Xunyu Zhou

Liu Family Professor of IEOR
Director, Nie Center for Intelligent Asset Management
Columbia University

Degrees

Ph.D. Operations Research & Control Theory, July 1989, Fudan University, China
B.Sc. Mathematics, July 1984, Fudan University, China

Professional Experience

2016-: Liu Family Professor of IEOR, Department of Industrial Engineering and Operations Research, Columbia University, USA

2007-2016: Nomura Professor of Mathematical Finance, Mathematical Institute, The University of Oxford, UK

2013-2014: Choh-Ming Li Professor of Financial Engineering, Department of Systems Engineering and Engineering Management, The Chinese University of Hong Kong, Hong Kong

1993-2012: Assistant Professor/Associate Professor/Professor/Chair Professor, Department of Systems Engineering and Engineering Management, The Chinese University of Hong Kong, Hong Kong

1991-1993: Postdoctoral Fellow, Faculty of Management, University of Toronto, Canada

1989-1991: Postdoctoral Fellow, Department of Mathematics, Faculty of Science, Kobe University, Japan

1984-1989: Teaching Assistant and Research Assistant, Institute of Mathematics, Fudan University, China

1987-1988: Exchange Ph.D. Student, Department of Mathematics, Faculty of Science and Technology, Keio University, Japan

Honors and Awards

2023	Distinguished Faculty Teaching Award, Fu Foundation School of Engineering and Applied Science, Columbia University
2017	Archimedes Society Lecture, Columbia University
2016	Elected Fellow, SIAM
2016	Liu Family Professorship of Financial Engineering, Columbia University
2013	Wolfson Research Award, The Royal Society, UK
2013	Humboldt Distinguished Lecture, Humboldt - Universität zu Berlin, Germany
2013	Choh-Ming Li Professorship of Financial Engineering, The Chinese University of Hong Kong
2012	Plenary speaker, Congress of Bachelier Finance Society
2010	Invited 45-minute speaker, International Congress of Mathematicians
2007	Nomura Professorship of Mathematical Finance, University of Oxford
2005	Elected Fellow, IEEE
2005	Croucher Senior Research Fellowship, Croucher Foundation
2003	SIAM Outstanding Paper Prize, SIAM
2002	Exemplary Teaching Award, Faculty of Engineering, The Chinese University of Hong Kong
2001	Meritorious Service Award, *Operations Research*, INFORMS
1999	First Class Award, Science & Technology Progress Awards, Shanghai Municipality, China
1998	Deutscher Akademischer Austauschdienst (DAAD) Research Fellowship, Germany
1993	Alexander von Humboldt Research Fellowship, Germany
1989	Monbusho Scholarship, Japan

Editorial Service

Co-Editor, *Mathematics and Financial Economics*, Springer, 2015-

Editorial Board Member, *The SIAM Book Series on Financial Mathematics*, SIAM, 2015-

Advisory Board Member, *Quantitative Finance*, Routledge, 2020-

Associate Editor, *Operations Research*, INFORMS, 1999-

Associate Editor, *Mathematics of Operations Research*, INFORMS, 2011-2020

Associate Editor, *Mathematical Finance*, Blackwell, 2001-

Associate Editor, *SIAM Journal on Financial Mathematics*, SIAM, 2009-2014

Associate Editor, *SIAM Journal on Control and Optimization*, SIAM, 2009-2014

Associate Editor, *Quantitative Finance*, Routledge, 2010-2020

Associate Editor, *Stochastic Models*, Taylor & Francis, 2019-

Associate Editor, *Applied Mathematics and Optimization*, Springer, 2017-

Associate Editor, *IEEE Transactions on Automatic Control*, IEEE, 1999-2002

Associate Editor, *Asia-Pacific Financial Markets*, Springer, 2006-

Section Editor, *Encyclopedia of Quantitative Finance*, Wiley, 2010

Editor, Special Issue: Selected Papers from the Yellow Mountain Workshop, *Mathematical Finance*, Volume 16 Number 1, 2006

Editor, Special Issue: Selected Papers from the Lijiang Workshop, *Mathematical Finance*, Volume 18 Number 4, 2008

Editor, Special Issue: 11th World Congress of the Bachelier Finance Society, *Mathematical Finance*, Volume 34 Number 1, 2024

Professional Membership

Fellow, Institute of Electrical and Electronic Engineers (IEEE)

Fellow, Society of Industrial and Applied Mathematics (SIAM)

Life Member, Bachelier Finance Society

Member, The Institute for Operations Research and the Management Sciences (INFORMS)

Administrative Responsibilities

Director, Nie Center for Intelligent Asset Management, Columbia University, 2017-

Head, Mathematical Finance Group (about 12 faculty members), University of Oxford, 2007-2016

Head, Oxford Finance, University of Oxford, 2014-2015

Director, Nomura Centre for Mathematical Finance, University of Oxford, 2008-2015

Director, Oxford-Nie Financial Big Data Lab, University of Oxford, 2014-2016

Director, Centre for Financial Engineering, The Chinese University of Hong Kong, 2013-2014

Member, Research Grants Council (RGC), Hong Kong SAR Government, 2008-2011

Research Interests

- Machine Learning (reinforcement learning, robust optimization, data-driven portfolio selection)
- Quantitative Finance and Insurance (risk management, asset allocation, option pricing, stock loans, reinsurance, dividend management)
- Theoretical Economics (Arrow-Debreu equilibria, cumulative prospect theory, rank-dependent utility theory, principal-agent problem)
- Stochastic Optimal Control (stochastic Hamiltonian systems, Hamilton-Jacobi-Bellman equation, viscosity solution, stochastic linear–quadratic control, risk-sensitive control)
- Applied Probability (backward stochastic differential equations, optimal stopping)

