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Current as of: March 2023

ACADEMIC POSITIONS

January, 2015 to present	**Associate Professor of Computer Science**, School of Computing and Information Systems Singapore Management University
October, 2014 to September, 2020	**Deputy Director (Research)** Fujitsu-SMU Urban Computing and Engineering Corp Lab Singapore Management University
December, 2006 to December, 2014	**Assistant Professor**, School of Information Systems Singapore Management University

EDUCATION

September, 2001 to October, 2006	**Ph.D.**, **University of Michigan**, Ann Arbor, Michigan Department of Industrial and Operations Engineering • Dissertation: Game-theoretic Approaches for Complex Systems Optimization. • Co-advisors: Professor Robert L. Smith and Professor Michael P. Wellman.
September, 1993 June, 1997	**B.S.E.**, **National Taiwan University**, Taipei, Taiwan Department of Mechanical Engineering

OTHER EXPERIENCE

January, 2006 to April, 2006	**Graduate Student Instructor, University of Michigan** Teaching assistant for IOE 310: Introduction to Optimization Methods
September, 2001 to October, 2006	**Graduate Student Research Assistant, University of Michigan** Member of both Artificial Intelligence Lab. and Dynamic Systems Optimization Lab
July, 1999 to June, 2001	**Research Engineer, OLE Technology Corp.** Software startup company on Product Life Cycle Management system.
July, 1997 to June, 1999	**Lecturer, Taiwan Army** Compulsory military service, rank: Second Lieutenant.

RESEARCH INTERESTS

- Urban computing and sustainable urban operations
- Mobility-on-demand systems
- Mobile crowdsourcing
- Last-mile logistics
- Agent-based modeling and simulation
- Large-scale optimization models and computational methods

Honors and Awards

- Best Student Paper Award: Integrating Empirical Analysis into Analytical Framework: An Integrated Model Structure for On-Demand Transportation, *2021 INFORMS Conference on Service Science*, 2021.

- Finalist, INFORMS Innovative Applications in Analytics Award (IAAA): Driver Guidance System for Taxi Drivers, *Analytics Society of INFORMS*, 2020.

- Lee Kong Chian Fellowship for Research Excellence, *Singapore Management University*, 2019–2020.

- Best Application Demo: A Driver Guidance System for Taxis in Singapore, *Seventeenth International Conference on Autonomous Agents and Multiagent Systems (AAMAS-18)*, 2018.

- First Prize, CIKM AnalytiCup: DataSpark Mobility Open-Task Challenge: Predicting Taxi Demand-Supply Mismatches to Dynamically Position Mobility-on-Demand Services, *Twenty-Sixth ACM International Conference on Information and Knowledge Management (CIKM-17)*, 2017.

- Honorable Mention, Best of CSCW Award: Campus-scale mobile crowd-tasking: Deployment and behavioral insights, *Nineteenth ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW-16)*, 2016.

- Lee Kong Chian Fellowship for Research Excellence, *Singapore Management University*, 2015–2016.

- Finalist, George B. Dantzig Dissertation Award: Game-theoretic Approaches for Complex Systems Optimization, *Institute for Operations Research and the Management Sciences*, 2007.

- Wilson Prize (best student paper in manufacturing systems): Sampled fictitious play for multi-action stochastic dynamic programs, *Department of Industrial and Operations Engineering, University of Michigan*, 2005.

Media Mentions

- Commentary: Shortening the waiting time for your cab with a driver guidance system, *Channel News Asia*, February 5, 2019.

- Pass the parcel (crowd-sourced logistics), *NHK World*, November 8, 2018.

- New app can direct cabbies to areas of high demand, *Straits Times*, February 27, 2018.

- 400 taxi drivers involved in SMU pilot project to help them find passengers faster, *Channel 8 News*, January 29, 2018.

- Third-party booking system benefits smaller taxi companies, *Lianhe Zaobao*, November 18, 2016.

- *Channel NewsAsia: It Figures*, March 8, 2016.

- Clearing Corp funds derivatives research, *Financial Times*, May 3, 2010.

- IFM to fund clearing, position-limit studies, *Futures Magazine*, May 2, 2010.

- Watching for the tipping point, *Business Times*, March 23, 2010.

Sponsored Research

- Co-PI: "The Impacts of On-demand Platforms under Individual Choice Endogeneity" (with Ying Xu (SUTD) as PI).
  MOE Academic Research Fund Tier 2, 2023 – 2025, S$382,187.

- PI: "Learning by Doing in the Age of Big Data".
  MOE Social Science Research Thematic Grant, August 2021 – July 2024, S$579,318.

- PI: "Smart Barrier-Free Access (SmartBFA) 2.0".
  Mercurics, May 2021 – April 2022, S$50,000.

- Co-PI: "Not for Girls?: Gender Imbalance in STEM and Its impact on Female Students' Creative Performance" (with Chi-Ying Cheng (SMU) as PI).
  MOE Tertiary Education Research Fund, June 2021 – May 2023, S$192,673.

- PI: "Intelligent Taxi Queue Management".
  Changi Airport Group, October 2019 – September 2021, S$200,000.

- Co-Lead PI: Fujitsu-SMU Urban Computing and Engineering Lab (with Hoong Chuin Lau).
  Jointly funded by Fujitsu and National Research Foundation, November 2014 – October 2019, S$27,000,000.

- Co-PI: "Context-Aware Large-Scale Mobile Crowd-Sourcing" (with Archan Misra).
  Xerox Research Center India (XRCI), July 2013 – July 2016, USD$150,000

- Co-PI: "Coordinating Automated Para-Transit Service Operations" (with Hoong Chuin Lau).
  Singapore-MIT Alliance for Research and Technology Centre, Jan 2011 – December 2015, S$482,515.

- PI: "Optimizing Taxi Fleet Operations".
  Singapore-MIT Alliance for Research and Technology Centre, November 2010 – August 2011, S$46,211.

- PI: "Commodity Trading Simulation".
  The Infocomm Development Authority of Singapore, October 2010 – March 2011, S$4,589 (equivalent credit).

