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Education

PhD, University of Michigan, United States of America, 2006

Bachelor of Science, National Taiwan University, Taiwan, 1997

Academic Appointments

Associate Professor of Computer Science, School of Computing and Information Systems, SMU, Apr 2021 - Present

Associate Professor of Information Systems, School of Computing and Information Systems, SMU, Jan 2015 - Mar 2021

Assistant Professor of Information Systems, School of Computing and Information Systems, SMU, Jan 2007 - Dec 2014

Lecturer of Information Systems, School of Computing and Information Systems, SMU, Dec 2006 - Dec 2006

Graduate Student Instructor, Department of Industrial and Operations Engineering, University of Michigan, United States of America, Jan 2006 - Jan 2006

Graduate Student Research Assistant, Dynamic Systems Optimization Laboratory and Artificial Intelligence Laboratory, University of Michigan, United States of America, Jan 2001 - Jan 2006

Academic Administrative Positions

Urban Fellow, SMU Urban Institute, SMU, Aug 2023 - Present

Deputy Director (Research), Fujitsu-SMU Urban Computing & Engineering (UNiCEN) Corp. Lab, SMU, Jan 2015 - Dec 2019

Other Positions and Affiliations

Research Programmer, OLE Technology Corp, Taiwan, Jan 1999 - Jan 2001

Lecturer / Second Lieutenant, Taiwan Army, Taiwan, Jan 1997 - Jan 1999

Awards and Honors

Best Student Paper Award, 2021 INFORMS Conference on Service Science, 2021

Finalist, INFORMS Innovative Applications in Analytics Award (IAAA): Driver Guidance System for Taxi Drivers, 2020

Lee Kong Chian Fellowship for Research Excellence, Singapore Management University, 2019, 2015

Best Application Demo, Seventeenth International Conference on Autonomous Agents and Multiagent Systems (AAMAS-18), 2018

First Prize, CIKM AnalytiCup: DataSpark Mobility Open-Task Challenge, Twenty-Sixth ACM International Conference on Information and Knowledge Management, 2017

Honorable mention for the best paper award (top 5% of all papers), Nineteenth ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW-16), 2016

Rackham Travel Grant (2003 - 2005), Rackham Graduate School, University of Michigan, 2013

Finalist, George B. Dantzig Dissertation Award, INFORMS, 2007

Future Academician Colloquium, INFORMS, 2005

Wilson Prize (awarded annually to the best student paper on manufacturing systems), Department of Industrial and Operations Engineering, University of Michigan, 2005

AAAI Student Scholarship, 18th International Joint Conference on Artificial Intelligence, 2003

President's Award (top 5% of the department), National Taiwan University, 1994

Professional Memberships

Institute of Electrical and Electronics Engineers (IEEE), 2006

Institute for Operations Research and the Management Sciences (INFORMS), 2005

Association for the Advancement of Artificial Intelligence (AAAI), 2004

RESEARCH

Research Interests

Urban Transportation Systems

Agent-based Models for Financial Markets

Large-scale Optimization Models and Computational Methods

Models and Computational Methods for Market-Based Resource Allocation Problems

Behavioral Models and Optimization in Leisure Settings

Publications

Journal Articles [Refereed]

Long-term mine planning: A survey of classical, hybrid and artificial intelligence-based methods, by AZHAR, Nurul A.B.; GUNAWAN, Aldy; CHENG, Shih-Fen; LEONARDI, Erwin. (2024). *Asia-Pacific Journal of Operational Research*, 1-31. <https://doi.org/10.1142/S0217595924400141> (Advance Online)

Neighborhood retail amenities and taxi trip behavior: A natural experiment in Singapore, by LEE, Kwan Ok; CHENG, Shih-Fen. (2023). *Habitat International*, 131 1-13. <https://doi.org/10.1016/j.habitatappint.2022.102714> (Published)

The impact of ride-hail surge factors on taxi bookings, by AGARWAL, Sumit; CHAROENWONG, Ben; CHENG, Shih-Feng; KEPPO, Jussi. (2022). *Transportation Research Part C: Emerging Technologies*, 136 1-26. <https://doi.org/10.1016/j.trc.2021.103508> (Published)

A State Aggregation Approach for Stochastic Multiperiod Last-Mile Ride-Sharing Problems, by AGUSSURJA, Lucas; CHENG, Shih-Fen; LAU, Hoong Chuin. (2019). *Transportation Science*, 53 (1), 148-166. <https://doi.org/10.1287/trsc.2018.0840> (Published)

Obfuscation at-source: Privacy in context-aware mobile crowd-sourcing, by KANDAPPU, Thivya; MISRA, Archan; CHENG, Shih-Fen; TANDRIANSYAH, Randy; LAU, Hoong Chuin. (2018). *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*, 2 (1), 16: 1-24. <https://doi.org/10.1145/3191748> (Published)

Scalable Urban Mobile Crowdsourcing: Handling Uncertainty in Worker Movement, by CHENG, Shih-Fen; CHEN, Cen; KANDAPPU, Thivya; LAU, Hoong Chuin; MISRA, Archan; JAIMAN, Nikita; TANDRIANSYAH, Randy; KOH, Desmond. (2018). *ACM Transactions on Intelligent Systems and Technology*, 9 (3), 1-24. <https://doi.org/10.1145/3078842> (Published)

Achieving Economic and Environmental Sustainabilities in Urban Consolidation Center With Bicriteria Auction, by HANDOKO, Stephanus Daniel; LAU, Hoong Chuin; CHENG, Shih-Fen. (2016). *IEEE Transactions on Automation Science and Engineering*, 13 (4), 1471-1479. <http://doi.org/10.1109/TASE.2016.2563459> (Published)

Multi-agent orienteering problem with time-dependent capacity constraints, by CHEN, Cen; CHENG, Shih-Fen; LAU, Hoong Chuin. (2014). *Web Intelligence and Agent Systems*, 12 (4), 347-358. <https://doi.org/10.3233/WIA-140304> (Published)

