

Canrong Zhang

Research Center for Modern Logistics
Shenzhen International Graduate School
Tsinghua University
Shenzhen, China 518055

Tel: (86)-0755-26036021
Email: crzhang@sz.tsinghua.edu.cn
Website: <https://www.sigs.tsinghua.edu.cn/zcr/main.htm>

BIOGRAPHY

Canrong Zhang is a professor in the Research Center for Smart Production and Logistics Systems, Shenzhen International Graduate School, Tsinghua University. He obtained his PhD degree in 2010 from the Industrial Engineering Department of Tsinghua University, and Bachelor's degree in 2005 from the Industrial Engineering Department of Xi'an Jiaotong University.

His research focuses on the application of operations research and data analytics techniques to problems in production, logistics and supply chain management. He has published more than fifty articles in mainly premier journals, including Transportation Science, Transportation Research Part B: Methodological, INFORMS Journal on Computing, IIE Transactions, European Journal of Operational Research, Naval Research Logistics, etc. He has been awarded the Distinguished Young Scholar by Natural Science Foundation of Guangdong Province.

His study has gained over 15 research grants including four granted by the National Natural Science Foundation of China (NSFC) and one by the National Key R&D Program of China. In addition, he is also active in academia-industry collaboration. His research works have been translated into a series of Decision Support Systems, ranging from tactical planning and operational scheduling to online dispatching and sequencing, which has benefited several companies including Huawei Hisilicon Co., Ltd, and Five Continents International Container Terminal in Tianjin Seaport.

Dr. Zhang is actively engaged in professional services for the research community. He presently serves as an Area Editor for Computers & Industrial Engineering: An International Journal. In addition, he provides reviewing service for multiple journals, and also chaired or co-chaired several conference programs or sessions.

EDUCATION

- Ph.D., Industrial Engineering, Tsinghua University, July 2010
- Visiting Scholar, Industrial Engineering, University of Wisconsin-Madison, Sept. 2008 - Sept. 2009
- B.S., Industrial Engineering, Xi'an Jiaotong University, July 2005

PROFESSIONAL EXPERIENCE

Tsinghua University, Shenzhen International Graduate School

- Professor, December 2020 - Present
- Associate Professor, December 2013 - November 2020
- Assistant Professor, July 2010 - November 2013

RESEARCH INTERESTS

-Optimization and Data Analytics, with application areas focused on:

- Container Terminal Design and Operations
- Logistic Network Design and Operations
- Production System Design, Planning and Scheduling

TEACHING EXPERIENCE

- Advanced Operations Research
- Production Management
- Inventory Management
- Analysis and Optimization on Logistics Systems

PUBLICATIONS

(*: corresponding author; #: the student under my (co-)supervision)

Refereed Journals – associated with Logistics and Transportation Systems, with focus on Container Terminals

1. Duan H.#, **Zhang C.**, Zhen L., Wang M.*, and Miao L. Exact Algorithm for the Integrated Berth and Quay Crane Allocation Problem Considering Tidal Impact. *Transportmetrica A: Transport Science*, 2025, forthcoming.
2. Wang Q.#, Tong X., Li Y., Wang C., and **Zhang C.** Integrated Scheduling Optimization for Automated Container Terminal: A Reinforcement Learning-Based Approach. *IEEE Transactions on Intelligent Transportation Systems*, July 2025, 26(7): 10019-10035.
3. Wang C.#, Wang Q.#, Xiang X.*, **Zhang C.**, and Miao L. Optimizing Integrated Berth Allocation and Quay Crane Assignment: A Distributionally Robust Approach. *European Journal of Operational Research*, February 2025, 320(3): 593-615.
4. Li Y.#, Li X.#, **Zhang C.***, and Wu T. Decomposition algorithms for the robust unidirectional quay crane scheduling problems. *Computers & Operations Research*, July 2024, 167: 106670.
5. Wang C.#, Liu K.#, **Zhang C.***, and Miao L. Distributionally Robust Chance-Constrained Optimization for the Integrated Berth Allocation and Quay Crane Assignment Problem. *Transportation Research Part B: Methodological*, April 2024, 182: 102923.
6. Wang C.#, Miao L., **Zhang C.***, Wu T., and Liang Z. Robust Optimization for the Integrated Berth Allocation and Quay Crane Assignment Problem. *Naval Research Logistics*, April 2024, 71(3): 452-476.
7. Wang N.#, Meng Q., and **Zhang C.***. A branch-price-and-cut algorithm for the local container drayage problem with controllable vehicle interference. *Transportation Research Part B: Methodological*, December 2023, 178: 102835.
8. **Zhang C.***, Wang Q., and Yuan G. Novel models and algorithms for location assignment for outbound containers in container terminals. *European Journal of Operational Research*, July 2023, 308(2): 722-737.
9. Xia Y.#, Zeng W., **Zhang C.***, and Yang H. A branch-and-price-and-cut algorithm for the vehicle routing problem with load-dependent drones. *Transportation Research Part B: Methodological*, May 2023, 171: 80-110.

