. and **Chan, J.S.K.** Mortality models incorporating long memory for life table estimation: a comprehensive analysis. *Annals of Actuarial Science*, **15**(2)(3), 567-604.
22. Yan, H., Peters, G.W. and **Chan, J.S.K.** Multivariate long memory cohort mortality models. *ASTIN Bulletin*, **50**(1), 223-263. SSRN.

23. Nick James, Max Menzies, **Chan, J.S.K.** Changes to the extreme and erratic behaviour of cryptocurrencies during COVID-19. *Physica A: Statistical Mechanics and its Applications*, **565**, 125581, arXiv.

2020

24. Nick James, Max Menzies, Lamiae Azizi, **Chan, J.S.K.** (2020) Novel semi-metrics for multivariate change point analysis and anomaly detection. *Physica D: Nonlinear Phenomena*, **412**, November 2020, 132636. arXiv.
25. Tan, S.K., **Chan, J.S.K.** and Ng, K.H. (2020) On the speculative nature of cryptocurrencies: a study on realised volatility. *Finance Research Letters*, **32**, 101075.
26. Phillip, A., **Chan, J.S.K.** and Peiris, M.S. (2020) On generalized bivariate Student-t Gegenbauer long memory stochastic volatility models with leverage: Bayesian forecasting of Cryptocurrencies with a focus on Bitcoin. *Econometrics and Statistics*, **16**, 69-90.
27. **Chan, J.S.K.**, Choy, S.T.B and Walker, S. (2020) A new method to estimate the shape parameter of a distribution. *Journal of Data Science*, **18(1)**, 78-100.
28. Nitithumbundit, T. and **Chan, J.S.K.** (2020) ECM Algorithm for Auto-regressive Multivariate Skewed Variance Gamma Model with Unbounded Density. *Methodology and Computing in Applied Probability* **22**, 1169-1191. ArXiv.

2019

29. Yatigammana, R.P., **Chan, J.S.K.** and Gerlach, R.H. (2019) Forecasting the conditional distribution of durations via Mixture distributions. *Quantitative Finance*, **19(12)**, 2051-2067, doi:10.1080/14697688.2019.1618896
30. Phillip, A., **Chan, J.S.K.** and Peiris, M.S. (2019) On long memory effects in the volatility measure of Cryptocurrencies. *Finance Research Letters*, **28**, 95-100.
31. **Chan, J.S.K.**, Ng, K.H. and Ragell, R. (2019) Bayesian return forecasts using realised range and asymmetric CARR model with various distribution assumptions. *International Review of Economics and Finance*, **61**, 188-212, doi:10.1016/j.iref2019.01.003
32. Tan, S.K., Ng, K.H., **Chan, J.S.K.** and Ibrahim, M. (2019) Quantile Range-based Volatility Measure for Modelling and Forecasting Volatility Using High Frequency Data. *North American Journal of Economics and Finance*, **47**, 537-551.

2018

33. **Chan, J.S.K.**, Ng, K.H., Nitithumbundit, T. and Peiris, M.S. (2020) Efficient estimation of financial risk by regressing the quantiles of parametric distribution: An application to CARR models. *Studies in Nonlinear Dynamics and Econometrics*, **23(2)**, 20170012.
34. Phillip, A., **Chan, J.S.K.** and Peiris, M.S. (2018) Bayesian estimation of Gegenbauer long memory processes with stochastic volatility: methods and applications. *Studies in Nonlinear Dynamics & Econometrics*, **22**(3), 20150110.
35. Phillip, A., **Chan, J.S.K.** and Peiris, M.S. (2018) A new look at Cryptocurrencies. *Economics Letters*, **163**, 6-9.
36. **Chan, J.S.K.**, Choy, S.T.B., Makov, U. and Landsman, Z. (2018) Modelling Insurance Losses Using Contaminated Generalised Beta Type-II Distribution. *ASTIN Bulletin: The Journal of the IAA*, **48**(2), 871-904.

2017

37. Ng, K.H., Peiris, S., **Chan, J.S.K.**, Ng, K.H. and Allen, D. (2017) Efficient modelling and forecasting with range based volatility models and its application. *North American Journal of Economics and Finance*, **42**, 448-460.

2016

38. **Chan, J.S.K.** and Wan, Wai-Yin (2016) Bayesian analysis of Cannabis offences using generalized Poisson geometric process model with flexible dispersion. *Journal of Statistical Computation and Simulation*, **80(16)**, 3315-3336.
39. **Chan, J.S.K.** (2016) Bayesian informative dropout model for longitudinal binary data with random effects using conditional and joint modeling. *Biometrical Journal*, **58(3)**, 549-569.
40. Choy, S.T.B., **Chan, J.S.K.** and Makov, U.E. (2016) Robust Bayesian analysis of loss reserves data using scale mixtures distributions. *Journal of Applied Statistics*, **43(3)**, 396-411.