Sampled fictitious play for multi-action stochastic dynamic programs, by GHATE, Archis; CHENG, Shih-Fen; BAUMERT, Stephen; REAUME, Daniel; SHARMA, Dushyant; SMITH, Robert L.. (2014). *IIE Transactions*, 46 (7), 742-756. <https://doi.org/10.1080/0740817X.2013.857062> (Published)

A dynamic programming approach to achieving an optimal end-state along a serial production line, by CHENG, Shih-Fen; NICHOLSON, Blake E.; EPELMAN, Marina A.; REAUME, Daniel J.; SMITH, Robert L.. (2013). *IIE Transactions*, 45 (12), 1278-1292. <http://dx.doi.org/10.1080/0740817X.2013.770183> (Published)

Robust distributed scheduling via time-period aggregation, by CHENG, Shih-Fen; TAJAN, John; LAU, Hoong Chuin. (2012). *Web Intelligence and Agent Systems*, 10 (3), 305-318. <http://doi.org/10.3233/WIA-2012-0248> (Published)

Would price limits have made any difference to the 'Flash Crash' on May 6, 2010, by LEE, Wing Bernard; CHENG, Shih-Fen; KOH, Annie. (2011). *Review of Futures Markets*, 19 55-93. http://www.rfmjournals.com/vol19_ifm_3.html (Published)

An analysis of extreme price shocks and illiquidity among systematic trend followers, by LEE, Bernard; CHENG, Shih-Fen; KOH, Annie. (2010). *Review of Futures Markets*, 18 (4), 385-419. (Published)

CoSIGN: A parallel algorithm for coordinated traffic signal control, by CHENG, Shih-Fen; EPELMAN, Marina A.; SMITH, Robert L.. (2006). *IEEE Transactions on Intelligent Transportation Systems*, 7 (4), 551-564. <https://doi.org/10.1109/TITS.2006.884617> (Published)

Walverine: a Walrasian trading agent, by CHENG, Shih-Fen; LEUNG, Evan; LOCHNER, Kevin M.; O'MALLEY, Kevin; REEVES, Daniel M.; SCHVARTZMAN, Julian L.; WELLMAN, Michael P.. (2005). *Decision Support Systems*, 39 (2), 169-184. <http://doi.org/10.1016/j.dss.2003.10.005> (Published)

Trading agents competing: Performance, progress, and market effectiveness, by WELLMAN, Michael P.; CHENG, Shih-Fen; REEVES, Daniel M.; LOCHNER, Kevin M.. (2003). *IEEE Intelligent Systems*, 18 (6), 48-53. <https://doi.org/10.1109/mis.2003.1249169> (Published)

Conference Proceedings

Comparison of evolutionary algorithms: A case study on the multi-objective carbon-aware mine planning, by AZHAR, Nurul Asyikeen; GUNAWAN, Aldy; CHENG, Shih-Fen; LEONARDI, Erwin. (2024.0). *2024 IEEE 20th International Conference on Automation Science and Engineering (CASE): Bari, Italy, August 28 - September 1: Proceedings*, (pp. 962-969) Piscataway, NJ: IEEE. <https://doi.org/10.1109/CASE59546.2024.10711825> (Published)

Enabling sustainable freight forwarding network via collaborative games, by TAN, Pang-Jin; CHENG, Shih-Fen; CHEN, Richard. (2024.0). *Proceedings of the 33rd International Joint Conference on Artificial Intelligence 2024: Jeju, August 3-9*, (pp. 2976-2983) Jeju: International Joint Conferences on Artificial Intelligence. <https://doi.org/10.24963/ijcai.2024/330> (Published)

Imitating cost-constrained behaviors in reinforcement learning, by SHAO, Qian; VARAKANTHAM, Pradeep; CHENG, Shih-Fen. (2024.0). *Proceedings of the 34th International Conference on Automated Planning and Scheduling, ICAPS 2024: Banff, June 1-6*, (pp. 514-522) Banaff: Association for the Advancement of Artificial Intelligence. <https://doi.org/10.1609/icaps.v34i1.31512> (Published)

M2-CNN: A macro-micro model for taxi demand prediction, by CHENG, Shih-Fen; RATHNAYAKA, Prabod. (2023.0). *2023 IEEE International Conference on Big Data: Sorrento, Italy, December 15-18: Proceedings*, (pp. 1395-1402) Piscataway, NJ: IEEE. <https://doi.org/10.1109/BigData59044.2023.10386527> (Published)

Designing large-scale intelligent collaborative platform for freight forwarders, by TAN, Pang Jin; CHENG, Shih-Fen; CHEN, Richard. (2023.0). *Proceedings of the 2023 IEEE Symposium Series on Computational Intelligence, Mexico, December 5-8*, (pp. 1767-1772) Piscataway, NJ: IEEE. <https://doi.org/10.1109/SSCI52147.2023.10371994> (Published)

Quantifying taxi drivers' behaviors with behavioral game theory, by JI, Mengyu; XU, Yuhong; CHENG, Shih-Fen. (2023.0). *2023 IEEE International Conference on Intelligent Transportation Systems, ITSC: Bilbao, Spain, September 24-28: Proceedings*, (pp. 3016-3021) Piscataway, NJ: IEEE . <https://doi.org/10.1109/ITSC57777.2023.10422246> (Published)

Carbon-aware mine planning with a novel multi-objective framework, by AZHAR, Nurul Asyikeen Binte; GUNAWAN, Aldy; CHENG, Shih-Fen; LEONARDI, Erwin. (2023.0). *Proceedings of the Fourteenth International Conference on Computational Logistics, Berlin, Germany, 2023 September 6-8*, (pp. 1-16) ICCL: (Published)

Strategic planning for flexible agent availability in large taxi fleets, by KUMAR, Rajiv; VARAKANTHAM, Pradeep; CHENG, Shih-Fen. (2023.0). *Proceedings of the 22nd International Conference on Autonomous Agents and Multiagent Systems, London, 2023 May 29 - June 2*, (pp. 552-560) New York: ACM. <https://doi.org/10.5555/3545946.3598683> (Published)

Improving quantal cognitive hierarchy model through iterative population learning, by XU, Yuhong; CHENG, Shih-Fen; CHEN, Xinyu. (2023.0). *Proceedings of the 22nd International Conference on Autonomous Agents and Multiagent Systems, London, 2023 May 29 - June 2*, (pp. 2718-2720) New York: ACM. <https://doi.org/10.5555/3545946.3599054> (Published)