Grants

Research Grants

1. PI, RGC General Research Fund 2014/15 (No. 14209814), Nonlinear Stochastic Control under Probability Distortion, HK$692,894 (US$1=HK$7.8), 2014-2017 (withdrawn due to resignation)
2. PI, Institute for Risk Management and Innovation, East China Normal University, RMB1,300,000 (US$1=RMB6.2), 2011-2017
3. PI, RGC Earmarked Grant 2011/2012 (No. GRF419511) "Tackling Time-Inconsistency in Behavioral Portfolio Selection", HK$1,400,000, 2011-2014
4. PI, Strategic Direction Grant, Chinese University of Hong Kong, "New Directions of Financial Engineering", HK$1,000,000, 2010-2013
5. PI, RGC Earmarked Grant 2006/2007 (No. CUHK418606) "Stochastic Control with Sample-wise State Constraints", HK$356,000 (US$1=HK$7.8), 2007-2009
6. PI, RGC Earmarked Grant 2004/2005 (No. CUHK418605), "Dynamic Mean–Variance Portfolio Selection with Aversion to Ambiguity", HK$538,836, 2005-2008
7. PI, RGC Earmarked Grant 2003/2004 (No. CUHK 4175/03E), "Indefinite Stochastic LQ Control with Partial Information", HK$565,723, 2003-2006
8. PI, RGC Earmarked Grant 2001/2002 (No. CUHK 4234/01E), "Risk-Sensitive Control", HK$762,762, 2001-2004
9. PI, RGC Earmarked Grant 1999/2000 (No. CUHK 4435/99E): "Optimal Controls of Forward-Backward Stochastic Systems with Financial Applications", HK$622,000, 1999-2002
10. PI, RGC Earmarked Grant 1998/99 (No. CUHK 4054/98E): "Optimal Dividend Distributions and Risk Controls for Financial Companies", HK$622,000, 1998-2001
11. PI, RGC Earmarked Grant 1997/98 (No. CUHK 4125/97E): "New Challenges in Optimization of Stochastic Diffusion Processes", HK$1,134,100, 1997-2000
12. PI, Mainline Research Scheme: "Maximum Principle for Singular Controls in Finance", HK$126,800, 1995-97
13. PI, RGC Earmarked Grant 1995/96 (No. CUHK 489/95E): "Asymptotic Optimality of Hierarchical Production Policies in Discrete Event Manufacturing Systems", HK$257,000, 1995-98
14. PI, RGC Earmarked Grant 1994/95 (No. CUHK 249/94E): "Dynamic Near-Optimization and Applications", HK$476,000, 1994-97
15. PI, CUHK Direct Grant for Research 1993/94 (No. 220500660): "Hierarchical Decision Making in Stochastic Manufacturing Systems", HK$100,000, 1993-95
16. Co-I, NSFC/RGC Joint Research Scheme 2005/06, "Study of Optimal Portfolio Selection Policies", HK$489,700, 2006-2009

17. Co-I, RGC Earmarked Grant 2004/05 (No. CUHK 4242/04E), "Continuous Linear Programming – Computational and Control Perspectives", HK$506,447, 2005-2007
18. Co-I, RGC Earmarked Grant 2000/2001 (No. CUHK 4175/00E), "Linear Quadratic Control via Semidefinite Programming, with Applications", HK$635,817, 2000-2003
19. Co-I, RGC Earmarked Grant 1994/95 (No. CUHK 278/94E): "Manpower Planning and Scheduling with Staff of Mixed Skills", HK$303,000, 1994-96

Industrial Grants

1. Aurora FinTech Research Fund, US$500,000, 2020-
2. Nie Center for Intelligent Asset Management, US$2,000,000, 2017-
3. Research grant supported by Jiangsu Ruihua Investment Ltd, US$1,000,000, 2017-
4. Oxford-Nie Financial Big Data Lab, Oxford University, £600,000 (£1=US$1.3), 2014-2017
5. Nomura Centre for Mathematical Finance, Oxford University, £750,000, 2009-2014
6. Additional Funding for Industrial Support (No. AF/148/94): "An Integrated System for Resource Planning and Scheduling of Large Scale Organization", HK$3,918,000, 1994-97

Academic Publications

Google Scholar Metrics (as of 9 February 2024)

- Total citations: 17270
- h-index: 60
- i10-index: 138

Monograph

1. J. Yong and X. Zhou, *Stochastic Controls: Hamiltonian Systems and HJB Equations*, *Applications of Mathematics* Series No. 43, Springer, New York, 1999 (438 pages).

Edited Books

1. T. Zhang and X. Zhou (Eds.), *Stochastic Analysis and Applications to Finance*, *Interdisciplinary Mathematical Sciences* Series, World Scientific, Singapore, 2012.
2. S. Chen, X. Li, J. Yong and X. Zhou (Eds.), *Control of Distributed Parameter and Stochastic Systems*, Kluwer, London, 1999.
3. D.D. Yao, H. Zhang and X. Zhou (Eds.), *Stochastic Models and Optimization*, Springer, New York, 2003.

Refereed Journal Papers (Submitted)

1. M. Dai, Y. Dong, Y. Jia and X. Zhou, "Learning Merton's strategies in an incomplete market: Recursive entropy regularization and biased Gaussian exploration".
2. K. Wang, X. Xu and X. Zhou, "Variable clustering via distributionally robust nodewise regression".
3. X. Gao and X. Zhou, "Square-root regret bounds for continuous-time episodic Markov decision processes".
4. X. Gao and X. Zhou, "Logarithmic regret bounds for continuous-time average-reward Markov decision processes".

Refereed Journal Papers (Published or Accepted)

1. L. Chen and X. Zhou, "Naïve Markowitz policies", to appear in *Mathematical Finance*.
2. W. Tang, Y. Wu and X. Zhou, "Discrete-time simulated annealing: A convergence analysis via the Eyring–Kramers law, to appear in *Numerical Algebra, Control and Optimization*.
3. Y. Chi, X. Zhou and S. Zhuang, "Variance insurance contracts", *Insurance: Mathematics and Economics*, Vol. 115 (2024), pp. 62-82.
4. X. Han, R. Wang and X. Zhou, "Choquet regularization for reinforcement learning", *SIAM Journal on Control and Optimization*, Vol. 61 (2023), pp. 2777-2801.
5. Y. Li, Z. Xu and X. Zhou, "Robust utility maximization with intractable claim", *Finance and Stochastics*, Vol. 27 (2023), pp. 985-1015.
6. X. Cui, Y. Shi and X. Zhou, "Beta and coskewness pricing: Perspective from probability weighting", *Operations Research*, Vol. 71 (2023), pp. 776790.
7. Y. Jia and X. Zhou, "q-Learning in continuous time", *Journal of Machine Learning Research*, Vol. 24 (2023), pp. (161):1-61.
8. S. Hu, J. Obloj and X. Zhou, "A casino gambling model under cumulative prospect theory: Analysis and algorithm", *Management Science*, Vol. 69 (2023), pp. 24742496.
9. W. Tang and X. Zhou, "Tail probability estimates of continuous-time simulated annealing processes", *Numerical Algebra, Control and Optimization,* Vol. 13 (2023), pp. 473-485.
10. Y. Jia and X. Zhou, "Policy gradient and actor–critic learning in continuous time and space: Theory and algorithms", *Journal of Machine Learning Research*, Vol. 23 (2022), pp. (275):1-50.
11. Y. Jia and X. Zhou, "Policy evaluation and temporal-difference learning in continuous time and space: A martingale approach", *Journal of Machine Learning Research*, Vol. 23 (2022), pp. (154):1-55.
12. W. Tang, Y. Zhang and X. Zhou, "Exploratory HJB equations and their convergence", *SIAM Journal on Control and Optimization*, Vol. 60 (2022), pp. 3191-3216.