2015

41. Dong, A.X.D., **Chan, J.S.K.** and Peters, G. (2015) Risk margin quantile function via parametric and non-parametric Bayesian quantile regression. *Astin Bulletin*, **45(3)**, 503-550. SSRN.
42. **Chan, J.S.K.** (2015) Predicting loss reserves using quantile regression. *Journal of Data Science*, **13(1)**, 127-156.

2014

43. **Chan, J.S.K.** and Wan, W.Y. (2014) Multivariate generalized Poisson geometric process model with scale mixture of normal distributions. *Journal of Multivariate Analysis*, **127**, 72-87.
44. **Chan, J.S.K.**, Wan, W.Y. and Yu, P.L.H. (2014) A Poisson Geometric Process approach for predicting drop-out and committed first time blood donors. *Journal of Applied Statistics*, **41(7)**, 1486-1503.
45. **Chan, J.S.K.** (2014) Analysis of correlation structures using generalized estimating equation approach for longitudinal binary data. *Journal of Data Science*, **12**, 293-305.

2013

46. Jones, C.G.A., Kemp, R.I. and **Chan, J.S.K.** (2013) The relationship between delay discounting, judicial supervision and substance use among adult drug court clients. *Psychology, Public Policy, and Law*, **19(4)**, 454-465.
47. Dong, A.X.D and **Chan, J.S.K.** (2013) Bayesian analysis of loss reserving using dynamic models with generalized beta distribution. *Insurance, Mathematics and Economics*, **53**, 355-365.
48. **Chan, J.S.K.**, Lam, C.P.Y., and Choy, S.T.B. (2013) Modelling electricity market price spike using Bayesian conditional autoregressive geometric process model. *Communications in Statistics: Theory and Methods*. Special Issue: Advances in Probability and Statistics, **43(10-12)**, 2505-2515.
49. Wang, J.J.J., Choy, S.T.B and **Chan, J.S.K.** (2013) Modelling stochastic volatility using generalised t distribution. *Journal of Statistical Computation and Simulation*, **83**, 340-354.

2012

50. **Chan, J.S.K.**, Lam, C.P.Y., Yu, P.L.H., Choy, S.T.B. and Chen, C.W.S. (2012) A Bayesian conditional autoregressive geometric process Model for range data. *Computational Statistics and Data Analysis*, Special Issue on Computational and Financial Econometrics, **56**, 3006-3019.

2011

51. Chen, C.W.S., **Chan, J.S.K.**, So, M.K.P and Lee, K.K.M. (2011) Classification in segmented regression problems. *Computational Statistics and Data Analysis*, **55**, 2276-2287.
52. Wang, J.J.J., **Chan, J.S.K.** and Choy, S.T.B. (2011) Stochastic volatility models with leverage and heavy-tailed distributions: A Bayesian approach using scale mixtures. *Computational Statistics and Data Analysis*, **55**, 852-862.
53. Chen, C.W.S., **Chan, J.S.K.**, Gerlach, Richard and Hsieh, William Y.L. (2011) A comparison of estimators for regression models with change points. *Statistics and Computing*, **21**, 395-414.
54. Wan, W.Y. and **Chan, J.S.K.** (2011) Bayesian analysis of robust Poisson geometric process model using heavy-tailed distributions. *Computational Statistics and Data Analysis*, **55**, 687-702.
55. **Chan, J.S.K.** and Wan, W.Y. (2011) Bayesian approach to analysing longitudinal bivariate binary data with informative dropout. *Computational Statistics*, **26**, 121-144.

2010

56. **Chan, J.S.K.** and Leung, D.Y.P. (2010) Binary geometric process model for the modeling of longitudinal binary data with trend. *Computational Statistics*, **25**, 505-536.

2009

57. **Chan, J.S.K.**, Leung, D.Y.P., Choy, S.T.B. and Wan, W.Y. (2009) Nonignorable dropout models for longitudinal binary data with random effects. *Computational Statistics and Data Analysis*, **53**, 4530-4545.
58. Wan, W.Y. and **Chan, J.S.K.** (2009) A new approach for handling longitudinal count data with zero inflation and overdispersion: Poisson geometric process model. *Biometrical Journal*, **51**, 556-570.
59. Choy, S.T.B., **Chan, J.S.K.**, and Makov, U.E. (2009) Model selection for loss reserves. *Risk, Life and Pensions*, **5**, 35-40.