Preference-aware delivery planning for last-mile logistics, by SHAO, Qian; CHENG, Shih-Fen. (2023.0). *Proceedings of the 22nd International Conference on Autonomous Agents and Multiagent Systems, London, 2023 May 29 - June 2*, (pp. 1524-1532) New York: ACM. <https://doi.org/10.5555/3545946.3598806> (Published)

A carbon-aware planning framework for production scheduling in mining, by AZHAR, Nurul A.; GUNAWAN, Aldy; CHENG, Shih-Fen; LEONARDI, Erwin . (2022.0). *ICCL 2022: Proceedings of the 13th International Conference, Barcelona, September 21-23*, (pp. 441-456) Cham: Springer. https://doi.org/10.1007/978-3-031-16579-5_30 (Published)

Taxi travel time based Geographically Weighted Regression Model (GWR) for modeling public housing prices in Singapore, by WANG, Yi'an; CAI, Fangyi; CHENG, Shih-Fen; WU, Bo; CAO, Kai. (2022.0). *Proceedings of the 29th International Conference on Geoinformatics, Beijing, China, 2022 June 15 - 18*, Beijing, China: IEEE. <https://doi.org/10.1109/Geoinformatics57846.2022.9963833> (Published)

Multiscale generative models: Improving performance of a generative model using feedback from other dependent generative models, by CHEN, Changyu; BOSE, Avinandan; CHENG, Shih-Fen; SINHA, Arunesh . (2022.0). *Proceedings of 36th AAAI Conference on Artificial Intelligence (AAAI), Vancouver, Canada, 2022 February 22 - March 1*, (pp. 1-9) Virtual Conference: (Accepted)

A Lagrangian column generation approach for the probabilistic crowdsourced logistics planning, by HAN, Chung-Kyun; CHENG, Shih-Fen. (2021.0). *Proceedings of 2021 IEEE 17th International Conference on Automation Science and Engineering, Lyon, France, August 23-27*, (pp. 107-112) Lyon, France: IEEE. (Published)

Automated taxi queue management at high-demand venues, by JI, Mengyu; CHENG, Shih-Fen. (2021.0). *Proceedings of 2021 IEEE 17th International Conference on Automation Science and Engineering, Lyon,*

France, August 23-27, (pp. 1757-1762) Lyon, France: (Published)

Integrating empirical analysis into analytical framework: An integrated model structure for on-demand transportation, by SU, Yuliu; XU, Ying; COURCOUBETIS, Costas; CHENG, Shih-Fen. (2021.0). *2021 INFORMS Conference on Service Science (ICSS2021), Virtual Conference, August 10-12*, (pp. 1-10) Virtual Conference: Informis. (Published)

Adaptive operating hours for improved performance of taxi fleets, by KUMAR, Rajiv Ranjan; VARAKANTHAM, Pradeep; CHENG, Shih-Fen. (2021.0). *Proceedings of the 20th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2021), Virtual Conference, May 3-7*, (pp. 728-736) Richland, SC: IFAAMAS. <https://doi.org/10.5555/3463952.3464040> (Published)

PokeME: Applying context-driven notifications to increase worker engagement in mobile crowd-sourcing, by KANDAPPU, Thivya; MEHROTRA, Abhinav; MISRA, Archan; MUSOLESI, Mirco; CHENG, Shih-fen; MEEGAHAPOLA, Lakmal Buddika. (2020.0). *CHIIR '20: Proceedings of the 5th Conference on Human Information Interaction and Retrieval, Vancouver, March 14-18*, (pp. 3-12) New York: ACM. <https://doi.org/10.1145/3343413.3377965> (Published)

An exact single-agent task selection algorithm for the crowdsourced logistics, by HAN, Chung-Kyun; CHENG, Shih-Fen. (2020.0). *Proceedings of the 29th International Joint Conference on Artificial Intelligence IJCAI 2020: Virtual, Yokohama, Japan, January 7-15*, (pp. 4352-4358) Menlo Park, CA: IJCAI. <https://doi.org/10.24963/ijcai.2020/600> (Published)

A homophily-free community detection framework for trajectories with delayed responses, by HAN, Chung-Kyun; CHENG, Shih-Fen; VARAKANTHAM, Pradeep. (2019.0). *Proceedings of the 18th International Conference on Autonomous Agents and Multiagent Systems (AAMAS-19), Montreal, Canada, May 13-17*, (pp. 2003-2005) Montreal, Canada: ACM. <https://doi.org/10.5555/3306127.3331991> (Published)

Mobility-driven BLE transmit-power adaptation for participatory data muling, by HAN, Chung-Kyun; MISRA, Archan; CHENG, Shih-Fen. (2018.0). *2018 IEEE 24th International Conference on Parallel and Distributed Systems ICPADS: Singapore, December 11-13: Proceedings*, (pp. 962-971) Piscataway, NJ: IEEE. <https://doi.org/10.1109/PADSW.2018.8644545> (Published)

Taxis strike back: A field trial of the driver guidance system, by CHENG, Shih-Fen; JHA, Shashi Shekhar; RAJENDRAM, Rishikeshan. (2018.0). *AAMAS '18: Proceedings of the 17th International Conference on Autonomous Agents and Multiagent Systems, Stockholm, July 10-15*, (pp. 577-584) Richland, SC: IFAAMAS. (Published)

A driver guidance system for taxis in Singapore, by JHA, Shashi Shekhar; CHENG, Shih-Fen; LOWALEKAR, Meghna; WONG, Nicholas; RAJENDRAM, Rishikeshan; VARAKANTHAM, Pradeep; TROUNG, Nghia Troung; BIN ABD RAHMAN, Firmansyah. (2018.0). *AAMAS '18: Proceedings of the 17th International Conference on Autonomous Agents and Multiagent Systems, Stockholm, July 10-15*, (pp. 1820-1822) Richland, SC: IFAAMAS. (Published)