- Co-PI: "Policy Implications of Position Limits: An Agent-based Analysis" (with Bernard Lee and Annie Koh).
  The Institute for Financial Markets, May 2010 – September 2010, USD$15,000.

- PI: "Creating a Better Commodity Trading Simulation – A Multi-Agent Approach".
  SMU International Trading Institute, July 2008 – June 2009, S$37,350.

- PI: "Exploring Agent-based Computational Models".
  Wharton-SMU Research Centre, May 2008 – May 2009, S$39,050

- PI: "Market-Based Approaches for Dynamic Resource Allocation Problems".
  SMU Internal Grant, Ministry of Education (MOE) Tier 1, March 2007 – February 2008, S$30,100.

- PI: "Designing the Market Game for a Commodity Trading Simulation".
  International Enterprise Singapore, February 2007 – January 2008, S$47,266.

PUBLICATIONS

Referred Journals

1. Kwan Ok Lee and Shih-Fen Cheng. Neighborhood retail amenities and taxi trip behavior: A natural experiment in Singapore. *Habitat International*, 131: 102714, 2023.

2. Sumit Agarwal, Ben Charoenwong, Shih-Fen Cheng, and Jussi Keppo. The Impact of Ride-Hail Surge Factors on Taxi Bookings. *Transportation Research Part C*, 136: 103508, 2022.

3. Lucas Agussurja, Shih-Fen Cheng, and Hoong Chuin Lau. A state aggregation approach for stochastic multi-period last-mile ride-sharing problem. *Transportation Science*, 53(1): 148–166, 2019.

4. Thivya Kandappu, Archan Misra, Shih-Fen Cheng, Randy Tandriansyah, and Hoong Chuin Lau. Obfuscation At-Source: Privacy in Context-Aware Mobile Crowd-Sourcing. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*, 2(1): 16, 2018.

5. Shih-Fen Cheng, Cen Chen, Thivya Kandappu, Hoong Chuin Lau, Archan Misra, Nikita Jaiman, Randy Tandriansyah, and Desmond Koh. Scalable urban mobile crowdsourcing: Handling uncertainty in worker movement. *ACM Transactions on Intelligent Systems and Technology*, 9(3): 26, 2018.

6. Stephanus Daniel Handoko, Hoong Chuin Lau, and Shih-Fen Cheng. Achieving economic and environmental sustainability in urban consolidation center with bi-criteria auction. *IEEE Transactions on Automation Science and Engineering*, 13(4): 1471-1479, 2016.

7. Cen Chen, Shih-Fen Cheng, and Hoong Chuin Lau. Multi-agent orienteering problem with time-dependent capacity constraints. *Web Intelligence and Agent Systems*, 12: 347–358, 2014.

8. Archis Ghate, Shih-Fen Cheng, Stephen Baumert, Daniel Reaume, Dushyant Sharma, and Robert L. Smith. Sampled fictitious play for multi-action stochastic dynamic programs. *IIE Transactions*, 46(7): 742–756, 2014.

9. Shih-Fen Cheng, Blake Nicholson, Marina A. Epelman, Daniel Reaume, and Robert L. Smith. A dynamic programming approach to achieving an optimal end state along a serial production line. *IIE Transactions*, 45(12): 1278–1292, 2013.
   - Featured in the Industrial Engineer Magazine, pages 48-49, November 2013.

10. Shih-Fen Cheng, John Tajan, and Hoong Chuin Lau. Robust distributed scheduling via time period aggregation. *Web Intelligence and Agent Systems*, 10: 305-318, 2012.

11. Bernard Lee, Shih-Fen Cheng and Annie Koh. Would Price Limits Have Made any Difference to the 'Flash Crash' on May 6, 2010. *Review of Futures Markets*, 19(Special IFM Issue): 55–93, 2011.

12. Bernard Lee, Shih-Fen Cheng and Annie Koh. An analysis of extreme price shocks and illiquidity among systematic trend followers. *Review of Futures Markets*, 18(4): 385–419, 2010.

13. Shih-Fen Cheng, Marina A. Epelman and Robert L. Smith. CoSIGN: A parallel algorithm for coordinated traffic signal control. *IEEE Transactions on Intelligent Transportation Systems*, 7(4):551–564, 2006.

14. Shih-Fen Cheng, Evan Leung, Kevin M. Lochner, Kevin O'Malley, Daniel M. Reeves, Julian L. Schvartzman, and Michael P. Wellman. Walverine: A Walrasian trading agent. *Decision Support Systems*, 39:169–184, 2005.

15. Michael P. Wellman, Shih-Fen Cheng, Daniel M. Reeves and Kevin M. Lochner. Trading agents competing: Performance, progress, and market effectiveness. *IEEE Intelligent Systems*, 18(6):48–53, 2003.

Referred Conferences and Workshops

1. Rajiv Kumar, Pradeep Varakantham, and Shih-Fen Cheng. Strategic Planning for Flexible Agent Availability in Large Taxi Fleets. *22nd International Conference on Autonomous Agents and Multiagent Systems (AAMAS-2023)*, London, UK, May 2023.

2. Qian Shao and Shih-Fen Cheng. Preference-Aware Delivery Planning for Last-Mile Logistics. *22nd International Conference on Autonomous Agents and Multiagent Systems (AAMAS-2023)*, London, UK, May 2023.

3. Yuhong Xu, Shih-Fen Cheng, and Xinyu Chen. Improving Quantal Cognitive Hierarchy Model Through Iterative Population Learning (Extended Abstract). *22nd International Conference on Autonomous Agents and Multiagent Systems (AAMAS-2023)*, London, UK, May 2023.

4. Nurul Asyikeen Azhar, Aldy Gunawan, Shih-Fen Cheng, and Erwin Leonardi. A carbon-aware planning framework for production scheduling in mining. *12th International Conference on Computational Logistics (ICCL-22)*, Barcelona, Spain, September 2022.

5. Yi'An Wang, Fangyi Cai, Shih-Fen Cheng, Bo Wu, and Kai Cao. Taxi travel time based Geographically Weighted Regression Model (GWR) for modeling public housing prices in Singapore. *29th International Conference on Geoinformatics (Geoinformatics 2022)*, Beijing, China, August 2022.