2008

60. **Chan, J.S.K.** and Choy, S.T.B. (2008) Analysis of covariance structures in time series. *Journal of Data Science*, **6**, 573-590.
61. **Chan, J.S.K.**, Choy, S.T.B. and Makov, U.E. (2008) Robust Bayesian analysis for loss reserves data using the generalized-T distribution. *ASTIN Bulletin*, **38**, 207-230.
62. Choy, S.T.B. and **Chan, J.S.K.** (2008) Scale mixtures distributions in statistical modelling. *Australian and New Zealand Journal of Statistics*, **50**, 135-146.

2007

63. Yu, P.L.H., Chung, K.H., Lee, C.K., Lin, C.K. and **Chan, J.S.K.** (2007) Predicting potential drop-out and future commitment for first time donors based on first one and a half years donation patterns: the case in Hong Kong Chinese Donors. *Vox Sanguinis*, **93**, 57-63.
64. **Chan, J.S.K.** Choy, S.T.B. and Lee, A.B.W. (2007) Bayesian analysis of constant elasticity of variance models. *Applied Stochastic Models in Business and Industry*, **23**, 83-96.

2006

65. Yu, P.L.H., **Chan, J.S.K.** and Fung, W.K. (2006) Statistical Exploration from SARS. *The American Statistician*, **60**, 81-91.
66. **Chan, J.S.K.** , Yu, P.L.H., Lam, Y. and Ho, A.P.K. (2006) Modeling SARS data using threshold Geometric Process. *Statistics in Medicine* , **25** , 1826-1839.

1995-2005

67. **Chan, J.S.K.** , Kuk, A.Y.C. and Yam, H.K. (2005) Monte Carlo Approximation through Gibbs output in Generalized linear mixed models. *Journal of Multivariate Analysis*, **94** , 300-312.
68. Lam, Y., Zhu, L.X. and **Chan, J.S.K.** (2004) Analysis of data for a series of events by a geometric process model. *Acta Mathematicae Applicatae Sinica, English series*, **20** , 263-282.
69. **Chan, J.S.K.** , Yeh, L and Leung, D.Y.P. (2004) Statistical inference for geometric processes with Gamma distributions. *Computational Statistics and Data Analysis*, **47** , 565-581.
70. Choy, B.S.T., **Chan, J.S.K.** and Yam, H.K. (2002) Robust analysis on salamander data, Generalized Linear model with random effects. *Bayesian Statistics* **7**, 477-484. Oxford, UK: Oxford University Press.
71. Kuk, A.Y.C. and **Chan, J.S.K.** (2001) Three ways of implementing the EM algorithm when parameters are not identificiable. *Biometrical Journal* **43**, No.2, 207-218.
72. **Chan, J.S.K.** (2000) Initial stage problem in autoregressive binary regression. *The Statistician* **49**, 495-502.
73. Yeh, L. and **Chan, S.K.** (1998) Statistical inference for geometric processes with lognormal distribution. *Computing Statistics and Data Analysis* **27**, 99-112.

74. **Chan, J.S.K.**, Kuk, A.Y.C., Bell, J. and McGilchrist, C. (1998). The analysis of methadone clinic data using marginal and conditional logistic models with mixture or random effects. *The Australian and New Zealand Journal of Statistics* **40**, 1-10. Download
75. Bell, J., Mattick, R.P., Hay, A., **Chan, J.** and Hall, W., (1997) Methadone maintenance and drug-related crime. *Journal of Substance Abuse* **9**, 15-25.
76. **Chan, J.S.K.**, Kuk, A.Y.C. and Bell, J., (1997) A Likelihood approach to analysing longitudinal bivariate binary data. *Biometrical Journal.* **39**, No.4, 409-421. Download
77. **Chan, J.S.K.** and Kuk, A.Y.C., (1997) Maximum likelihood estimation for probit-linear mixed models with correlated random effects. *Biometrics* **53**, 86-97.
78. Bell, J., **Chan, J.** and Kuk, A., (1995) Investigating the influence of treatment philosophy on outcome of methadone maintenance. *Addiction* **90**, 823-830.

Conference proceedings

79. **Chan, J.S.K.**, Lam, C., Chen, C. and Choy, S.T.B. (2008) Threshold geometric process model financial time series model0, Joint Meeting of 4th World Conference of the IASC and 6th Conference of the Asian Regional Section of the IASC on Computational Statistics & Data Analysis, Yokohama, Japan, 8th December 2008.
80. Choy, S.T.B. and **Chan, J.S.K.** (2008) Bayesian analysis of stochastic volatility using the generalized-t distribution, Joint Meeting of 4th World Conference of the IASC and 6th Conference of the Asian Regional Section of the IASC on Computational Statistics & Data Analysis, Yokohama, Japan, 8th December 2008.
81. Choy, S.T.B., **Chan, J.S.K.** and Yam, H.K. (2003) Robust analysis of salamander data, Generalized Linear model with random effects. *Bayesian Statistics*, **7**, 477-484. Oxford, UK: Oxford University Press.