Upping the game of taxi driving in the age of Uber, by JHA, Shashi Shekhar; CHENG, Shih-Fen; LOWALEKAR, Meghna; WONG, Wai Hin; RAJENDRAM, Rishikeshan; TRAN, Trong Khiem; VARAKANTHAM, Pradeep; TRUONG TRONG, Nghia ; ABD RAHMAN, Firmansyah;. (2018.0). *Proceedings of the Thirtieth AAAI Conference on Innovative Applications of Artificial Intelligence, New Orleans, 2018, February 2-7*, (pp. 7779-7785) Menlo Park, CA: AAAI Press. (Published)

Exact and heuristic approaches for the multi-agent orienteering problem with capacity constraints, by WANG, Wenjie; LAU, Hoong Chuin; CHENG, Shih-Fen. (2018.0). *Proceedings of 2017 IEEE Symposium Series on Computational Intelligence, Hilton Hawaiian Village Resort Honolulu, United States, November 27 - December 1*, (pp. 1-7) Honolulu, HI: Institute of Electrical and Electronics Engineers Inc. <https://doi.org/10.1109/SSCI.2017.8285329> (Published)

Privacy in context-aware mobile crowdsourcing systems, by KANDAPPU, Thivya; MISRA, Archan; CHENG, Shih-Fen; LAU, Hoong Chuin. (2017.0). *2017 IEEE International Conference on Pervasive Computing and Communications Workshops, PerCom Workshops: Kona, Big Island, Hawaii, March 13-17*, (pp. 231-236) Piscataway, NJ: IEEE. <https://doi.org/10.1109/PERCOMW.2017.7917563> (Published)

Privacy in context-aware mobile crowdsourcing systems, by KANDAPPU, Thivya; MISRA, Archan; CHENG, Shih-Fen; LAU, Hoong Chuin. (2017.0). *Proceedings of the IEEE International Conference on Pervasive Computing and Communications Workshops, PerCom Workshops 2017, Kona, Big Island, United States, March 13-17*, (pp. 231-236) New York: IEEE. (Published)

An agent-based approach to human migration movement, by LIN, Larry J. J.; CARLEY, Kathleen M.; CHENG, Shih-Fen. (2016.0). *WSC 2016: Proceedings of the Winter Simulation Conference 2016, Arlington, VA, December 11-14*, (pp. 3150-3520) Piscataway, NJ: IEEE. <https://doi.org/10.1109/WSC.2016.7822380> (Published)

Managing egress of crowd during infrastructure disruption, by TENG, Teck-Hou; CHENG, Shih-Fen; TRUONG, Trong Nghia; LAU, Hoong Chuin. (2016.0). *WSC 2016: Proceedings of the Winter Simulation Conference, Washington DC, December 11-14*, (pp. 1316-1327) Piscataway, NJ: IEEE. <https://doi.org/10.1109/WSC.2016.7822186> (Published)

TASKer: behavioral insights via campus-based experimental mobile crowd-sourcing, by KANDAPPU, Thivya; JAIMAN, Nikita; TANDRIANSYAH, Randy; MISRA, Archan; CHENG, Shih-Fen; CHEN, Cen; LAU, Hoong Chuin; CHANDER, Deepthi; DASGUPTA, Koustuv. (2016.0). *Proceedings of the ACM International Joint Conference on Pervasive and Ubiquitous Computing, UbiComp; Heidelberg; Germany; September 12-16, 2016*, (pp. 392-402) New York: ACM. <https://doi.org/10.1145/2971648.2971690> (Published)

TASKer: Behavioral insights via campus-based experimental mobile crowd-sourcing, by KANDAPPU, Thivya; JAIMAN, Nikita; Tandriansyah, Randy; MISRA, Archan; CHENG, Shih-Fen; CHEN, Cen; LAU, Hoong Chuin; CHANDER, Deepthi; DASGUPTA, Koustuv. (2016.0). *UbiComp '16: Proceedings of the 2016 ACM International Joint Conference on Pervasive and Ubiquitous Computing: Heidelberg, Germany, September 12-16*, (pp. 392-402) New York: ACM. <https://doi.org/10.1145/2971648.2971690> (Published)

An experimental investigation of product competition and marketing in social networks, by CHEN, Cen; GUO, Zhiling; CHENG, Shih-Fen; LAU, Hoong Chuin. (2016.0). *Proceedings of the 10th China Summer Workshop on Information Management CSWIM 2016: June 25-26, Dalian, China*, (pp. 36-41) Dalian: CSWIM. (Published)

Campus-scale mobile crowd-tasking: Deployment and behavioral insights, by KANDAPPU, Thivya; MISRA, Archan; CHENG, Shih-Fen; JAIMAN, Nikita; Tandriansyah, Rand; CHEN, Cen; LAU, Hoong Chuin; CHANDER, Deepthi; DASGUPTA, Koustuv. (2016.0). *CSCW '16: Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work and Social Computing: San Francisco, February 27 - March 2*, (pp. 800-812) New York: ACM. <https://doi.org/10.1145/2818048.2819995> (Published)

Campus-scale mobile crowd-tasking: deployment & behavioral insights, by Thivya Kandappu; Archan Misra; Shih-Fen Cheng; Nikita Jaiman; Randy Tandriansiyah; Cen Chen; Hoong Chuin Lau; Deepthi Chander; Koustuv Dasgupta. (2016.0). *Proceeding of 19th ACM Conference on Computer-Supported Cooperative Work and Social Computing, CSCW; San Francisco; United States; 27 February-2 March, 2016*, (pp. 800-812) New York: ACM. <https://dl.acm.org/doi/10.1145/2818048.2819995> (Published)

Achieving stable and fair profit allocation with minimum subsidy in collaborative logistics, by AGUSSURJA, Lucas; LAU, Hoong Chuin; CHENG, Shih-Fen. (2016.0). *Proceedings fo the Thirtieth AAAI Conference on Artificial Intelligence (AAAI-16): February 12-17, 2016, Phoenix, Arizona*, (pp. 3785-3792) Palo Alto, CA: AAAI Press. (Published)

Building crowd movement model using sample-based mobility survey, by LIN, Larry J. J.; CHENG, Shih-Fen; LAU, Hoong Chuin. (2015.0). *2015 Winter Simulation Conference: Proceedings, Huntington Beach, CA, December 6-9*, (pp. 139-150) Piscataway, NJ: IEEE. <https://doi.org/10.1109/WSC.2015.7408159> (Published)