13. W. Tang, X. Xiao and X. Zhou, "Asset selection via correlation blockmodel clustering", *Expert Systems With Applications*, Vol. 195 (2022), 116558.
14. J. Blanchet, L. Chen and X. Zhou, "Distributionally robust mean-variance portfolio selection with Wasserstein distances", *Management Science*, Vol. 68 (2022), pp. 6382-6410.
15. X. Gao, Z. Xu and X. Zhou, "State-dependent temperature control for Langevin diffusions", *SIAM Journal on Control and Optimization*, Vol. 60 (2022), pp. 1250-1268.
16. M. Xu, Z. Xu and X. Zhou, "g-Expectation of distributions", *Probability, Uncertainty and Quantitative Risk*, Vol. 7 (2022), pp. 385-404.
17. K. S. Tan, W. Wei and X. Zhou, "Failure of smooth pasting principle and nonexistence of equilibrium stopping rules under time-inconsistency", *SIAM Journal on Control and Optimization*, Vol. 59 (2021), pp. 4136-4154.
18. Y. Hu, H. Jin and X. Zhou, "Consistent investment of sophisticated rank-dependent utility agents in continuous time", *Mathematical Finance*, Vol. 31 (2021), pp. 1056-1095.
19. M. Strub and X. Zhou, "Evolution of the Arrow-Pratt measure of risk-tolerance for predictable forward utility processes", *Finance and Stochastics*, Vol. 25 (2021), pp. 331-358.
20. H. Wang and X. Zhou, "Continuous-time mean-variance portfolio selection: A reinforcement learning framework", *Mathematical Finance*, Vol. 30 (2020), pp. 1273-1308.
21. H. Wang, T. Zariphopoulou and X. Zhou, "Reinforcement learning in continuous time and space: A stochastic control approach", *Journal of Machine Learning Research*, Vol. 21 (2020), pp. 1-34.
22. S. Ebert, W. Wei and X. Zhou, "Weighted discounting – On group diversity, time-inconsistency, and consequences for investment", *Journal of Economic Theory*, Vol. 189 (2020), pp. 1-40.
23. B. Angoshtar, T. Zariphopoulou and X. Zhou, "Predictable forward performance processes: The binomial case", *SIAM Journal on Control and Optimization*, Vol. 58 (2020), pp. 327-347.
24. Y.-J. Huang, A. Nguyen-Huu and X. Zhou, "Stopping behaviors of naive and non-committed sophisticated agents when they distort probability", *Mathematical Finance*, Vol. 30 (2020), pp. 310-340.
25. X. He, S. Hu, J. Obloj and X. Zhou, "Optimal exit time from casino gambling: Strategies of pre-committed and naive gamblers", *SIAM Journal on Control and Optimization*, Vol. 57 (2019), pp. 1845-1868.
26. X. He, S. Hu, J. Obloj and X. Zhou,"Two explicit Skorokhod embeddings for simple symmetric random walk", *Stochastic Processes and Their Applications*, Vol. 129 (2019), pp. 3431-3445.
27. H. Jin, J. Xia and X. Zhou, "Arrow-Debreu equilibria for rank-dependent utilities with heterogeneous probability weighting", *Mathematical Finance*, Vol. 29 (2019), pp. 898-927.
28. R. Wang, Z. Xu and X. Zhou, "Dual utilities under dependence uncertainty", *Finance and Stochastics*, Vol. 23 (2019), pp. 1025-1048.

29. Z. Xu, X. Zhou and S. Zhuang "Optimal insurance with rank-dependent utility and increasing indemnities", *Mathematical Finance*, Vol. 29 (2019), pp. 659-692.
30. X. He, R. Kouwenberg and X. Zhou, "Inverse S-shaped probability weighting and its impact on investment", *Mathematical Control and Related Fields*, Vol. 8 (2018), pp. 679-706.
31. Y. Hu, H. Jin and X. Zhou, "Time-inconsistent stochastic linear–quadratic control: Characterization and uniqueness of equilibrium", *SIAM Journal on Control and Optimization*, Vol. 55 (2017), pp. 1261-1279.
32. X. He, R. Kouwenberg and X. Zhou, "Rank-dependent utility and risk taking in complete markets", *SIAM Journal on Financial Mathematics*, Vol. 8 (2017), pp. 214-239.
33. X. He, S. Hu, J. Obloj and X. Zhou, "Path-dependent and randomized strategies in Barberis' casino gambling model", *Operations Research*, Vol. 65 (2017), pp. 97-103.
34. J. Xia and X. Zhou, "Arrow-Debreu equilibria for rank-dependent utilities", *Mathematical Finance*, Vol. 26 (2016), pp. 558-588.
35. X. He and X. Zhou, "Hope, fear and aspirations", *Mathematical Finance*, Vol. 26 (2016), pp. 3-50.
36. X. He, H. Jin and X. Zhou, "Dynamic portfolio choice when risk is measured by weighted VaR", *Mathematics of Operations Research*, Vol. 40, pp. 773-796.
37. H. Chang, J. Cvitanic and X. Zhou, "Optimal contracting with moral hazard and behavioral preferences", *Journal of Mathematical Analysis and Applications*, Vol. 428 (2015), pp. 959-981.
38. C. Bernard, X. He, J.-A. Yan and X. Zhou, "Optimal insurance design under rank dependent utility", *Mathematical Finance*, Vol. 25 (2015), pp. 154-186.
39. H. Jin and X. Zhou, "Continuous-time portfolio selection under ambiguity", *Mathematical Control and Related Fields*, Vol. 5 (2015), pp. 475-488.
40. X. He and X. Zhou, "Myopic loss aversion, reference point, and money illusion", *Quantitative Finance*, Vol. 14 (2014), pp. 1541-1554.
41. T. Bjork, A. Murgoci and X. Zhou, "Mean-variance portfolio optimization with state dependent risk aversion", *Mathematical Finance*, Vol. 24 (2014), pp. 1-24.
42. Z. Xu and X. Zhou, "Optimal stopping under probability distortion", *Annals of Applied Probability*, Vol. 23 (2013), pp. 251-282.
43. H. Jin and X. Zhou, "Greed, leverage, and potential losses: A prospect theory perspective", *Mathematical Finance*, Vol. 23 (2013), pp. 122-142.
44. Z. Qian and X. Zhou, "Existence of solutions to a class of indefinite stochastic Riccati equations", *SIAM Journal on Control and Optimization*, Vol. 51 (2013), pp. 221-229.
45. Y. Hu, H. Jin and X. Zhou, "Time-inconsistent stochastic linear-quadratic control", *SIAM Journal on Control and Optimization*, Vol. 50 (2012), pp. 1548-1572.