Papers submitted and online

82. Yan, H. Peters, G.W. and **Chan, J.S.K.** Evidence for Persistence and Long Memory Features in Mortality Data.
83. Blamires, Sean J., Dong, Alice X., Huang, Weidong and **Chan, J.S.K.** New approaches to Teaching Statistics through Data Science.
84. Huang, Z.L., **Chan, J.S.K.** and Peters, Gareth W. Efficient covariance and correlation matirx measures for multivariate studies.
85. Lam, F., **Chan, J.S.K.** and Choy, S.T.B. Temporal Multivariate Density Networks for Portfolio Optimization.
86. Savage, H. and **Chan, J.S.K.** Bayesian analyses of the two-stage CARR-return models with applications to COVID-19 impact on the cryptocurrency market.
87. Usman, F., **Chan, J.S.K.**, Dong, A.X.D. and Makov, U.E. Poisson mixture deep learning neural network models for the prediction for drivers' claims with excessive zero claims using telematics data.
88. Kenny, J. and **Chan, J.S.K.** A novel approach to credit risk sensitivity categorisation and classification using hierarchical clustering, kernel density estimation and Naive Bayes classification.

Research and teaching grants

2006-now

1. Ministry of Higher Education, Malaysia (2023); Fundamental Research Grant Scheme (FRGS) project titled Asymmetric multivariate realised range-based volatility and return models for predicting volatilities correlations and returns in financial markets using high frequency data (Grant No: FRGS/1/2023/STG06/UM/02/1). Leader: A/prof. Kok-haur Ng; The total grant amount is RM$64,175.
2. Ministry of Higher Education, Malaysia (2021); Fundamental Research Grant Scheme (FRGS) project titled On the Hazard Function of Duration Models Applied to High Frequency Financial Data (Grant No: FRGS/1/2021/STG06/UM/02/4). Leader: Dr. Kok-haur Ng; The total grant amount is RM$62,746.

3. BKP Special (2017), UM BKS032_2017: Extension of realized volatility models to long memory: I have on-going research collaboration and cosupervision with Dr KH Ng, University of Malaya. We have successfully applied for two grants: I. UM BKS032_2017: Forecasting of financial colatility: The role of realised range-based measures augmented with its asymmetry and distribution assumptions. for RM 18000 with duration 01/04/2017 to 31/03/2018.
4. The Individual Grant Competition from the Casualty Actuarial Society and the Society of Actuaries in 2016 on the topic *Enhanced Predictive Modeling for Usage-Based Auto Insurance* with Prof Makov and was granted US$14000.
5. HDR+ Staff Grants (2015-2016), the University of Sydney (AU$9645.10) on the topic Enhancing research experience of HDR students through on-line resources and connections on the topic on the topic *Enhancing research experience of HDR students through on-line resources and connections* with principal investigator Dr. **J.S.K. Chan** and co-investigators Prof. Jean Yang and Prof. Richard Gerlach.
6. Mid-Career Researcher Support Program (2014-2015), Post-sabbatical Support Scheme (AU$3600) by the Science Faculty, the University of Sydney on the topic *Extensions of conditional autoregressive range models for market price volatility*.
7. Taiwan Exchange Program-Scientific Visits to Taiwan Program (2010-2011) by the Australian Academy of Science, Department of Innovation Industry, Science and Research (AU$7600) on the topic *Accurate Volatility Estimation in Financial Time Series Models* with principal investigator Dr. **J.S.K. Chan**.
8. Geran Penyelidikan Universiti (UMRG)-AFR (Frontier Science) (No: RG260-13AFR) (2013-2016) (UM$62,700) on the topic *On estimation and statistical inference for volatility models in finance* with principal investigator Dr Kok Haur Ng and co-investigators Dr. Swee Leng Au, A/Prof Shelton Peiris, Dr Kooi Huat Ng and Dr. **J.S.K. Chan**.