Learning and controlling network diffusion in dependent cascade models, by DU, Jiali; VARAKANTHAM, Pradeep; KUMAR Akshat; CHENG, Shih-Fen. (2015.0). *2015 IEEE/WIC/ACM International Joint Conference on Web Intelligence and Intelligent Agent Technology WI-IAT 2015: 6-9 December, Singapore*, Piscataway, NJ: IEEE. <https://doi.org/10.1109/WI-IAT.2015.126> (Published)

Density Peaks Clustering Approach for Discovering Demand Hot Spots in City-scale Taxi Fleet Dataset, by LIU, Dongchang; CHENG, Shih-Fen; YANG, Yiping. (2015.0). *Eighteenth IEEE International Conference on Intelligent Transportation Systems*, (pp. 1831-1836) Los Alamitos, CA: IEEE Computer Society. <http://dx.doi.org/10.1109/ITSC.2015.297> (Published)

Designing bus transit services for routine crowd situations at large event venues, by DU, Jiali; CHENG, Shih-Fen; LAU, Hoong Chuin. (2015.0). *Computational Logistics: 6th International Conference, ICCL 2015 Delft, The Netherlands, September 23-25: Proceedings*, (pp. 704-718) Cham: Springer. https://doi.org/10.1007/978-3-319-24264-4_48 (Published)

Towards city-scale mobile crowdsourcing: Task recommendations under trajectory uncertainties, by CHEN, Cen; CHENG, Shih-Fen; LAU, Hoong Chuin; MISRA, Archan. (2015.0). *Proceedings of the*

Twenty-Fourth International Joint Conference on Artificial Intelligence (IJCAI 2015): Buenos Aires, Argentina, 25–31 July 2015, (pp. 1113-1119) Palo Alto, CA: AAAI Press. (Published)

Multi-agent task assignment for mobile crowdsourcing under trajectory uncertainties, by CHEN, Cen; CHENG, Shih-Fen; LAU, Hoong Chuin; MISRA, Archan. (2015.0). *AAMAS '15: Proceedings of the 14th International Conference on Autonomous Agents and Multi-Agent Systems: 4-8 May 2015, Istanbul, Turkey*, (pp. 1715-1716) Richland, SC: AAMAS. http://www.aamas2015.com/en/AAMAS_2015_USB/aamas/p1715.pdf (Published)

TRACCS: Trajectory-Aware Coordinated Urban Crowd-Sourcing, by CHEN, Cen; CHENG, Shih-Fen; GUNAWAN, Aldy; MISRA, Archan; Dasgupta, Koustuv; Chander, Deepthi. (2014.0). *Proceedings of the Second AAAI Conference on Human Computation and Crowdsourcing HCOMP 2014: November 2-4, 2014, Pittsburgh*, (pp. 30-40) Palo Alto, CA: AAAI Press. <http://www.aaai.org/ocs/index.php/HCOMP/HCOMP14/paper/view/8966> (Published)

Mechanisms for arranging ride sharing and fare splitting for last-mile travel demands, by CHENG, Shih-Fen; NGUYEN, Duc Thien; LAU, Hoong Chuin. (2014.0). *AAMAS '14: Proceedings of the 13th International Conference on Autonomous Agents and Multiagent Systems, 5-9 May, 2014, Paris*, (pp. 1505-1506) Richland, SC: AAMAS. <http://aamas2014.lip6.fr/proceedings/aamas/p1505.pdf> (Published)

An agent-based simulation approach to experience management in theme parks, by CHENG, Shih-Fen; LIN, Larry Junjie; DU, Jiali; LAU, Hoong Chuin; VARAKANTHAM, Pradeep. (2013.0). *WSC '13: Proceedings of the 2013 Winter Simulation Conference: December 8-11, 2013, Washington DC*, (pp. 1527-1538) Piscataway, NJ: IEEE. <http://doi.org/10.1109/WSC.2013.6721536> (Published)

Budgeted personalized incentive approaches for smoothing congestion in resource networks, by VARAKANTHAM, Pradeep; FU, Na; YEOH, William; CHENG, Shih-Fen; LAU, Hoong Chuin. (2013.0). *Algorithmic Decision Theory: Third International Conference, ADT 2013, Bruxelles, Belgium, November 12-14, 2013, Proceedings*, (pp. 375-386) Cham: Springer Verlag. http://doi.org/10.1007/978-3-642-41575-3_29 (Published)

A multi-objective memetic algorithm for vehicle resource allocation in sustainable transportation planning, by LAU, Hoong Chuin; AGUSSURJA, Lucas; CHENG, Shih-Fen; TAN, Pang Jin. (2013.0). *IJCAI-13: Proceedings of the Twenty-third International Joint Conference on Artificial Intelligence: Beijing, China, 3-9 August 2013*, (pp. 2833-2839) Menlo Park, CA: AAAI Press. <http://www.aaai.org/ocs/index.php/IJCAI/IJCAI13/paper/view/6814> (Published)

A mechanism for organizing last-mile service using non-dedicated fleet, by CHENG, Shih-Fen; NGUYEN, Duc Thien; LAU, Hoong Chuin. (2012.0). *WI-IAT 2012: IEEE/WIC/ACM International Conference on Intelligent Agent Technology, 4-7 December 2012, Macau: Proceedings*, (pp. 85-89) Los Alamitos, CA: IEEE Computer Society. <http://doi.org/10.1109/WI-IAT.2012.254> (Published)

Knowledge-driven Autonomous Commodity Trading Advisor, by LIM, Yee Pin; CHENG, Shih-Fen. (2012.0). *WI-IAT 2012: IEEE/WIC/ACM International Conference on Intelligent Agent Technology, 4-7 December 2012, Macau: Proceedings*, (pp. 119-125) Los Alamitos, CA: IEEE Computer Society. <http://dx.doi.org/10.1109/WI-IAT.2012.208> (Published)