6. Alp Arslan, Firat Kilci, Shih-Fen Cheng, and Archan Misra. Choice-based crowdshipping: A dynamic task display problem. *10th INFORMS Transportation Science and Logistics Society Workshop*, Bergen, Norway, June 2022.

7. Changyu Chen, Avinandan Bose, Shih-Fen Cheng, and Arunesh Sinha. Multiscale Generative Models: Improving Performance of a Generative Model Using Feedback from Other Dependent Generative Models. *Thirty-Sixth AAAI Conference on Artificial Intelligence (AAAI-22)*, to appear, Vancouver, BC, Canada, February 2022.

8. Yuliu Su, Ying Xu, Costas Courcoubetis, and Shih-Fen Cheng. Integrating Empirical Analysis into Analytical Framework: An Integrated Model Structure for On-Demand Transportation. *2021 INFORMS Conference on Service Science (ICSS-2021)*, Virtual, August 2021.
   - Awarded best student paper award.

9. Mengyu Ji and Shih-Fen Cheng. Automated taxi queue management at high-demand venues. *2021 IEEE 17th International Conference on Automation Science and Engineering (CASE-2021)*, Lyon, France (Virtual), August 2021.

10. Chung-Kyun Han and Shih-Fen Cheng. A Lagrangian column generation approach for the probabilistic crowdsourced logistics planning. *2021 IEEE 17th International Conference on Automation Science and Engineering (CASE-2021)*, Lyon, France (Virtual), August 2021.

11. Rajiv Ranjan Kumar, Pradeep Varakantham, and Shih-Fen Cheng. Adaptive operating hours for improved performance of taxi fleets. *20th International Conference on Autonomous Agents and Multiagent Systems (AAMAS-2021)*, London, UK (Virtual), May 2021.

12. Chung-kyun Han and Shih-Fen Cheng. An exact single-agent task selection algorithm for the crowdsourced logistics. *29th International Joint Conference on Artificial Intelligence and the 17th Pacific Rim International Conference on Artificial Intelligence. (IJCAI-2020)*, Japan, July 2020.

13. Thivya Kandappu, Abhinav Mehrotra, Archan Misra, Mirco Musolesi, Shih-Fen Cheng, and Lakmal Buddika Meegahapola. PokeME: Applying context-driven notifications to increase worker engagement in mobile crowd-sourcing. *Fifth ACM SIGIR Conference on Human Information Interaction and Retrieval (CHIIR-20)*, Vancouver, Canada, March 2020.

14. Shih-Fen Cheng, Ming Hu, and Jussi Keppo. Tragedy of the ride-hailing. *Manufacturing and Service Operations Management 2019 Conference (MSOM-19)*, Singapore, June 2019.

15. Shih-Fen Cheng, Ming Hu, and Jussi Keppo. Tragedy of the ride-hailing. *Fifth Workshop on Marketplace Innovation*, Stanford, California, June 2019.

16. Chung-Kyun Han, Shih-Fen Cheng, and Pradeep Varakantham. A homophily-free community detection framework for trajectories with delayed responses (Extended Abstract). *Eighteenth International Conference on Autonomous Agents and Multiagent Systems (AAMAS-19)*, pages 2003–2005, Montreal, Canada, May 2019.

17. Chung-Kyun Han, Archan Misra, and Shih-Fen Cheng. Mobility-driven BLE transmit-power adaptation for participatory data muling. *IEEE Twenty-Fourth International Conference on Parallel and Distributed Systems (ICPADS-18)*, pages 962–971, Singapore, December 2018.

18. Shih-Fen Cheng, Shashi Shekhar Jha, and Rishikeshan Rajendram. Taxis strike back: A field trial of the driver guidance system. *Seventeenth International Conference on Autonomous Agents and Multiagent Systems (AAMAS-18)*, pages 577–584, Stockholm, Sweden, July 2018.

19. Shashi Shekhar Jha, Shih-Fen Cheng, Meghna Lowalekar, Nicholas Wong Wai Hin, Rishikeshan Rajendram, Tran Trong Khiem, Pradeep Varakantham, Truong Trong Nghia and Firmansyah Rahman. Upping the game of taxi driving in the age of Uber. *Thirtieth Annual Conference on Innovative Applications of Artificial Intelligence (IAAI-18)*, pages 7779–7785, New Orleans, Louisiana, USA, February 2018.

20. Larry Lin, Chung-Kyun Han, Shih-Fen Cheng, Hoong Chuin Lau, and Archan Misra. Smart bundling for crowdsourced package deliveries. *Sixth INFORMS Transportation Science and Logistics Society Workshop*, Hong Kong, January 2018.

21. Thivya Kandappu, Archan Misra, Shih-Fen Cheng, and Hoong Chuin Lau. Privacy in context-aware mobile crowdsourcing systems, *Fourth International Workshop on Crowd Assisted Sensing, Pervasive Systems and Communications (CASPer 2017), in conjunction with 15th IEEE International Conference on Pervasive Computing and Communications (PerCom 2017)*, Kona, Big Island, Hawaii, USA, March 2017.

22. Wenjie Wang, Hoong Chuin Lau, and Shih-Fen Cheng. Exact and heuristic approaches for the multi-agent orienteering problem with capacity constraints. *2017 IEEE Symposium Series on Computational Intelligence (IEEE SSCI-17)*, Honolulu, Hawaii, USA, November 2017.

23. Teck-Hou Teng, Shih-Fen Cheng, Trong Nghia Truong, and Hoong Chuin Lau. Managing egress of crowd during infrastructure disruption. *2016 Winter Simulation Conference (WSC-16)*, Arlington, VA, USA, December 2016.

24. Larry Lin, Kathleen M. Carley, and Shih-Fen Cheng. An agent-based approach to human migration movement. *2016 Winter Simulation Conference (WSC-16)*, Arlington, VA, USA, December 2016.