1996-2005

9. University Research Committee (2004-2006), The University of Hong Kong (HK$30,000) (Earmarked Research Grant application support) on the topic *New Methodologies for Loss Reserves and Other Aspects in Insurance Industry* with principal investigator Dr. **J.S.K. Chan** and co-investigator Dr. S.T.B. Choy and Prof. U.E. Makov.
10. Committee on Research and Conference Grants (2004-2005), The University of Hong Kong (HK$41,500) on the topic *Modelling of SARS data using threshold Geometric Process models* with principal investigator Dr. **J.S.K. Chan** and co-investigator Prof. Yeh Lam.
11. University Research Committee (2003-2004), The University of Hong Kong (HK$15,000) (Earmarked Research Grant application support) on the topic *Generalized Geometric Process with Applications* with principal investigator Dr. **J.S.K. Chan** and co-investigator Prof. Y. Lam.
12. Seed Funding for Basic Research (2002-2003), The University of Hong Kong (HK$50,000) on the topic *Likelihood and Bayesian analysis of stochastic volatility, jump diffusion and other financial models using scale mixtures distribution* with principal investigator Dr. **J.S.K. Chan** and co-investigator Dr. B.S.T. Choy.
13. Committee on Research and Conference Grants (2000-2002), The University of Hong Kong (HK$90,000) on the topic *Extension of informative drop-out models to handle multiple responses and random effects in longitudinal binary data analysis* with principal investigator Dr. **J.S.K. Chan** and co-investigator Dr. D.Y.P. Leung.
14. Social Science Faculty Research Fund (2000-2001), The University of Hong Kong (HK$10,000) on the topic *Modelling trended binary response with geometric process* with principal investigator Dr. **J.S.K. Chan**.
15. Competitive Earmarked Research Grant (1999-2002), Research Grants Council, Hong Kong (HK$435,000) on the topic *Analysis of generalized linear mixed models with applications* with principal investigator Dr. S.T.B. Choy and co-investigators Dr. **J.S.K. Chan**, Prof. A.Y.C. Kuk and Prof. S.G. Walker.
16. Competitive Earmarked Research Grant (1998-1999), Research Grants Council, Hong Kong (HK$120,000) on the topic *Analysis of generalized linear mixed models with applications* with principal investigator Dr. S.T.B. Choy and co-investigators Dr. **J.S.K. Chan**, Prof. A.Y.C. Kuk and Prof. S.G. Walker.
17. Committee on Research and Conference Grants (1998-2000), The University of Hong Kong (HK$66,693) on the topic *Modelling informative drop-out in longitudinal binary data analysis* with

principal investigator Dr. **J.S.K. Chan**.

18. Committee on Research and Conference Grants (1996-1997), The University of Hong Kong (HK$66,693) on the topic *Robust analysis of Regression models for correlated binary data* with principal investigator Dr. S.T.B. Choy and co-investigator Dr. **J.S.K. Chan**.

Postgraduate supervision

Current

1. Alex Lam in full-time PhD (2023-now) on the area *Machine learning/deep learning in asset management* with main supervisor A/Prof Boris Choy in Business School and associate supervisors A/Prof. **J.S.K. Chan**.
2. Niya Chen in full-time PhD (2022-now) on the area *volatility measures and modelling*.
3. Johann Kenny in part-time PhD (2021-now) on the area *Machine Learning frameworks for the prediction of Credit Rating migration* with main supervisor A/Prof. **J.S.K. Chan**.
4. Zheng Lyu Huang in full time PhD (2020-now) on the area *Financial time series modelling of cryptocurrency volatilty using Bayesian method* with main supervisor A/Prof. **J.S.K. Chan** and associate supervisor Prof. Gareth Peters, Heriot-Watt University.
5. Zainab Alfaifi in full time PhD (2019-now) on the area *Hybrid Statistical Model and Neural Networks in Machine Learning* with main supervisor A/Prof. **J.S.K. Chan** and associate supervisors A/Prof Lamiae Azizi and Dr Alice Dong, University of Technology, Sydney.