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Niche-seeking in influence maximization with adversary, by LIOW, Long Foong; CHENG, Shih-Fen; LAU, Hoong Chuin. (2012.0). *ICEC '12: 14th Annual International Conference on Electronic Commerce, Singapore, 7-8 August 2012*, (pp. 107-112) Singapore: ACM. <http://doi.org/10.1145/2346536.2346556> (Published)

Uncertain congestion games with assorted human agent populations, by AHMED, Asrar; VARAKANTHAM, Pradeep; CHENG, Shih-Fen. (2012.0). *Uncertainty in Artificial Intelligence: Proceedings of the Twenty-eighth Conference: August 15-17, 2012, Catalina Island, United States*, (pp. 44-53) Corvallis, OR: AUAI Press. (Published)

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A Service Choice Model for Optimizing Taxi Service Delivery, by CHENG, Shih-Fen; QU, Xin. (2009.0). *ITSC 2009: Proceedings of the 12th International IEEE Conference on Intelligent Transportation Systems, St Louis, MO, October 3-7, 2009*, (pp. 66-71) Piscataway, NJ: IEEE. <http://dx.doi.org/10.1109/ITSC.2009.5309520> (Published)

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<http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.137.4019> (Published)

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Conference Papers

How can taxis up their games in the age of Uber, by CHENG, Shih-Fen. (2019.0). *2019 INFORMS Annual Meeting, Seattle, October 20-23, Seattle*. (Presented)

Tragedy of the ride-hailing, by CHENG, Shih-Fen; HU, Ming; KEPPO, Jussi. (2019.0). *Manufacturing and Service Operations Management Conference and SIG Meeting, Singapore, 2019 June 30 - July 2, Singapore*. (Presented)

Tragedy of the ride-hailing, by CHENG, Shih-Fen; HU, Ming; KEPPO, Jussi. (2019.0). *Workshop on Marketplace Innovation 5th WMI 2019, June 4-5, Stanford, CA*. (Presented)

Smart bundling for crowdsourced package deliveries, by LIN, Larry; HAN, Chung-Kyun; CHENG, Shih-Fen; LAU, Hoong Chuin; MISRA, Archan. (2018.0). *6th INFORMS Transportation Science and Logistics Society Workshop 2018, January 7-10, Hong Kong*. (Presented)

Interacting Knapsack Problem in Designing Resource Bundles, by NGUYEN, Truong Huy D.; VARAKANTHAM, Pradeep; LAU, Hoong Chuin; CHENG, Shih-Fen. (2013.0). *Metaheuristics International Conference 10th MIC 2013, August 5-8, Singapore*. (Published)

Multi-agent orienteering problem with time-dependent capacity constraints, by CHEN, Cen; CHENG, Shih-Fen; LAU, Hoong Chuin. (2013.0). *Metaheuristics International Conference 10th MIC 2013, August 5-8, Singapore*. (Presented)

Liquidity withdrawal and the 'Flash Crash' on May 6, 2010, by LEE, Wing Bernard; CHENG, Shih-Fen; KOH, Annie. (2011.0). *21st Asia-Pacific Futures Research Symposium, 11 February 2011, Singapore*. (Presented)

An Analysis of Extreme Price Shocks and Illiquidity among Trend Followers, by LEE, Bernard; CHENG, Shih-Fen; KOH, Annie. (2010.0). *Asia-Pacific Futures 20th Research Symposium, Hong Kong, 25-26 February 2010, Hong Kong*. <http://ssrn.com/abstract=1546458> (Published)

Designing and Validating an Agent-Based Commodity Trading Simulation, by CHENG, Shih-Fen; LIM, Yee Pin. (2009.0). *International Workshop on Agent-based Approaches in Economic and Social Complex Systems 6th AESCS 2009, November 13-14, Taipei*. (Published)

Working Papers

Choice-based crowdshipping: A dynamic task display problem, by ARSLAN, Alp; KILCI, Firat; CHENG, Shih-Fen; MISRA, Archan. (2022). <https://doi.org/10.2139/ssrn.4217416> (Published)

Decision Support for Assorted Populations in Uncertain and Congested Environments, by Varakantham, Pradeep Reddy; Ahmed, Asrar; CHENG, Shih-Fen. (2013). Will be submitting to Journal of Artificial Intelligence Research (JAIR). (Published)

Uncertain congestion games with assorted human agent populations, by VARAKANTHAM, Pradeep; AHMED, Asrar; CHENG, Shih-Fen. (2013). (Published)

An analysis of extreme price shocks and illiquidity among systematic trend followers, by LEE, Wing Bernard; CHENG, Shih-Fen; KOH, Annie. (2010). SSRN. <http://doi.org/10.2139/ssrn.1546458> (Published)

Papers Submitted for Review

Working Papers

Learning by Driving: Evidence from taxi driver wages in Singapore, by AGARWAL, Sumit; CHENG, Shih-Fen; KEPPO, Jussi; RENGARAJAN Sathyanarain.. (Submitted)

Price competition in global operations: considering the effect of parallel trade, by KAO, Yuan-Mao; CHENG, Shih-Fen; WU, Cheng-Hung.. (Submitted)

Research Grants

Singapore Management University

Investigating the Psychology of Consumer–AI Interaction for the Design and Development of AI-based Products and Services, Academic Research Fund (AcRF) Tier 2, Ministry of Education (MOE) , PI (Project Level): Hannah H. CHANG , Co-PI (Project Level): Michelle P LEE, 2022, S\$388,297

Not for Girls?: Gender Imbalance in STEM and Its impact on Female Students' Creative Performance, Tertiary Education Research Fund (TRF), Ministry of Education (MOE) , PI (Project Level): CHENG Chi-Ying , Co-PI (Project Level): CHENG Shih-Fen, LEE Yeow Leong, RAMACHANDRA RAO Vandana, 2021, S\$192,673

Learning by Doing in the Age of Big Data, The Social Science Research Thematic Grant, Ministry of Education (MOE) , PI (Project Level): CHENG Shih-Fen, 2021, S\$579,318

Smart Barrier-Free Access (SMARTBFA) v2, 0.0, Mercurics Pte Ltd , PI (Project Level): CHENG Shih-Fen , Co-PI (Project Level): TAN Hwee Xian, 2021, S\$50,000