25. Thivya Kandappu, Nikita Jaiman, Randy Tandriansyah, Archan Misra, Shih-Fen Cheng, Cen Chen, Hoong Chuin Lau, Deepthi Chander, and Koustuv Dasgupta. TASKer: Behavioral insights via campus-based experimental mobile crowd-sourcing. *2016 ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp-16)*, Heidelberg, Germany, September 2016.

26. Lucas Agussurja, Hoong Chuin Lau, and Shih-Fen Cheng. Achieving stable and fair profit allocation with minimum subsidy in collaborative logistics. *Thirtieth AAAI Conference on Artificial Intelligence (AAAI-16)*, Phoenix, AZ, USA, February 2016.

27. Thivya Kandappu, Archan Misra, Shih-Fen Cheng, Nikita Jaiman, Randy Tandriansyah, Cen Chen, Hoong Chuin Lau, Deepthi Chander, and Koustuv Dasgupta. Campus-scale mobile crowd-tasking: Deployment and behavioral insights. *Nineteenth ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW-16)*, San Francisco, CA, USA, February 2016.

28. Larry J. J. Lin, Shih-Fen Cheng, and Hoong Chuin Lau. Building crowd simulations using sample-based mobility survey. *2015 Winter Simulation Conference (WSC-15)*, Huntington Beach, CA, USA, December 2015.

29. Jiali Du, Pradeep Varakantham, Akshat Kumar, and Shih-Fen Cheng. Learning and controlling network diffusion in dependent cascade models. *2015 IEEE/WIC/ACM International Conference on Intelligent Agent Technology (IAT-15)*, Singapore, December 2015.

30. Dongchang Liu, Shih-Fen Cheng, and Yiping Yang. Density peaks clustering approach for discovering demand hot spots in city-scale taxi fleet dataset. *Eighteenth IEEE International Conference on Intelligent Transportation Systems (ITSC-15)*, pages 1831–1836, Canary Islands, Spain, September 2015.

31. Jiali Du, Shih-Fen Cheng, and Hoong Chuin Lau. Designing bus bridging services for regular egress. *Sixth International Conference on Computational Logistics (ICCL-15)*, Delft, The Netherlands, September 2015.

32. Cen Chen, Shih-Fen Cheng, Hoong Chuin Lau, and Archan Misra. Towards city-scale mobile crowdsourcing: Task recommendations under trajectory uncertainties. *Twenty-Fourth International Joint Conference on Artificial Intelligence (IJCAI-15)*, Beunos Aires, Argentina, July 2015.

33. Cen Chen, Shih-Fen Cheng, Hoong Chuin Lau, and Archan Misra. Multi-agent task assignment for mobile crowdsourcing under trajectory uncertainties (Extended Abstract). *Fourteenth International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS-15)*, Istanbul, Turkey, May 2015.

34. Cen Chen, Shih-Fen Cheng, Aldy Gunawan, Archan Misra, Koustuv Dasgupta, and Deepthi Chander. TRACCS: A framework for trajectory-aware coordinated urban crowd-sourcing. *Second AAAI Conference on Human Computation and Crowdsourcing (HCOMP-14)*, pages 30–40, Pittsburgh, PA, USA, November 2014.

35. Shih-Fen Cheng, Duc Thien Nguyen, and Hoong Chuin Lau. Mechanisms for arranging ride sharing and fare splitting for last-mile travel demands (Extended Abstract). *Thirteenth International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS-14)*, pages 1505–1506, Paris, France, May 2014.

36. Shih-Fen Cheng, Larry Lin, Jiali Du, Hoong Chuin Lau, and Pradeep Varakantham. An agent-based simulation approach to experience management in theme parks. *2013 Winter Simulation Conference (WSC-13)*, pages 1527–1538, Washington, D.C, USA, December 2013.

37. Pradeep Varakantham, Na Fu, William Yeoh, Shih-Fen Cheng, and Hoong Chuin Lau. Budgeted personalized incentive approaches for smoothing out congestion in resource networks. *Third International Conference on Algorithmic Decision Theory (ADT-13)*, pages 375–386, Brussels, Belgium, November 2013.

38. Hoong Chuin Lau, Lucas Agussurja, Shih-Fen Cheng, and Pang Jin Tan. A multi-objective memetic algorithm for vehicle resource allocation in sustainable transportation planning. *Twenty-Third International Joint Conference on Artificial Intelligence (IJCAI-13)*, pages 2833–2839, Beijing, China, August 2013.

39. Cen Chen, Shih-Fen Cheng, and Hoong Chuin Lau. The multi-agent orienteering problem. *Tenth Metaheuristics International Conference (MIC-13)*, Singapore, August 2013.

40. Truong Huy Nguyen, Pradeep Varakantham, Hoong Chuin Lau and Shih-Fen Cheng. Interacting knapsack problem in designing resource bundles. *Tenth Metaheuristics International Conference (MIC-13)*, Singapore, August 2013.

41. Shih-Fen Cheng, Larry Lin, Jiali Du, Hoong Chuin Lau, and Pradeep Varakantham. An agent-based simulation approach to experience management in theme parks. *14th International Workshop on Multi-Agent-Based Simulation (MABS-13), in conjunction with AAMAS-13*, Saint Paul, Minnesota, USA, May 2013.

42. Geoffrey J. Gordon, Pradeep Varakantham, William Yeoh, Hoong Chuin Lau, Ajay S. Aravamudhan, and Shih-Fen Cheng. Lagrangian relaxation for large-scale multi-agent planning. *2012 IEEE/WIC/ACM International Conference on Intelligent Agent Technology (IAT-12)*, Macau, December 2012.

43. Yee Pin Lim and Shih-Fen Cheng. Knowledge-driven autonomous commodity trading advisor. *2012 IEEE/WIC/ACM International Conference on Intelligent Agent Technology (IAT-12)*, pages 119–125, Macau, December 2012.

44. Shih-Fen Cheng, Duc Thien Nguyen, and Hoong Chuin Lau. A mechanism for organizing last-mile service using non-dedicated fleet. *2012 IEEE/WIC/ACM International Conference on Intelligent Agent Technology (IAT-12)*, pages 85–89, Macau, December 2012.