Graduated in 2006-2024

6. Farha Usman in PhD (2019-2023) on the topic *Statistical and machine learning models with applications to loss reserving and auto-insurance claim prediction using telematics data.* with main supervisor A/Prof. **J.S.K. Chan** and associate supervisor Prof. Udi Makov, University of Haifa and Dr Alice Dong, University of Technology, Sydney.
7. Steve Wong in part time PhD (2018-2023) on the topic *Machine learning in portfolio management* with research supervisor A/Prof. **J.S.K. Chan**, associate supervisors A/Prof. Richard Xu (UTS) and A/Prof. Lamiae Azizi.
8. Shay Kee Tan in full time PhD (2015-2022) on the topic *Robust volatility measures and multivariate models for volatilities and returns with financial applications* with research supervisor Dr. Kok Haur Ng (University of Malaya) and associate supervisor A/Prof. **J.S.K. Chan**.
9. Nicholas James in full time PhD (2018-2021) on the topic *Distance measures, inconsistencymatrices and algorithms for the study of epidemiological and financial crises* with associate supervisor Dr Lamiae Azizi.
10. Dr Hongxuan Yan in full time PhD (2015-2018) on the topic *Generalised linear Gegenbauer long memory models for time series of counts with finanical and insurance applications* with research supervisor A/Prof. **J.S.K. Chan** and associate supervisor Prof. G. Peters, Heriot-Watt University.
11. Dr Andrew Phillip in full time PhD (2014-2018) on the topic *On Gegenbauer long memory stochastic volatility models: A Bayesian Markov chain Monte Carlo approach with applications* with research supervisor A/Prof. **J.S.K. Chan** and associate supervisor A/Prof S. Peiris.
12. Dr Thanakorn Nitithumbundit in full time PhD (2013-2018) on the topic *Inference and applications for Variance Gamma distribution in scales mixtures representation* with research supervisor A/Prof. **J.S.K. Chan** and associate supervisor Dr. B. Choy (DBA, USyd).
13. Dr Rasika Pushpamali Yatigammana in full time PhD (2011-2016) on the topic *Advancement of Autoregressive Conditional Duration Models involving Liquidity and Price Dynamics* with research supervisor Prof. Richard Gerlach (DBA, USyd) and associate supervisors A/Prof. Shelton Peiris, Dr. **J.S.K. Chan** and Dr. B. Choy (DBA, USyd).
14. Dr Alice Xiaodan Dong in part time PhD (2007-2015) on the topic *Bayesian Analysis of Reserving Models and Applications* with research supervisor Dr. **J.S.K. Chan** and associate supervisor Dr. G. Peters (UCL).
15. Dr Joanna Jia Jia Wang in full time PhD (2008-2012) on the topic *Bayesian Analysis of Stochastic Volatility Models: Modelling and Applications* with research supervisor Dr. **J.S.K. Chan** and associate supervisor: Dr. Boris Choy.

16. Dr Wai Yin Wan in full time PhD (2007-2010) on the topic *Extension pf Poisson Geometric Process Model with Applicaitons* with research supervisor Dr. **J.S.K. Chan** and associate supervisor: Dr. Boris Choy.
17. Ms Connie Pui Yu Lam in Part-time MSc (2007-2011) on the topic *Geometric Process models for financial time series* with research supervisor Dr. **J.S.K. Chan** and associate supervisor Prof. Neville Weber.

Graduated in 1996-2005

18. Ms Wan Wai Yin (2004-2006) in full time MPhil on the topic *Analysis of Poisson count data using geometric process model*.
19. Mr Pak Kei Alvin Ho (2003-2005) in full time MPhil on the topic *Parametric and nonparametric inference for Geometric Process*.
20. Ms Ka Ki Vicki Chau (2001-2003) in full time MPhil on the topic *Informative Drop-out models for longitudinal Binary Data*.
21. Ms Ho Kam Carrie Yam (2000-2002) in full time MPhil on the topic *On a topic of generalized linear mixed models and stochastic volatility model* co-supervised with main supervisor Dr. S.T.B. Choy.

Honours and M.Sc. project supervision

1. Ms Ye Tian (2023) on the M.Sc. project topic *Neural network analysis for claim prediction using telematics auto-insurance data*.
2. Mr Yang Wang (2022) on the topic *Variable selection for telematics driving behaviour data*.
3. Mr Hayden James Savage (2022) on the topic *Volatility models for studying the pandemic impact of cryptocurrency market*.
4. Mr Yize Ma (2019) on the topic *Bayesian inference for multivariate volatility models with applications to cryptocurrencies*.
5. Ms Rachel Ragell (2015) on the topic *Return-based models using the Realized Range fitted to the Conditional Autoregressive Range model*.
6. Mr Hongxuan Yan (2014) on the topic *Inference methodology of bilinear time series model*.
7. Mr Thanakorn Nitithumbundit (2012) on the topic *Multivariate stochastic volatility models*.
8. Ms Frances Algert (2012) on the topic *Informative missing models for longitudinal count data*.
9. Mr Martin Nguyen (2011) on the topic *Ordered response models*.

Presentations

Fully sponsored workshop

1. The workshop of Institute of Statistical Mathematics-Heriot Watt University Spatial and Temporal Modelling (STM2018) from Feb 27-28, 2018 at the Institute of Statistical Mathematics (ISM), Tokyo, Japan on the topic *Advanced statistical models for cryptocurrency research* invited by Professors Tomoko Matsui and Gareth Peters.
2. The workshop of Institute of Statistical Mathematics-University College London Spatial and Temporal Modelling (STM2016) from July 20-23, 2016 at the Institute of Statistical Mathematics (ISM), Tokyo, Japan on the topic *Finanical risk and quantile models* invited by Professors Tomoko Matsui and Gareth Peters.
3. International Workshop on Statistical Computing in Quantitative Finance and Biostatistics: A Satellite Meeting for the 7th IASC-ARS Conference, Feng Chia University, 20-21 December, 2011 on the topic *Stochastic Modelling of Volatility and Inter-relationships in the Australian Electricity Markets* funded by National Science Council, Taiwan.