46. T. Meyer-Brandis, B. Oksendal and X. Zhou, "A mean-field stochastic maximum principle via Malliavin calculus", *Stochastics*, Vol. 84 (2012), pp. 643-666.
47. X. He and X. Zhou, "Portfolio choice under cumulative prospect theory: An analytical treatment", *Management Science*, Vol. 57 (2011), pp. 315-331.
48. X. He and X. Zhou, "Portfolio choice via quantiles", *Mathematical Finance*, Vol. 21 (2011), pp. 203-231.
49. H. Jin, S. Zhang and X. Zhou, "Behavioral portfolio selection with loss control", *Acta Mathematica Sinica*, Vol. 27 (2011), pp. 255-274.
50. C. Chiu and X. Zhou, "The premium of dynamic trading", *Quantitative Finance*, Vol. 11 (2011), pp. 115-123.
51. S. Ji and X. Zhou, "A generalized Neyman-Pearson lemma for g-probabilities", *Probability Theory and Related Fields*, Vol. 148 (2010), pp. 645-669.
52. M. Dai, Z. Xu and X. Zhou, "Continuous-time Markowitz's model with transaction costs", *SIAM Journal on Financial Mathematics*, Vol. 1 (2010), pp. 96-125.
53. H. Pham, V. Vath and X. Zhou, "Optimal switching over multiple regimes", *SIAM Journal on Control and Optimization*, Vol. 48 (2009), pp. 2217-2253.
54. J.-A. Yan and X. Zhou, "Markowitz strategies revised", *Acta Mathematica Scientia*, Vol. 29 (2009), pp. 817-828.
55. Q. Zhang and X. Zhou, "Valuation of stock loans with regime switching", *SIAM Journal on Control and Optimization*, Vol. 48 (2009), pp. 1229-1250.
56. A. Shiryaev, Z. Xu and X. Zhou, "Thou shalt buy and hold", *Quantitative Finance*, Vol. 8 (2008), pp. 765-776.
57. H. Morimoto and X. Zhou, "Optimal consumption in a growth model with the Cobb-Douglas production function", *SIAM Journal on Control and Optimization*, Vol. 47 (2008), pp. 2991-3006.
58. H. Jin and X. Zhou, "Behavioral portfolio selection in continuous time", *Mathematical Finance*, Vol. 18 (2008), pp. 385-426.
59. H. Jin, Z. Xu and X. Zhou, "A convex stochastic optimization problem arising from portfolio selection", *Mathematical Finance*, Vol. 18 (2008), pp. 171-184.
60. S. Ji and X. Zhou, "The Neyman-Pearson lemma under g-probabilities", *C. R. Acad. Sci. Paris*, Ser. I, Vol. 346 (2008), pp. 209-212.
61. J. Xiong and X. Zhou, "Mean–variance portfolio selection under partial information", *SIAM Journal on Control and Optimization*, Vol. 46 (2007), pp. 156-175.
62. J. Xia and X. Zhou, "Stock loans", *Mathematical Finance*, Vol. 17 (2007), pp. 307-317.
63. X. Li and X. Zhou, "Continuous-time mean–variance efficiency: The 80% rule", *Annals of Applied Probability*, Vol. 16 (2006), pp. 1751-1763.
64. D. Yao, S. Zhang and X. Zhou, "Tracking a financial benchmark using a few assets", *Operations Research*, Vol. 54 (2006), pp. 232-246.

65. H. Jin, H. Markowitz and X. Zhou, "A note on semivariance", *Mathematical Finance*, Vol. 16 (2006), pp. 53-62.
66. S. Ji and X. Zhou, "A maximum principle for stochastic optimal control with terminal state constraints, and its applications", *Communications in Information and Systems*, Vol. 6 (2006), pp. 321-337. (A Special Issue Dedicated to Tyrone Duncan on the Occasion of His 65th Birthday)
67. Y. Hu and X. Zhou, "Constrained stochastic LQ control with random coefficients, and application to mean–variance portfolio selection", *SIAM Journal on Control and Optimization*, Vol. 44 (2005), pp. 444-466.
68. Y. Hu and X. Zhou, "Stochastic control for linear systems driven by fractional noises", *SIAM Journal on Control and Optimization*, Vol. 43 (2005), pp. 2245-2277.
69. A.E.B. Lim and X. Zhou, "A new risk-sensitive maximum principle", *IEEE Transactions on Automatic Control*, Vol. AC-50 (2005), pp. 958-966.
70. T. Bielecki, H. Jin, S. Pliska and X. Zhou, "Continuous-time mean–variance portfolio selection with bankruptcy prohibition", *Mathematical Finance*, Vol. 15 (2005), pp. 213-244.
71. H. Jin, J.-A. Yan and X. Zhou, "Continuous-time mean–risk portfolio selection", *Annales de l'Institut Henri Poincaré (B) Probabilités et statistiques*, Vol. 41 (2005), pp. 559-580.
72. F. Gozzi, A. Swiech and X. Zhou, "A corrected proof of the stochastic verification theorem within the framework of viscosity solutions", *SIAM Journal on Control and Optimization*, Vol. 43 (2005), pp. 2009-2019.
73. Y. Liu, G. Yin and X. Zhou, "Near-optimal controls of random-switching LQ problems with indefinite control weight costs", *Automatica*, Vol. 41 (2005), pp. 1063-1070.
74. X. Chen and X. Zhou, "Stochastic LQ control with conic control constraints on an infinite time horizon", *SIAM Journal on Control and Optimization*, Vol. 43 (2004), pp. 1120-1150.
75. T. Choulli, M. Taksar and X. Zhou, "Interplay between dividend rate and business constraints for a financial corporation", *Annals of Applied Probability*, Vol. 14 (2004), pp. 1810-1837.
76. D. Yao, S. Zhang and X. Zhou, "Stochastic LQ control via primal–dual semidefinite programming", *SIAM Review*, Vol. 46 (2004), pp. 87-111.
77. X. Guo, J. Liu and X. Zhou, "A constrained nonlinear regular-singular stochastic control problem, with applications", *Stochastic Processes and Their Applications*, Vol. 109 (2004), pp. 167-187.
78. G. Yin and X. Zhou, "Markowitz's mean-variance portfolio selection with regime switching: ¿From discrete-time models to their continuous-time limits", *IEEE Transactions on Automatic Control*, Vol. 49 (2004), pp. 349-360.
79. X. Cai, K.L. Teo, X.Q. Yang and X. Zhou, "Minimax portfolio optimization: Empirical numerical study", *Journal of the Operational Research Society*, Vol. 55 (2004), pp. 65-72.
80. X. Zhou and G. Yin, "Markowitz's mean-variance portfolio selection with