Intelligent Taxi Queue Management, Changi Airport Group Pte Ltd , PI (Project Level): CHENG Shih-Fen, 2019, S\$200,000

Urban Computing and Engineering Centre of Excellence, Corporate Laboratory@University, National Research Foundation (NRF) & Fujitsu (Multiple Funding Sources) , PI (Programme Level): LAU Hoong Chuin , PI (Project Level): CHENG Shih-Fen, Pradeep Reddy VARAKANTHAM, Akshat KUMAR, 2014, S\$18,500,000

Coordinating Automated Para-Transit Service Operations (2014), Future Urban Mobility (FM) IRG, Singapore-MIT Alliance for Research and Technology (SMART) , PI (Project Level): LAU Hoong Chuin , Co-PI (Project Level): CHENG Shih-Fen, 2014, S\$74,541.98

Coordinating Automated Para-Transit Service Operations (2013), Future Urban Mobility (FM) IRG, Singapore-MIT Alliance for Research and Technology (SMART) , PI (Project Level): CHENG Shih-Fen , Co-PI (Project Level): LAU Hoong Chuin, 2013, S\$141,189.92

Content-Aware Large-Scale Mobile Crowd Sourcing, Xerox Corporation , PI (Project Level): Archan MISRA , Co-PI (Project Level): CHENG Shih-Fen, 2013, S\$187,500

Coordinating Automated Para-Transit Service Operations (2011), Future Urban Mobility (FM) IRG, Singapore-MIT Alliance for Research and Technology (SMART) , PI (Project Level): LAU Hoong Chuin , Co-PI (Project Level): CHENG Shih-Fen, 2012, S\$104,299.84

Coordinating Automated Para-Transit Service Operations (2012), Future Urban Mobility (FM) IRG, Singapore-MIT Alliance for Research and Technology (SMART) , PI (Project Level): LAU Hoong Chuin , Co-PI (Project Level): CHENG Shih-Fen, 2012, S\$122,758.68

Coordinating Automated Para-Transit Service Operations (2010), Future Urban Mobility (FM) IRG, Singapore-MIT Alliance for Research and Technology (SMART) , PI (Project Level): LAU Hoong Chuin , Co-PI (Project Level): CHENG Shih-Fen, 2011, S\$39,726

Optimizing Taxi Fleet Operations, Singapore-MIT Alliance for Research and Technology (SMART) , PI (Project Level): CHENG Shih-Fen, 2010, S\$46,211.4

Teaching "Commodity Trading" with Market Games, Agreement: Development of a Commodity Trading

Market Game for non-commercial teaching and research purposes, International Enterprise (IE) Singapore, PI (Project Level): CHENG Shih-Fen, S\$47,266

Enabling Sustainable Point-to-Point Transport Service via Behavioral Game Theory, SMU Internal Grant, Ministry of Education (MOE) Tier 1, PI (Project Level): CHENG Shih-Fen, 2023, S\$124,990

Exploring Agent-based Computational Models, SMU Internal Grant, Ministry of Education (MOE) Tier 1, PI (Project Level): CHENG Shih-Fen, 2008, S\$39,050

Market-Based Approaches for Dynamic Resource Allocation Problems, SMU Internal Grant, Ministry of Education (MOE) Tier 1, PI (Project Level): CHENG Shih-Fen, 2007, S\$30,100

Other Institutions

The Impacts of On-demand Platforms under Individual Choice Endogeneity, Academic Research Fund (AcRF) Tier 2, Ministry of Education (MOE) Ying XU (SUTD), Co-PI (Project Level): CHENG Shih-Fen, Lynette CHEAH (SUTD), 2022, SGD382,187

TEACHING

Courses Taught

Singapore Management University

Undergraduate Programmes :

- Agent-based Modeling and Simulation
- Computational Thinking

Postgraduate Professional Programmes :

- Capstone Project
- Capstone Project - Data Science and Engineering
- Multi-Agent Systems

Postgraduate Research Programmes :

- Dissertation
- Empirical Research Project 1
- Empirical Research Project 2
- Empirical Research Project 3
- Empirical Research Project I
- Empirical Research Project II
- Empirical Research Project III

THESES AND DISSERTATIONS

Theses and Dissertations Supervised

Singapore Management University

Supervisor, Dissertation by CHUNG-KYUN HAN, PhD in Computer Science, Singapore Management University, 2020

Supervisor, Dissertation by Larry LIN Junjie, PhD in Information Systems, Singapore Management University, 2018

Supervisor, "Proactive and Reactive Strategies to Handle Surges in Urban Crowds", Dissertation by DU JIALI, PhD in Information Systems, Singapore Management University, 2017

Theses and Dissertations Assessed

Singapore Management University

Committee Member, "Proactive and Reactive Resource/Task Allocation for Agent Teams in Uncertain Environments", Dissertation by AGRAWAL PRITEE, PhD in Information Systems, Singapore Management University, 2018

Committee Member, "Recommending Personalized Schedules in Urban Environments", Dissertation by CHEN CEN, PhD in Information Systems, Singapore Management University, 2017

Co Supervisor, Dissertation by CHEN Cen, PhD in Information Systems, Singapore Management University, 2017

Committee Member, "Robust Execution Strategy for Scheduling Under Uncertainty", Dissertation by FU NA, PhD in Information Systems, Singapore Management University, 2012

OTHER ACADEMIC AND PROFESSIONAL ACTIVITIES

Media Contributions and Citations

Rising private-hire car population, surging trips a roadblock to Singapore's car-lite goal?, Business Times, 08 Nov 2023

<https://www.businesstimes.com.sg/opinion-features/columns/rising-private-hire-car-population-surgings-trips-roadblock-singapores-car>

Turning point for the taxi industry?, Business Times, 30 Sep 2023

<https://www.businesstimes.com.sg/opinion-features/features/turning-point-taxi-industry>

Commentary: Shortening the waiting time for your cab with a driver guidance system, Channel News Asia, 05 Feb 2019

<https://www.channelnewsasia.com/news/commentary/singapore-taxi-industry-ride-hailing-apps-driver-guidance-system-11133266>

Thinking outside the box: innovative solutions for the package delivery industry, NHK World, 19 Nov 2018