Invited conference

4. The 44th International Symposium on Forecasting ICS 2024 during June 30 to July 3 in Dijon, France on the topic New loss reserve models with persistence effects to forecast trapezoidal losses in run-off triangles.
5. Time Series and Forecasting Symposium (TSF2022) The University of Sydney Business School December 11-12, 2022, invited by Dr Boris Choy on the topic *Predicting volatilities, correlations and returns of stock indices using multivariate conditional autoregressive range and return models*.
6. Time Series and Forecasting Symposium (TSF2019) The University of Sydney Business School November 11-12, 2019, invited by Dr Boris Choy on the topic *Bayesian inference for univariate and multivariate CARR models with applications to cryptocurrencies*.
7. The 3rd International Conference on Econometrics and Statistics held in National Chung Hsing University, Taichung, Taiwan during 25-27 June 2019 invited by Dr Boris Choy on the topic *Multivariate long memory cohort mortality models*.
8. The 2nd International Conference on Econometrics and Statistics (EcoSta 2018), City University of Hong Kong, June 19-21, 2018, invited by A/Prof Samuel Muller on the topic *Advanced statistical models for cryptocurrency research*.
9. The 1st International Conference on Econometrics and Statistics (EcoSta 2017), The Hong Kong University of Science and Technology, June 15-17, 2017, invited by A/Prof Samuel Muller on the topic *Modelling the conditional distribution of durations via mixture distributions*.
10. The 4th Institute of Mathematical Statistics, Asia Pacific Rim Meeting, The Chinese University of Hong Kong, June 27-30, 2016, invited by A/Prof Samuel Muller on the topic *Bayesian Gegenbauer long memory financial time series models*.
11. International Conference on Statistics and Probability 2015 (IMS-China), China Kuming, July 1-4, 2015 on the topic *Quantile regression for conditional autoregressive range model* invited by A/Prof Qiying Wang.
12. International Statistics Conference 2011, 28-30 Dec, Waters Edge, Battaramulla, Sri Lanka on the topic *Stochastic Modelling of Volatility and Inter-relationships in the Australian Electricity Markets* invited talk by A/Prof Shelton Peiris.
13. Joint Meeting of the 4th World Conference of International Association for Statistical Computing (IASC2008) and the 6th Conference of the Asian Regional Section of the IASC on Computational Statistics and Data Analysis, December 5-8, 2008 in Pacifico Yokohama, Japan on the topic *Threshold Geometric Process Model for Financial Time Series* invited by A/Prof. Philip Yu, HKU.

Contributed conference

14. The Australian Statistical Conference in conjunction with the Institute of Mathematical Statistics Annual Meeting 2014, 7-10 July 2014 Australian Technology Park, Sydney on the topic *Multivariate generalized Poisson geometric process model with scale mixtures of normal distributions*.
15. The 7th International Conference of the Thailand Econometric Society (Tes 2014), 8-10 Jan, 2014 at the Faculty of Economics, Chiang Mai University, Thailand on the topic *An Innovative Financial Time Series Model: A Threshold Conditional Autoregressive Geometric Process Jump Model*.
16. The 9th ICSA International Conference: Challenges of Statistical Methods for Interdisciplinary Research and Big Data, 20-23 December, 2013, at Hong Kong Baptist University on the topic *Bayesian Approach to Analysing Longitudinal Bivariate Binary Data with Informative Dropout*.
17. The 5th International Conference of the Thailand Econometric Society (Tes 2012), 12-13 Jan, 2012 at the Faculty of Economics, Chiang Mai University, Thailand on the topic *An Innovative Financial Time Series Model: The Geometric Process Model*.
18. The 9th Valencia International Meeting on Bayesian Statistics 2010, World Meeting of the International Society for Bayesian Analysis, Benidorm (Alicante, Spain), June 3-8, 2010 on the topic *Bayesian approach to analysing longitudinal bivariate binary data with informative dropout*.
19. The 3rd International Conference on Computational and Financial Econometrics (CFE 09), held in Limassol, Cyprus, October 29-31, 2009 on the topic *Extension of Geometric Process Models to Conditional Autogregressive Range Data*.
20. The 11th International Congress on Insurance: Mathematics and Economics, Piraeus, Greece on July 10-12, 2007, on the topic *Model selection for loss reserves: the Growing Triangle technique*.
21. The ASC 2004 Australian Statistical Conference, Cairns, Australia on July 11-16, 2004 on the topic *Modeling SARS data using threshold Geometric Process models*.