regime switching: A continuous-time model", *SIAM Journal on Control and Optimization*, Vol. 42 (2003), pp. 1466-1482.

81. X. Li, X. Zhou and M. Ait Rami, "Indefinite stochastic linear quadratic control with Markovian jumps", *Journal of Global Optimization*, Vol. 27 (2003), pp. 149-175.
82. Y. Hu and X. Zhou, "Indefinite stochastic Riccati equations", *SIAM Journal on Control and Optimization*, Vol. 42 (2003), pp. 123-137.
83. T. Choulli, M. Taksar and X. Zhou, "A diffusion model for optimal dividend distribution for a company with constraints on risk control", *SIAM Journal on Control and Optimization*, Vol. 41 (2003), pp. 1946-1979.
84. A.E.B. Lim, X. Zhou and J.B. Moore, "Multiple-objective risk-sensitive control", *Automatica*, Vol. 39 (2003), pp. 533-541.
85. M. Ait Rami, X. Chen and X. Zhou, "Discrete-time indefinite LQ control with state and control dependent noises", *Journal of Global Optimization*, Vol. 23 (2002), pp. 245-265.
86. A.E.B. Lim and X. Zhou, "Mean–variance portfolio selection with random parameters in a complete market", *Mathematics of Operations Research*, Vol. 27 (2002), pp. 101-120.
87. H. Wu and X. Zhou, "Identifying all optimal controls for an indefinite stochastic linear quadratic control problem", *IEEE Transactions on Automatic Control*, AC-47 (2002), pp. 1119-1122.
88. X. Li, X. Zhou and A.E.B. Lim, "Dynamic mean–variance portfolio selection with no-shorting constraints", *SIAM Journal on Control and Optimization*, Vol. 40 (2001), pp. 1540-1555.
89. M. Ait Rami, J.B. Moore and X. Zhou, "Indefinite stochastic linear quadratic control and generalized differential Riccati equation", *SIAM Journal on Control and Optimization*, Vol. 40 (2001), pp. 1296-1311.
90. D. Yao, S. Zhang and X. Zhou, "Stochastic LQ control via semidefinite programming", *SIAM Journal on Control and Optimization*, Vol. 40 (2001), pp. 801-823.
91. D. Yao, S. Zhang and X. Zhou, "A primal–dual semidefinite programming approach to LQ control problems", *IEEE Transactions on Automatic Control*, Vol. AC-46 (2001), pp. 1442-1447.
92. A.E.B. Lim and X. Zhou, "Linear–quadratic control of backward stochastic differential equations", *SIAM Journal on Control and Optimization*, Vol. 40 (2001), pp. 450-474.
93. T. Choulli, M. Taksar and X. Zhou, "Excess-of-loss reinsurance for a company with debt liability and constraints on risk reduction", *Quantitative Finance*, Vol. 1 (2001), pp. 573-596.
94. H. Wu and X. Zhou, "Stochastic frequency characteristics", *SIAM Journal on Control and Optimization*, Vol. 40 (2001), pp. 557-576.
95. A.E.B. Lim and X. Zhou, "Risk-sensitive control with HARA utility", *IEEE Transactions on Automatic Control*, Vol. AC-46 (2001), pp. 563-578.

96. N. Dokuchaev and X. Zhou, "Optimal investment strategies with bounded risks, general utilities, and goal achieving", *Journal of Mathematical Economics*, Vol. 35 (2001), pp. 289-309.
97. M. Ait Rami, X. Chen, J.B. Moore and X. Zhou, "Solvability and asymptotic behavior of generalized Riccati equations arising in indefinite stochastic LQ controls", *IEEE Transactions on Automatic Control*, Vol. AC-46 (2001), pp. 428-440.
98. N.T. Fong and X. Zhou, "Optimal feedback controls in deterministic two-machine flowshops with finite buffers", *IEEE Transactions on Automatic Control*, Vol. AC-45 (2000), pp. 1198-1202.
99. M. Ait Rami, X. Zhou and J.B. Moore, "Well-posedness and attainability of indefinite stochastic linear quadratic control in infinite time horizon", *Systems and Control Letters*, Vol. 41 (2000), pp. 123-133.
100. M. Ait Rami and X. Zhou, "Linear matrix inequalities, Riccati equations, and indefinite stochastic linear quadratic controls", *IEEE Transactions on Automatic Control*, Vol. AC-45 (2000), pp. 1131-1143.
101. S. Sethi, G. Sorger and X. Zhou, "Stability of real-time lot-scheduling policies with quality levels", *IEEE Transactions on Automatic Control*, Vol. AC-45 (2000), pp. 2193-2196.
102. S. Chen and X. Zhou, "Stochastic linear quadratic regulators with indefinite control weight costs. II", *SIAM Journal on Control and Optimization*, Vol. 39 (2000), pp. 1065-1081.
103. X. Cai, K.L. Teo, X.Q. Yang and X. Zhou, "An optimal strategy for risk averse investors in portfolio optimization", *Management Science*, Vol. 46 (2000), pp. 957-972.
104. X. Zhou and D. Li, "Continuous-time mean-variance portfolio selection: A stochastic LQ framework", *Applied Mathematics and Optimization*, Vol. 42 (2000), pp. 19-33.
105. M. Kohlmann and X. Zhou, "Relationship between backward stochastic differential equations and stochastic controls: A linear-quadratic approach", *SIAM Journal on Control and Optimization*, Vol. 38 (2000), pp. 1392-1407.
106. N. Dokuchaev and X. Zhou, "Stochastic controls with terminal contingent conditions", *Journal of Mathematical Analysis and Applications*, Vol. 238 (1999), pp. 143-165.
107. H. Yan, X. Zhou and G. Yin, "Approximating an optimal production policy in a continuous flow line: Recurrence and asymptotic properties", *Operations Research*, Vol. 47 (1999), pp. 535-549.
108. A.E.B. Lim and X. Zhou, "Optimal stochastic LQR control with integral quadratic constraints and indefinite control weights", *IEEE Transactions on Automatic Control*, Vol. AC-44 (1999), pp. 1359-1369.
109. J.B. Moore, X. Zhou and A.E.B. Lim, "Discrete time LQG controls with control dependent noise", *Systems and Control Letters*, Vol. 36 (1999), pp. 199-206.
110. G.A. Fleischer, A.K. Mason and X. Zhou, "The mid-period and other approximations in the presence of uniform intraperiod cash flows: A critical