45. Asrar Ahmed, Pradeep Varakantham, and Shih-Fen Cheng. Uncertain congestion games with assorted human agent populations. *Twenty-Eighth Conference on Uncertainty in Artificial Intelligence (UAI-12)*, pages 44–53, California, USA, August 2012.

46. Long Foong Liow, Shih-Fen Cheng, and Hoong Chuin Lau. Niche-seeking in influence maximization with adversary. *Fourteenth International Conference on Electronic Commerce (ICEC-12)*, pages 107–112, Singapore, August 2012.

47. Pradeep Varakantham, Shih-Fen Cheng, Geoff Gordon, and Asrar Ahmed. Decision support for agent populations in uncertain and congested environments. *Twenty-Sixth AAAI Conference on Artificial Intelligence (AAAI-12), pages 1471–1477, Toronto, Canada, July 2012.*

48. Geoff Gordon, Pradeep Reddy Varakantham, William Yeoh, Ajay Srinivasan, Hoong Chuin Lau, and Shih-Fen Cheng. Lagrangian relaxation for large-scale multi-agent planning (Extended Abstract). *Eleventh International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS-12)*, pages 1227–1228, Valencia, Spain, June 2012.

49. Shih-Fen Cheng and Thi Duong Nguyen. TaxiSim: A multiagent simulation platform for evaluating taxi fleet operations. *2011 IEEE/WIC/ACM International Conference on Intelligent Agent Technology (IAT-11)*, pages 14–21, Lyon, France, August 2011.

50. Pradeep Varakantham, Shih-Fen Cheng and Thi Duong Nguyen. Decentralized Decision Support for an agent population in dynamic and uncertain domains (Extended Abstract). *Tenth International Joint Conference on Autonomous Agents and MultiAgent Systems (AAMAS-11)*, pages 1147–1148, Taipei, Taiwan, May 2011.

51. Bernard Lee, Shih-Fen Cheng and Annie Koh. Would Position Limits Have Made any Difference to the 'Flash Crash' on May 6, 2010. *Twenty-First Asia-Pacific Futures Research Symposium (APFRS-11)*, Singapore, February 2011.

52. Shih-Fen Cheng. Event study method for validating agent-based trading simulations. *2010 IEEE/WIC/ACM International Conference on Intelligent Agent Technology (IAT-10)*, pages 465–469, Toronto, Canada, September 2010.

53. Bernard Lee, Shih-Fen Cheng and Annie Koh. An analysis of extreme price shocks and illiquidity among systematic trend followers. *Twentieth Asia-Pacific Futures Research Symposium (APFRS-10)*, Hong Kong, February 2010.

54. Shih-Fen Cheng and Xin Qu. A service choice model for optimizing taxi service delivery. *Twelfth International IEEE Conference on Intelligent Transportation Systems (ITSC-09)*, pages 66–71, St. Louis, MO, October 2009.

55. Shih-Fen Cheng and Yee Pin Lim. An agent-based commodity trading simulation *Twenty-First Annual Conference on Innovative Applications of Artificial Intelligence (IAAI-09)*, pages 72–78, Pasadena, CA, July 2009.

56. Shih-Fen Cheng, John Tajan, and Hoong Chuin Lau. Distributing complementary resources across multiple periods with stochastic demand: Hedging via time frame aggregation. *2008 IEEE/WIC/ACM International Conference on Intelligent Agent Technology (IAT-08)*, pages 373–379, Sydney, Australia, December 2008.

57. Shih-Fen Cheng. Designing the market game for a commodity trading simulation. *2007 IEEE/WIC/ACM International Conference on Intelligent Agent Technology (IAT-07)*, pages 445–449, San Jose, CA, November 2007.

58. Hoong Chuin Lau, Shih-Fen Cheng, Thin Yin Leong, Jong Han Park, and Zhengyi Zhao. Multi-period combinatorial auction mechanism for distributed resource allocation and scheduling. *2007 IEEE/WIC/ACM International Conference on Intelligent Agent Technology (IAT-07)*, pages 407–411, San Jose, CA, November 2007.

59. Shih-Fen Cheng and Michael P. Wellman. Iterated weaker-than-weak dominance. *Twentieth International Joint Conference on Artificial Intelligence (IJCAI-07)*, pages 1233–1238, Hyderabad, India, January 2007.

60. Michael P. Wellman, Daniel M. Reeves, Kevin M. Lochner, Shih-Fen Cheng, and Rahul Suri. Approximate strategic reasoning through hierarchical reduction of large symmetric games. *Twentieth National Conference on Artificial Intelligence (AAAI-05)*, pages 502–508, Pittsburgh, PA, July 2005.

61. Shih-Fen Cheng, Daniel M. Reeves, Yevgeniy Vorobeychik and Michael P. Wellman. Notes on equilibria in symmetric games. *6th Workshop On Game Theoretic And Decision Theoretic Agents, in conjunction with AAMAS-04*, New York City, NY, August 2004.

62. Michael P. Wellman and Shih-Fen Cheng. Market-based task allocation for dynamic information processing environments. *International Conference on Integration of Knowledge Intensive Multi-Agent Systems*, pages 109–114, Cambridge, MA, October 2003.

63. Shih-Fen Cheng, Chung-Chih Chou, Cheng-Yu Lin and Dar-Zen Chen. Computer-aided sketching of articulated gear mechanisms, *Thirteenth Chinese Society of Mechanical Engineers Annual Conference*, pages 298–304, Taipei, Taiwan, 1996.

Referred Technical Demo

1. Shashi Shekhar Jha, Shih-Fen Cheng, Rishikeshan Rajendram, Nicholas Wong, Firmansyah Bin Abd Rahman, Nghia Truong Trong, Meghna Lowalekar, and Pradeep Varakantham. A driver guidance system for taxis in Singapore. *Seventeenth International Conference on Autonomous Agents and Multiagent Systems (AAMAS-18)*, pages 1820–1822, Stockholm, Sweden, July 2018.
   * Awarded the Best Application Demo award.