<https://www3.nhk.or.jp/nhkworld/nhknewslines/backstories/thinkingoutside/>

Pass the parcel, NHK World, 08 Nov 2018

New app can direct cabbies to areas of high demand, Straits Times, 27 Feb 2018
<http://www.straitstimes.com/singapore/transport/new-app-can-direct-cabbies-to-areas-of-high-demand>
 400 taxi drivers involved in SMU pilot project to help them find passengers faster, Channel 8 News, 29 Jan 2018
<https://www.channel8news.sg/news8/singapore/20180129-sg-taxi/3946786.html>
 Interview with Lianhe Zaobao on taxi industry and third-party booking App, Lianhe Zaobao, Newspaper, 18 Nov 2016
 Interview with Channel NewsAsia: It Figures, Channel NewsAsia, Television, 03 Aug 2016
 Watching for the tipping point (Media Mentions), The Business Times, Newspaper, 23 Mar 2010
 Clearing Corp funds derivatives research (Media Mentions), Financial Times, Newspaper, 05 Mar 2010
 IFM to fund clearing, position-limit studies (Media Mentions), Futures Magazine, Magazine, 05 Feb 2010

UNIVERSITY SERVICE

Singapore Management University

Committee Member, Graduate College Task & Finish Group, Nov 2020 - May 2021
 Committee Member, Faculty Workforce Committee, Oct 2017 - Feb 2018
 Committee Member, Dean' s Evaluation Committee, Jul 2016 - Present
 Committee Member, Library Policy Committee., Jan 2007 - Jan 2010

EXTERNAL SERVICE – PROFESSIONAL

Committee Member, Senior Program Committee, AAAI Conference on Artificial Intelligence, Special Track on AI for Social Impact (2024), 2024 - Present
 Committee Member, Senior Program Committee, AAAI Conference on Human Computation and Crowdsourcing (HCOMP 2023), 2022 - Present
 Committee Member, Program Committee, International Conference on Automated Planning and Scheduling (ICAPS 2021 - 2024), 2021 - Present
 Committee Member, Senior Program Committee, AAAI Conference on Artificial Intelligence (2020, 2024), 2020 - Present
 Committee Member, Program Committee, AAAI Conference on Artificial Intelligence, Emerging Track on AI for Social Impact (AAAI 2020, 2022), 2020 - Present
 Editor Senior Editor, Editorial Board, Electronic Commerce Research and Applications, 2019 - Present
 Committee Member, Selection Committee, 2019 President's Science Awards, 2019
 Member, Program Committee, AAAI Conference on Human Computation and Crowdsourcing (HCOMP 2019, 2020, 2021), 2019 - 2021
 Committee Member, Program Committee, 26th World Congress on Intelligent Transport Systems (ITS World Congress), 2019
 Member, Program Committee, Winter Simulation Conference, 2018
 Member, Senior Program Committee, International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2018, 2019, 2023, 2024), 2018 - Present

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

Member, International Program Committee, Duke Forest Conference 2016, 2016 - Present

Member, Program Committee, ACM/SIGAPP Symposium on Applied Computing - Track on Intelligent Robotics and Multi-Agent Systems (ACM SAC 2015, 2016, 2018), 2015 - 2018

Chairperson, Special Session on Agents in Urban Computing and Engineering at 2015 International Conference on Intelligent Agent Technology, Institute of Electrical and Electronic Engineers (IEEE)/WIC/ACM, 2015 - Present

Publication Chair, 16th Annual International Conference on Electronic Commerce, ACM, 2014 - Present

Member, Editorial Board, Journal of Industrial and Production Engineering, 2014 - Present

Member, Program Committee, International Workshop on Data-Oriented Constructive Mining and Multi-Agent Simulation (DOCMAS 2013, 2014), 2013 - 2014

Member, Program Committee, International Joint Conference on Artificial Intelligence (IJCAI 2013, 2016, 2017, 2020), 2013 - 2020

Editor Associate Editor, Editorial Board, Electronic Commerce Research and Applications, 2013 - 2019

Member, Program Committee, International Workshop on Agents in Traffic and Transportation (ATT) (2012 @AAMAS, 2014 @AAMAS, 2016 @IJCAI, 2018 @IJCAI), 2012 - 2018

Member, Services Science Management and Engineering (SSME) Counsel, IBM, 2012 - Present

Member, Program Committee, Annual International Conference on Electronic Commerce (ICEC 2012, 2013), 2012 - 2013

Publication Chair, 14th Annual International Conference on Electronic Commerce, ACM, 2012 - Present

Member, Program Committee, AAAI Conference on Artificial Intelligence (AAAI 2011, 2012, 2016, 2017, 2019, 2021, 2022, 2023), 2011 - Present

Member, Program Committee, International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2011, 2013 - 2017), 2011 - 2017

Member, Program Committee, 6th Annual IEEE Conference on Automation Science and Engineering (CASE 2010), 2010 - Present

Session Chair, 12th International Conference on Intelligent Transportation Systems, Institute of Electrical and Electronic Engineers (IEEE), 2009 - Present

Member, Program Committee, International Conference on Principles of Practice in Multi-Agent Systems (PRIMA 2009 - 2015), 2009 - 2015

Session Chair, International Conference on Intelligent Agent Technology (IAT-08), Institute of Electrical and Electronic Engineers (IEEE)/WIC/ACM, 2008 - Present

Member, Editorial Board, International Journal of Electronic Business Management, 2008 - Present

Member, Program Committee, International Conference on Computational Intelligence and Security, 2008 - Present

Session Chair, INFORMS Annual Meeting, INFORMS, 2007 - Present

Ad hoc referee, 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 Systems, Man, and Cybernetics, IIE Transactions, International Conference on Automated Planning and Scheduling, 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, Web Intelligence and Agent Systems, Institute of Electrical and Electronic Engineers (IEEE), Springer, Elsevier, 2005 - Present

Reviewer Book, book proposal on transportation, Springer, 2005 - Present

EXTERNAL SERVICE – PUBLIC SECTOR AND COMMUNITY SERVICE

External Reviewer, Translational R&D and Innovation Fund (TIF), MOE, 2021 - Present