evaluation of relative error", *The Engineering Economist*, Vol. 43 (1998), pp. 369-377.

111. X. Chen and X. Zhou, "Deterministic near-optimal controls with state constraints", *Dynamics of Continuous, Discrete and Impulsive Systems*, Vol. 4 (1998), pp. 513-526.
112. M. Taksar and X. Zhou, "Optimal risk and dividend control for a company with a debt liability", *Insurance: Mathematics and Economics*, Vol. 22 (1998), pp. 105-122.
113. S. Chen, X. Li and X. Zhou, "Stochastic linear quadratic regulators with indefinite control weight costs", *SIAM Journal on Control and Optimization*, Vol. 36 (1998), pp. 1685-1702.
114. X. Zhou, "Stochastic near-optimal controls: Necessary and sufficient conditions for near-optimality", *SIAM Journal on Control and Optimization*, Vol. 36 (1998), pp. 929-947.
115. X. Zhou, "Characterization of optimal controls for diffusion processes", *Systems and Control Letters*, Vol. 31 (1997), pp. 3-9.
116. C. Samaratunga, S. Sethi and X. Zhou, "Computational evaluation of hierarchical production control policies for stochastic manufacturing systems", *Operations Research*, Vol. 45 (1997), pp. 258-274.
117. W.K. Ching, R. Chan and X. Zhou, "Circulant preconditioners for Markov-modulated Poisson processes and their applications to manufacturing systems", *SIAM Journal of Matrix Analysis and Applications*, Vol. 18 (1997), pp. 464-481.
118. X. Zhou, J. Yong and X. Li, "Stochastic verification theorems within the framework of viscosity solutions", *SIAM Journal on Control and Optimization*, Vol. 35 (1997), pp. 243-253.
119. S. Sethi, Q. Zhang and X. Zhou, "Hierarchical production planning in a stochastic two-machine flowshop with a finite internal buffer", *IEEE Transactions on Robotics and Automation*, Vol. 13 (1997), pp. 1-13.
120. S. Sethi and X. Zhou, "Optimal feedback controls in deterministic dynamic two-machine flowshops", *Operations Research Letters*, Vol. 19 (1996), pp. 225-235.
121. X. Zhou, "Sufficient conditions of optimality for stochastic systems with controllable diffusions", *IEEE Transactions on Automatic Control*, Vol. AC-41 (1996), pp. 1176-1179.
122. N.T. Fong and X. Zhou, "Hierarchical production policies in stochastic two-machine flowshops with finite buffers", *Journal of Optimization Theory and Applications*, Vol. 89 (1996), pp. 681-712.
123. X. Zhou, "Deterministic near-optimal controls Part II: Dynamic programming and viscosity solution approach", *Mathematics of Operations Research*, Vol. 21 (1996), pp. 655-674.
124. X. Zhou, "Deterministic near-optimal controls Part I: Necessary and sufficient conditions for near-optimality", *Journal of Optimization Theory and Applications*, Vol. 85 (1995), pp. 473-488.

125. S. Sethi and X. Zhou, "Dynamic stochastic job shops and hierarchical production planning", *IEEE Transactions on Automatic Control*, Vol. AC-39 (1994), pp. 2061-2076.

126. S. Sethi, Q. Zhang and X. Zhou, "Hierarchical controls in stochastic manufacturing systems with convex costs", *Journal of Optimization Theory and Applications*, Vol. 80 (1994), pp. 299-318.

127. X. Zhou and S. Sethi, "A sufficient condition for near optimal stochastic controls and its applications to manufacturing systems", *Applied Mathematics and Optimization*, Vol. 29 (1994), pp. 67-92.

128. S. Sethi, H. Yan, Q. Zhang and X. Zhou, "Feedback production planning in a stochastic two-machine flowshop: asymptotic analysis and computational results", *International Journal of Production Economics*, Vol. 30-31 (1993), pp. 79-93.

129. X. Zhou, "On the necessary conditions of optimal controls for stochastic partial differential equations", *SIAM Journal on Control and Optimization*, Vol. 31 (1993), pp. 1462-1478.

130. X. Zhou, "A class of semilinear stochastic partial differential equations and its controls: existence results", *Stochastic Processes and Their Applications*, Vol. 44 (1993), pp. 89-106.

131. X. Zhou, "Verification theorems within the framework of viscosity solutions", *Journal of Mathematical Analysis and Applications*, Vol. 177 (1993), pp. 208-225.

132. S. Sethi, Q. Zhang and X. Zhou, "Hierarchical controls in stochastic manufacturing systems with machines in tandem", *Stochastics and Stochastics Reports*, Vol. 41 (1992), pp. 89-118.

133. X. Zhou, "On the existence of optimal relaxed controls of stochastic partial differential equations", *SIAM Journal on Control and Optimization*, Vol. 30 (1992), pp. 247-261.

134. X. Zhou, "A duality analysis on stochastic partial differential equations", *Journal of Functional Analysis*, Vol. 103 (1992), pp. 275-293.

135. X. Zhou, "A unified treatment of maximum principle and dynamic programming in optimal stochastic controls", *Stochastics and Stochastics Reports*, Vol. 36 (1991), pp. 137-161.