2. Shih-Fen Cheng, Yee Pin Lim, and Chao-Chi Liu. An agent-based commodity trading simulation. *Eighth International Conference on Autonomous Agents and Multiagent Systems (AAMAS-09)*, pages 1377–1378, Budapest, Hungary, May 2009.

Book Chapter

1. Shih-Fen Cheng, Michael P. Wellman and Dennis G. Perry. Market-based resource allocation for information-collection scenarios. In K. Kurumatani, S.-H. Chen, and A. Ohuchi, editors, *Multiagent for Mass User Support*, LNAI 3012, pages 33–47. Springer-Verlag, January 2004.

Working Papers

(* The date on working paper reflects latest draft.)

1. Sumit Agarwal, Shih-Fen Cheng, Jussi Keppo, Long Wang, and Zoe Yang. Information Salience and Vehicle Idling Behavior: Evidence from Taxis in Singapore, under review, 2023.

2. Alp Arslan, Firat Kilci, Shih-Fen Cheng, and Archan Misra. Choice-Based Crowdshipping: A Dynamic Task Display Problem, under revision, 2022.

3. Yuan-Mao Kao, Yang Yang, Shih-Fen Cheng, and Cheng-Hung Wu. Price competition in global operations: considering the effect of parallel trade, under review, 2022.

4. Chung-Kyun Han, Shih-Fen Cheng, Hoong Chuin Lau, and Archan Misra. Smart bundling for the crowdsourced last-mile logistics: The case with public transport users, under revision, 2022.

5. Sumit Agarwal, Shih-Fen Cheng, Jussi Keppo, and Kang Mo Koo. Anticipated income shock and labor supply. August 2019.

6. Sumit Agarwal, Shih-Fen Cheng, Jussi Keppo, and Ryoko Sato. Learning by driving: Evidence from taxi driver wages in Singapore. November 2016.

Presentations

1. AI Technologies for Urban Transport Services, *Feng Chia University*, December 2022.

2. Human Behaviors in Urban Transportation, *Department of Civil Engineering, National Taiwan University*, November 2022.

3. Human Behaviors in Urban Transportation, *Department of Information Management, National Taiwan University*, November 2022.

4. AI Technologies for Point-to-Point Transportation, *National Defense Medical Center*, October 2022.

5. AI Technologies for Point-to-Point Transportation, *Department of Economics, National Cheng Kung University*, October 2022.

6. Quantifying Human Behaviors in Complex Games, *Department of Economics, National Cheng Kung University*, October 2022.

7. Quantifying Human Behaviors in Complex Games, *Department of Computer Science and Information Engineering, National Taiwan University*, October 2022.

8. Quantifying Human Behaviors in Complex Games, *Institute of Information Science, Academia Sinica*, October 2022.

9. Quantifying Human Behaviors in Complex Games, *Institute of Industrial Engineering, National Taiwan University*, September 2022.

10. Improving Quantal Cognitive Hierarchy Model Through Iterative Population Learning, *Department of Economics, National Taiwan University*, September 2022.

11. Improving Quantal Cognitive Hierarchy Model Through Iterative Population Learning, *Institute of Economics, Academia Sinica*, September 2022.

12. Improving Quantal Cognitive Hierarchy Model Through Iterative Population Learning, *Behavioural Science Initiative, Singapore Management University*, September 2022.

13. AI Technologies in City Management, *Global Cities Forum*, Shanghai, China (Virtual), November 2021.

14. The Driver Guidance System for Taxi Drivers, *Analytics for X 2021 Conference*, Singapore, June 2021.

15. The Driver Guidance System for Taxi Drivers, *INFORMS Innovative Applications in Analytics Award (IAAA)*, Virtual, April 2020.

16. How Can Taxis Up Their Games in the Age of Uber, *Amazon*, Seattle, Washington, USA, October 2019.

17. How Can Taxis Up Their Games in the Age of Uber, *INFORMS Annual Meeting 2019*, Seattle, Washington, USA, October 2019.

18. How Can Taxis Up Their Games in the Age of Uber, *Department of Computer Science, National Chiao Tung University*, Taiwan, May 2019.

19. Efficiency of Streethail vs. Booking Apps, *2018 INFORMS Annual Meeting*, Phoenix, Arizona, November 2018.

20. Taxis strike back: A field trial of the driver guidance system, *2018 INFORMS International Conference*, Taipei, Taiwan, June 2018.

21. Campus-scale mobile crowdsourcing: design, deployment, and behavioral insights, *Institute of Information Science, Academia Sinica*, Taipei, Taiwan, June 2017.

22. How can taxis up their games in the age of Uber, *INFINITI Lab*, Singapore, April 2017.

23. Invited Panelist, *Fourth Singapore-India Business Dialogue Sustainable Urban Management in Singapore and India, Singapore Management University*, November 2016.

24. How can taxis up their games in the age of Uber, *LTA-UITP Singapore International Transport Congress and Exhibition (SITCE 2016)*, Singapore, October 2016.

25. Transportation and logistics for future cities, *International Symposium on Applied Analytics for a Smart Society*, Colombo, Sri Lanka, September 2016.

26. How can taxis up their games in the age of Uber, *Asia Taxi Forum*, Singapore, July 2016.

27. Mobility on demand for future cities, *Taiwan Data Science Annual Meeting,* Taipei, Taiwan, July 2016.

28. Mobility on demand for future cities, *Thematic Workshop of APEX Business-IT Global Case Challenge 2016*, Singapore, May 2016.

29. Smartphone-enabled urban solutions: Mobility on demand and mobility on sale, *Future Ready Forum*, Singapore, March 2016.

30. Smartphone-enabled urban solutions: Mobility on demand and mobility on sale, *2016 SMU Logistics & Supply Chain Symposium: Urban Mobility & Circular Economy*, Singapore, March 2016.

31. Mobility on demand for future cities, *School of Computer Engineering, Nanyang Technological University*, Singapore, November 2015.

32. (Sustainable) Mobility on demand, *Future Urban Mobility Symposium 2015*, Singapore, July 2015.