22. The 7th Valencia International Meeting on Bayesian Statistics, Tenerife (Canary Islands), Spain held on June 1-6, 2002 and organized by International Society for Bayesian Analysis on the topic *Bayesian analysis of informative drop-out models*.
23. The 15th Australian Statistical Conference 3-7, July, 2000, Adelaide, Australia on the topic *Modeling informative drop-out in longitudinal binary data analysis*.
24. The 14th Biennial Conference, Statistical Society of Australia, 6-10, July, 1998, Gold Coast, Australia on the topic *Initial time problem in autoregressive binary*.
25. The 1997 International Symposium on Contemporary Multivariate Analysis and its Applications, Hong Kong, May 19-22, 1997 on the topic *A Likelihood approach to analysing longitudinal bivariate binary data*.
26. Biometrics 95, Coolangatta, Australia, Sept, 1995 on the topic *The analysis of methadone clinic data using marginal and conditional logistic models with mixture or random effects*.

Departmental seminar

27. Department of Statistics and Applied Probability, University of California, Santa Barbara, USA, April 3, 2024, on the topic *Machine Learning in Asset Management: Application of Mixture Density Network* invited by Professor Gareth Peters.
28. Department of Mathematics and Statistics, York University, Toronto, Canada, July 19, 2019, on the topic *Multivariate long memory cohort mortality models for life table construction* invited by Professor Xin Gao.
29. Institute of Mathematical Sciences, University of Malaya, Kuala Lumpur, Malaysia, June 16, 2017, on the topic *Forecasting trade duration via ACD models with mixture of GB2 distributions.*
30. Department of Mathematics and Statistics, Macquarie University, September 6, 2016, on the topic *Volatility estimation and forecast using quantile range-based measures and parametric quantile regression.*
31. Institute of Innovation for Future Society, Nagoya University, July 28, 2016 on the topic *Usage Based Auto Insurance: from data to model*.
32. Department of Statistics, The University of Sydney, March 13, 2015 on the topic *Quantile regression for conditional autoregressive range model*.
33. Graduate Institute of Statistics and Actuarial Science, Feng Chia University, Taiwan, 9 April, 2010 on the topic *Geometric process model for financial Time Series*.
34. Graduate Institute of Finance, Ling Tung University, Taiwan, 14 April, 2010 on the topic *Geometric process model for financial time series*.
35. School of Mathematics and Statistics, the University of New South Wales, Oct 17, 2008, on the topic *Stochastic volatility models with heavy-tailed distributions* invited by Prof. Spiridon Penev.
36. School of Mathematics and Applied Statistics, the University of Wollongong, May 27, 2008, on the topic *Geometric process models for series of events* invited by Prof. Matt Wand.
37. The Kirby Institute for infection and immunity in society, Medicine, The University of New South Wales in Nov 27, 2008, on the topic *Poisson geometric process model for time series count data with overdispersion and zero inflation* invited by A/Prof. Handan Wand.
38. Department of Statistics, The Chinese University of Hong Kong, Nov 11, 1997 on the topic *Generalized linear mixed models with applications in medical survey*.

Workshop

39. Sydney Summer Statistics Workshop, University of Technology, Sydney, Feb 2, 2007 on the topic *Geometric Process Models for Series of Events*.

Academic Visits

1. Prof Gareth Peters at the Department of Statistics and Applied Probability, University of California at Santa Barbara for 2 weeks in April, 2024.
2. Dr Gareth Peters at University College, London, UK for 3 weeks in May, 2014 on the topic *A new model for the entire quantile functions by combining a median model with a symmetric or asymmetric*

half-range model.

3. Dr. Kok Haur Ng at The University of Malaya, Malaysia for 3 weeks in April, 2014 on the topic *Parametric quantile regression for conditional autogregressive range model* and 2 weeks in Febrary 2017.
4. Prof Udi E Makov at
5. A/Prof. Badescu, Andrei L. at the Department of Statistical Science, University of Toronto, Canada 2012 to explore collaborative research in modelling longitudinal data using heavy-tailed distribution in scale mixtures representation.
6. Prof. Cathy WS Chen at Department of Statistics/Graduate Institute of Statistics & Actuarial Science, Feng Chai University, Taiwan during Apr 5-23, 2010 under Scientific Visit to Taiwan program on the topic *Accurate Volatility Estimation in Financial Time Series Models*.
7. Prof. Zhou Zhou at the Department of Statistics, University of Toronto, Canada 2010 to explore collaborative research in Bayesian approach with applications in health science.
8. Many visits to A/Prof. Philip Yu at the Department of Statistics and Actuarial Science, The University of Hong Kong on financial time series models.

School administration

Education codirector (2022-23), Program director (2015-semester 1, 2017, semester 1 and 2, 2019), second year coordinator, second year board of examiners (2016-semester 1, 2017). Members of research, management and academic program committees (2015-2017).

Other Links

- School of Mathematics and Statistics
- Faculty of Science
- Statistic jokes
- Reasons to be a statistician