136. X. Zhou, "Maximum principle of stochastic controlled systems of functional type", *Acta Mathematica Sinica*, Vol. 7 (1991), pp. 193-204.

137. X. Zhou, "Remarks on optimal controls of stochastic partial differential equations", *Systems and Control Letters*, Vol. 16 (1991), pp. 465-472.

138. X. Zhou, "Maximum principle, dynamic programming, and their connection in deterministic controls", *Journal of Optimization Theory and Applications*, Vol. 65 (1990), pp. 363-373.

139. X. Zhou, "The connection between the maximum principle and dynamic programming in stochastic controls", *Stochastics and Stochastics Reports*, Vol. 31 (1990), pp. 1-13.

140. X. Zhou and J. Xu, "On the existence of the weak solutions of stochastic

differential equations of functional type", *Chinese Annals of Mathematics*, Vol. 10, Ser. A (1989), pp. 309-317.

Invited Seminars at Universities

Over 70 invited seminars at universities and investment firms around the world, including

Cambridge, Imperial College, LSE, Kings College, Warwick, ETH, Paris Dauphine, UC Berkeley, Columbia, Stanford, Princeton, UT Austin, Georgia Tech, Case Western Reserve University, University of Michigan, University of Southern California, University of British Columbia, McMaster University, York University, Wayne State University, Universität Bonn, Humboldt, Technische Universität Berlin, Oslo, Swedish Royal Institute of Technology, Vienna Institute of Finance, Scuola Normale Superiore, Universität Konstanz, Erasmus University Rotterdam, Australian National University, Indian Institute of Science, National University of Singapore, Peking University, Chinese Academy of Sciences, Fudan University, Nanjing University, Nankai University, University of Hong Kong, Hong Kong University of Science and Technology, Academia Sinica, National Taiwan University, National Central University, University of Tokyo, Keio University, Osaka University, Kyushu University, Kobe University, Hiroshima University, Ritsumeikan University, Chiba University, Ehime University, Seoul National University, Pohang University of Science and Technology

Invited Seminars at Firms

Citigroup New York, Nomura Tokyo, Nomura London, UBS London, Man Group

Keynote/Plenary Talks at Conferences

"q-Learning in continuous time", 60-minute keynote lecture at *The 2023 International Conference on Actuarial Science, Quantitative Finance, and Risk Management*, Beijing, July 9-11, 2023

"Reinforcement learning in continuous time and its financial applications", 60-minute keynote lecture at *The 7th PKU-NUS Annual Conference in Quantitative Economics and Finance*, Shenzhen, May 20-21, 2023

"Continuous-time mean-variance portfolio selection: A reinforcement learning framework", 50-minute plenary lecture at *The 2019 Annual Conference of the Institute of Financial Econometrics and Risk Management*, Dalian, July 20-21, 2019

"Exploration versus exploitation in reinforcement learning: a stochastic control approach", 40-minute plenary lecture at *The 2018 Quantitative Methods in Finance*, Sydney, December 11-14, 2018

"Human centric FinTech", 30-minute keynote speech at *The 2018 Hengqin Quantitative Finance Summit*, Zhuhai, March 18, 2018

"Make asset management intelligent", 30-minute keynote speech at *The 2017 CKGSBs Global Innovation Summit*, Shenzhen, May 14-15, 2017

"Who Are I: Intrapersonal Conflicts in Performance Measure and Control", 60-minute plenary lecture at *The 2017 IFIP WG 7.3 Performance Conference*, New York, November 13-17, 2017

"Predictable forward performance processes", 45-minute plenary lecture at *The 2017 Second Paris-Asia Conference in Quantitative Finance*, Suzhou, China, May 26-27, 2017

"Rules, discretion, and compromises: A tale about time inconsistency", 45-minute plenary lecture at *The 2015 Quantitative Methods in Finance*, Sydney, December 15-18, 2015

"The best time to leave a casino", 50-minute plenary lecture at *The Third Asian Quantitative Finance Conference*, Hong Kong, July 6-8, 2015

"Rank dependent utility and risk taking", 60-minute plenary lecture at *The Second CUHK Symposium on Statistics: Financial Risk Management*, Hong Kong, December 22-23, 2014

"Rank dependent utility and risk taking", 45-minute plenary lecture at *The Fourth IMS Finance, Probability and Statistics Workshop*, Sydney, July 3-5, 2014

"Rank dependent utility and risk taking", 60-minute public lecture at *The Seventh International Symposium on Backward Stochastic Differential Equations*, Weihai, June 22-27, 2014

"Insurance contract under rank-dependent utility", 50-minute plenary lecture at *Risk Pricing and Related Topics in Financial Engineering*, Shanghai, June 15-16, 2013

"Rank dependent equilibria", 50-minute plenary lecture at *The First Asian Quantitative Finance Conference*, Singapore, January 9-11, 2013

"Arrow-Debreu equilibria for rank-dependent utilities", 60-minute plenary lecture at *Conference on Stochastic Optimization and Optimal Stopping*, Moscow, September 24-29, 2012

"Honey, I distorted the market", 60-minute plenary lecture at *The 7th World Congress of Bachelier Finance Society*, Sydney, June 19-22, 2012

"Distorted optimal stopping", 60-minute plenary lecture at *Modeling and Managing Financial Risks*, Paris, January 10-13, 2011

"Dr. Greed or: Why I still gamble even though I know when I lose I can lose real big", 60-minute plenary lecture at *Quantitative Methods in Finance 2007 Conference*, Sydney, December 16-19, 2009

"Stochastic control and behavioural theory in financial asset allocation", 60-minute keynote address at *The 2008 IEEE International Conference on Automation and Logistics*, Qingdao, September 1-3, 2008

"When to sell a stock, if you must", 60-minute plenary lecture at *The Second Annual Risk Management Conference*, Singapore, June 30-July 2, 2008

"Thou shalt buy and hold", 60-minute plenary lecture at *Quantitative Methods in Finance 2007 Conference*, Sydney, December 12-16, 2007

"Behavioral portfolio selection: Continuous time vs. single period", 45-minute plenary lecture at *Workshop on Mathematical Control Theory and Finance*, Technical University of Lisbon, Lisbon, April 10-14, 2007

"Continuous time behavioral portfolio selection", 60-minute plenary lecture at *Quantitative Methods in Finance 2005 Conference*, Manly Pacific Hotel, Sydney, December 14-17, 2005