33. Product competition with network effects, *21st International Conference on Computing in Economics and Finance*, Taipei, Taiwan, June 2015.

34. Smartphone-enabled urban solutions: Mobility on demand and mobility on sale, *Xerox Research Centre India*, Bangalore, India, April 2015.

35. Smartphone-enabled urban solutions: Mobility on demand and mobility on sale, *2015 Workshop on Analytics for Business, Consumer, and Social Insights (BCSI 2015)*, Singapore, March 2015.

36. Approximate dynamic programming for last-mile problem with stochastic demand, *INFORMS Annual Meeting*, San Fransisco, California, November 2014.

37. Smartphone-enabled urban solutions: Mobility on demand and mobility on sale, *Computer Science & Information Engineering*, National Taiwan University, Taipei, Taiwan, December 2014.

38. Smartphone-enabled urban solutions: Mobility on demand and mobility on sale, *Palo Alto Research Center*, Palo Alto, California, November 2014.

39. Smartphone-enabled urban solutions: Mobility on demand and mobility on sale, *Traffic21 @ Heinz College, Carnegie Mellon University*, Pittsburgh, Pennsylvania, November 2014.

40. Smartphone-enabled urban solutions: Mobility on demand and mobility on sale, *Business School, National University of Singapore*, Singapore, October 2014.

41. Smartphone-enabled urban solutions: Mobility on demand and mobility on sale, *Computer Science and Engineering, University of Michigan*, Ann Arbor, Michigan, July 2014.

42. Mechanisms for arranging ride sharing and fare splitting for last-mile travel demands, *LAMSADE, Université Paris-Dauphine*, Paris, France, May 2014.

43. Approximate dynamic programming for last-mile problem with stochastic demand, *Future Urban Mobility Symposium 2014*, Singapore, January 2014.

44. TaxiSim: Design and application, *Future Urban Mobility Symposium 2014*, Singapore, January 2014.

45. Mechanisms for arranging ride sharing and fare splitting for last-mile travel demands, *Department of Systems & Information Engineering, University of Virginia*, December 2013.

46. An agent-based simulation approach to experience management in theme parks, *ESHIA Winter Workshop: Towards Large Multiscale Simulations of Complex Socio-Economic Systems with Heterogeneous Interacting Agents*, Singapore, November 2013.

47. Fair cost sharing mechanisms for last mile ridesharing, *INFORMS Annual Meeting*, Minneapolis, Minnesota, November 2013.

48. Mobility on demand for future cities, *Department of Industrial Engineering, Tsinghua University*, Beijing, China, August 2013.

49. Research on living analytics, *Institute of Industrial Engineering, National Taiwan University*, Taipei, Taiwan, March 2013.

50. Research on living analytics, *Department of Business Administration, National Taiwan University*, Taipei, Taiwan, March 2013.

51. Research on living analytics, *Department of Computer Science and Information Engineering, National Cheng Kung University*, Tainan, Taiwan, March 2013.

52. TaxiSim: Its design and application, *Future Urban Mobility Symposium 2013*, Singapore, January 2013.

53. TaxiSim: A multiagent simulation platform for evaluating taxi fleet operations, *Land Transport Authority*, Singapore, January 2013.

54. Parallel markets, interdependent assets, and market crashes: an agent-based modeling perspective, *2011 Winter Workshop on Economic Heterogeneous Interacting Agents (2011 Winter WEHIA)*, Tianjin, China, November 2011.

55. Parallel markets, interdependent assets, and market crashes: an agent-based modeling perspective, *17th International Conference on Computing in Economics and Finance (CEF 2011)*, San Francisco, CA, June 2011.

56. Evaluating the impact of extreme conditions in financial markets with a flexible agent-based market simulation, *16th International Conference on Computing in Economics and Finance (CEF 2010)*, London, UK, July 2010.

57. An analysis of extreme price shocks and illiquidity among trend followers, *Fifth International Symposium on Financial Engineering and Risk Management*, Taipei, Taiwan, June 2010.

58. An analysis of extreme price shocks and illiquidity among trend followers, *R/Rmetrics Singapore Conference 2010 - Computational Topics in Finance*, Singapore, February 2010.

59. Optimal routing policy for taxi queuing, *INFORMS Annual Meeting*, Washington, DC, October 2008.

60. Game-theoretic approaches for complex systems optimization (Dantzig Dissertation Award presentation), *INFORMS Annual Meeting*, Seattle, WA, November 2007.

61. Combinatorial auction for multi-period distributed resource allocation, *INFORMS Annual Meeting*, Seattle, WA, November 2007.

62. Learning best reply evaluations in the sample fictitious play algorithm, *INFORMS Annual Meeting*, Seattle, WA, November 2007.

63. Designing an experimental gaming platform for trading grid resources, *Third International Workshop on Grid Computing and Applications*, Singapore, June 2007.

64. Designing an experimental gaming platform for trading grid resources, *Second International Conference on Design Science Research in Information Systems & Technology*, Pasadena, CA, May 2007.

65. A dynamic programming approach to the end-state problem, *Symposium on Complexity and Advanced Analytics: Theory and Applications*, Detroit, MI, October 2006.

66. A fictitious play algorithm for coordinated traffic signal control and dynamic route guidance, *INFORMS Annual Meeting*, San Francisco, CA, November 2005.

67. CoSIGN: A fictitious play algorithm for coordinated traffic signal control, *INFORMS Annual Meeting*, Denver, CO, October 2004.

68. Joint optimization of investment, production, and maintenance in production systems, *Symposium on Complexity and Advanced Analytics Applied to Business, Government and Public Policy*, Dearborn, MI, October 2004.

69. Market-based task allocation for dynamic information processing environments, *International Conference on Integration of Knowledge Intensive Multi-Agent Systems*, Cambridge, MA, October 2003.