"A few good stocks – The tale of benchmark tracking", 60-minute plenary talk at *Past Present and Future in Investment Management*, Sydney Harbour Marriott Hotel, August 11-12, 2005

"Investment and hedging strategies via stochastic control", 90-minute plenary talk at *International Workshop on Operations Research: Stochastic Models and Optimization Part I* organized by Chinese Academy of Sciences, Beijing, May 23-26, 2001

"A survey on indefinite stochastic LQ control with financial applications", 45-minute plenary talk in *Workshop on Mathematical Finance* jointly organized by the German Finance Association and University of Konstanz, Konstanz, Germany, October 5-7, 2000

"Hamilton-Jacobi theory, method of characteristics, and stochastic controls", 45-minute keynote speech in *The 3rd CSIAM Conference on Systems and Control Mathematics* organized by the CSIAM Committee on Systems and Control Mathematics, Dalian, China, August 25-28, 1996

Invited Lectures/Presentations at Conferences

Over 90 invited lectures/presentations in both academic and industrial conferences around the world

Postdoctoral Fellows Supervised

Yanwei Jia (Ph.D., National University of Singapore, 2020), January 2021-2023 (now an assistant professor at Chinese University of Hong Kong)

Haoran Wang (Ph.D., University of Texas at Austin, 2018), January 2019-2020 (now a research scientist at Vanguard)

Bahman Angoshtari (DPhil, University of Oxford, 2013), January 2014-August 2014 (now an assistant professor at University of Miami)

Zuoquan Xu (Ph.D., The Chinese University of Hong Kong, 2007), January 2008-July 2010 (now an associate professor at Hong Kong Polytechnic University)

Andrew E.B. Lim (Ph.D., Australian National University, 1997), January 1999 - July 2000 (now a professor at National University of Singapore)

Mustapha Ait Rami (Ph.D., Université Paris-IX Dauphine, 1997), September 1998 - December 1999 (now a professor at ENSIT)

Nikolai Dokuchaev (Ph.D., Leningrad University, 1983), September 1998 - March 1999 (now a professor at Zhejiang University/University of Illinois at Urbana-Champaign Institute)

Tahir Choulli (Ph.D., Université de Franche Comté, 1997), July - August 1999, July - August 2000 (now a professor at University of Alberta)

Hanzhong Wu (Ph.D., Fudan University, 1998), October - December 1999, August 2001 (now a professor at Fudan University)

Ngo Tai Fong (Ph.D., The Chinese University of Hong Kong, 1996), September 1996 - August 1997 (now a research scientist at Ford)

PhD Students Supervised

Ngo Tai Fong, 1993-1996 (now a research scientist at Ford)

Wai Ki Ching, 1994-1997 (His PhD thesis won the Outstanding PhD Thesis Award of the Faculty of Engineering in the year 1997; now a professor at University of Hong Kong)

Xun Li, 1996-2000 (now a professor at Hong Kong Polytechnic University)

Xi Chen, 1996-2000 (Her PhD thesis won the Outstanding PhD Thesis Award of the Faculty of Engineering in the year 2000; now an associate professor at Tsinghua University)

Chun Hung Chiu, 2000-2003 (now a professor at Sun Yat-sen University)

Hanqing Jin, 2001-2004 (now an associate professor at University of Oxford)

Zuoquan Xu, 2004-2007 (now an associate professor at Hong Kong Polytechnic University)

Xuedong He, 2006-2009 (now a professor at Chinese University of Hong Kong)

Hualei Chang, 2007-2010 (now a quant at Goldman Sachs)

Yifei Zhong, 2008-2011 (now a quant at Goldman Sachs)

Sang Hu, 2010-2014 (now an assistant professor at Chinese University of Hong Kong Shenzhen)

Shengchao Zhuang, 2010-2014 (now an assistant professor at University of Nebraska)

Wei Wei, 2012-2017 (now an assistant professor at Heriot–Watt University)

Pengyu Wei, 2013-2017 (now an assistant professor at University of Waterloo)

Lin Chen, 2016-2020 (now a trader at Hudson River Trading)

Xiao Xu, 2017-2021 (now a trader at Two Sigma)

Yilie Huang, 2019-

Teaching Activities

Courses Taught

- At Columbia: Financial Engineering: Continuous-Time Models, Stochastic Control and Applications, Introduction to Financial Engineering, Reinforcement Learning in Continuous Time
- At Oxford: Stochastic Control and Dynamic Asset Allocation I, Stochastic Control and Dynamic Asset Allocation II, Practical Stochastic Calculus, Asset Pricing and Portfolio Theory, Stochastic Calculus, Asset Pricing and Inefficiency of Markets
- At Chinese University of Hong Kong: Dynamic Asset Allocation, Advanced Stochastic Models, Stochastic Investment Models, Operations Research I, Operations Research II, Optimal Production Planning, Linear Algebra and Discrete Mathematics, System Modeling and Simulation

Teaching Award

- Exemplary Teaching Award, Faculty of Engineering, CUHK, 2002
- Distinguished Faculty Teaching Award, Fu Foundation School of Engineering and Applied Science, Columbia University, 2023

University Services

Committee services at Columbia including numerous tenure, promotion and search committees, and serving as the chair of some of these committees

Committee services at Oxford including

Member of Research Committee of Mathematical Institute, Member of Executive Committee of Oxford–Man Institute for Quantitative Finance

Committee services at CUHK including

Convenor of Engineering Research Panel, Graduate Division Head of SEEM, Member of FAPC, Member of DAPC, Founding Fellow of CWC College, Chairman of External Links and Exchange Committee of CWC College, EXCO of SEEM, Member of University Research Committee

Other Professional Activities

General Chair, The 11th World Congress of the Bachelier Finance Society

Council Member, Bachelier Finance Society, 2014-2017

Founder and Member of Steering Committee, Hong Kong Consortium of Quantitative Finance, 2010-

Founder and Member of Steering Committee, Shanghai Consortium of Quantitative Finance, 2012-

Member, Research Grants Council (RGC), Hong Kong SAR Government, 2008-2011

Member, Engineering Panel of the Research Grants Council (RGC), Hong Kong SAR Government, 2004-2008

Member, Scientific Committee, Center for Financial Engineering and Risk Management, Chinese Academy of Sciences, 2003-

Member, Registry of Specialist Referees, Hong Kong Research Grants Council

Registered External Assessor, Applied Research and Development Scheme, The Applied Research Council, Hong Kong