Course Taught

- CS603: Multi-agent Systems (Postgraduate), 2018 - now
- CS426 (formerly IS418): Agent-based Modeling & Simulation, 2017 – now
- COR-IS1702 (formerly IS103): Computational Thinking, 2013 – now
- IS418: Intelligent Business Gaming, 2010 – 2017
- IS102: Computer as an Analysis Tool, 2007 – 2013
- Commodity Trading Simulation, 2007 – 2011
- IS418: Intelligent Agent Design & Applications, 2007 – 2008
- Quantitative Finance Workshop: Introduction to C++, 2007 – 2009

Thesis Chair (PhD)

- Mengyu Ji, August 2019 – now
- Pang Jin Tan, August 2019 – now
- Qian Shao, August 2020 - now

- Jian Bin Liew, January 2021 - now
- Chung-Kyun Han, January 2016 – December 2020
  - Awarded SMU Presidential Doctoral Fellowship.
  - Engineering Manager, LG Display.
- Larry Lin (co-supervised with Hoong Chuin Lau), January 2014 – December 2018
  - Data Scientist, Grab.
- Cen Chen (co-supervised with Hoong Chuin Lau), January 2013 – June 2017
  - Senior Algorithm Engineer, Ant Financial (part of the Alibaba Group).
- Jiali Du (co-supervised with Hoong Chuin Lau), July 2012 – June 2017
  - Data Scientist, Booking.com.

THESIS CHAIR (ENGD)

- Asyikeen Azhar (co-supervised with Aldy Gunawan), August 2020 – now
- Xulang Wan (co-supervised with Bing Tian Dai), January 2021 – now

THESIS CHAIR (MASTER)

- Duc Thien Nguyen (co-supervised with Hoong Chuin Lau), March 2011 – July 2014
- Long Foong Liow (co-supervised with Hoong Chuin Lau), August 2009 – June 2012

THESIS COMMITTEE MEMBER (PHD)

- Rajiv Kumar (Chair: Pradeep Varakantham)
- Tanvi Verma (Chair: Pradeep Varakantham)
- Meghna Lowalekar (Chair: Pradeep Varakantham)
- Pritee Agrawal (Chair: Pradeep Varakantham)
- Na Fu (Chair: Hoong Chuin Lau)

PROFESSIONAL ACTIVITIES

- Senior Program Committee membership:
  - International Joint Conference on Artificial Intelligence (IJCAI): 2023
  - International Conference on Autonomous Agents and Multiagent Systems (AAMAS): 2018, 2019, 2023
  - AAAI Conference on Human Computation and Crowdsourcing (HCOMP): 2022
  - AAAI Conference on Artificial Intelligence (AAAI): 2020
- Program Committee membership:
  - AAAI Conference on Artificial Intelligence (AAAI): 2011, 2012, 2016, 2017, 2019, 2021, 2022, 2023
  - International Conference on Automated Planning and Scheduling (ICAPS): 2021, 2022, 2023
  - AAAI Conference on Artificial Intelligence, Emerging Track on AI for Social Impact: 2020, 2022
  - AAAI Conference on Human Computation and Crowdsourcing (HCOMP): 2019, 2020, 2021
  - International Joint Conference on Artificial Intelligence (IJCAI): 2013, 2016, 2017, 2020
  - 26th World Congress on Intelligent Transport Systems (ITS World Congress): 2019
  - International Conference on Autonomous Agents and Multiagent Systems (AAMAS): 2011, 2013–2017
  - Winter Simulation Conference (WSC): 2018

- International Workshop on Agents in Traffic and Transportation (ATT): 2012 @AAMAS, 2014 @AAMAS, 2016 @IJCAI, 2018 @IJCAI
- ACM Symposium on Applied Computing (ACM SAC): 2015, 2016, 2018
- IEEE International Conference on Agents (ICA): 2016, 2017
- Duke Forest Conference 2016
- International Conference on Principles of Practice in Multi-Agent Systems (PRIMA): 2009–2015
- International Conference on Electronic Commerce (ICEC): 2012, 2013
- International Workshop on Data-Oriented Constructive Mining and Multi-Agent Simulation @ IAT-13 (2013)
- Annual IEEE Conference on Automation Science and Engineering (CASE): 2010
- International Conference on Computational Intelligence and Security: 2008

- Editorial Board membership:
  - Senior Editor, Electronic Commerce Research and Applications, 2019 - Now
  - Associate Editor, Electronic Commerce Research and Applications, 2013 - 2019

- Member, 2019 President's Science Awards Selection Committee, 2019

- Associate Editor, 21st IEEE International Conference on Intelligent Transportation Systems (ITSC-18), 2018

- Demo Chair, Fifteenth International Conference on Autonomous Agents and Multiagent Systems (AAMAS-16), 2016

- Chair, IAT-15 Special Session on Agents in Urban Computing and Engineering

- Publication Chair, 16th Annual International Conference on Electronic Commerce (ICEC-14), 2014

- Publication Chair, 14th Annual International Conference on Electronic Commerce (ICEC-12), 2012

- Member of:
  - Institute of Electrical and Electronics Engineers (IEEE)
  - Association for the Advancement of Artificial Intelligence (AAAI)
  - Institute for Operations Research and the Management Sciences (INFORMS)

- Reviewer for Springer book proposal on transportation, 2005

- Ad hoc referee for:
  - ACM Transactions on Intelligent Systems and Technology
  - Applied Mathematical Modeling
  - Computational Intelligence
  - Conference on Uncertainty in Artificial Intelligence
  - Discrete Applied Mathematics
  - Electronic Commerce Research and Applications
  - European Journal of Operational Research
  - Geoinformatica
  - IEEE International Conference on Intelligent Transportation Systems
  - IEEE Transactions on Automatic Control
  - IEEE Transactions on Intelligent Transportation Systems
  - IEEE Transactions on Mobile Computing
  - IEEE Transactions on Systems, Man, and Cybernetics
  - IISE Transactions
  - International Conference on Information Systems
  - International Journal of Geographical Information Science
  - Journal of Economic Behavior and Organization
  - Journal of Global Optimization
  - Journal of Intelligent Transportation Systems

- – Operations Research
- – Transportation Research Part A
- – Transportation Research Part C
- – Transportation Science
- – Web Intelligence and Agent Systems
- – Winter Simulation Conference