10. Wang M.[#], **Zhang C.***, Bell M., and Miao L. A Branch-and-Price Algorithm for Location-Routing Problems with Pick-Up Stations in the Last-Mile Distribution System, *European Journal of Operational Research*, December 2022, 303(3): 1258-1276.
11. Duan H.[#], Ma F., Miao L., and **Zhang C.*** A Semi-supervised Deep Learning Approach for Vessel Trajectory Classification Based on AIS Data, *Ocean and Coastal Management*, March 2022, 218: 1-12.
12. Wang M.[#], Miao L., and **Zhang C.*** A Branch-and-Price Algorithm for a Green Location Routing Problem with Multi-Type Charging Infrastructure, *Transportation Research Part E: Logistics and Transportation Review*, December 2021, 156: 1-30.
13. Yu L., **Zhang C.**, Jiang J., Yang H., and Shang H. Reinforcement learning approach for resource allocation in humanitarian logistics. *Expert Systems with Applications*, July 2021, 173: 1-14.
14. Li N., Li X., **Zhang C.**, and Kong N. Integrated Optimization of Appointment Allocation and Access Prioritization in Patient-Centred Outpatient Scheduling. *Computers & Industrial Engineering*, April 2021, 154: 1-10.
15. Wu T., Shi Z., and **Zhang C.*** The hub location problem with market selection. *Computers & Operations Research*, March 2021, 127: 1-13.
16. You J.[#], **Zhang C.**, Xue Z., Miao L., and Ye B. A bi-objective model for robust local container drayage problem. *RAIRO - Operations Research*, March 2021, 55: 625-646.
17. **Zhang C.**, Guan H., Yuan Y., Chen W., and Wu T. Machine learning-driven algorithms for the container relocation problem. *Transportation Research Part B: Methodological*, September 2020, 139: 102-131.
18. Xie F.[#], Wu T., and **Zhang C.***. A Branch-and-Price Algorithm for the Integrated Berth Allocation and Quay Crane Assignment Problem. *Transportation Science*, September-October 2019, 53(5): 1427-1454.
19. You J.[#], Miao L., **Zhang C.***, and Xue Z. A generic model for the local container drayage problem using the emerging truck platooning operation mode. *Transportation Research Part B: Methodological*, March 2020, 113: 181-209.
20. Wu T., Xiao F., **Zhang C.**, Zhang D., and Liang Z. Regression and Extrapolation Guided Optimization for Production-Distribution with Ship-Buy-Exchange Options. *Transportation Research Part E: Logistics and Transportation Review*, September 2019, 129: 15-37.
21. Wang Z.[#], Qi M., Cheng C., and **Zhang C.** A hybrid algorithm for large-scale service network design considering a heterogeneous fleet. *European Journal of Operational Research*, July 2019, 276(2): 521-541.
22. Yu L.[#], Yang H., Miao L., and **Zhang C.*** Rollout Algorithms for Resource Allocation in Humanitarian Logistics. *IIE Transactions*, August 2019, 51(8):887-909.
23. **Zhang C.**, Wu T., Qi M., and Miao L. Simultaneous Allocation of Berths and Quay Cranes under Discrete Berth Situation. *Asia-Pacific Journal of Operational Research*, June 2018, 35(3): 1-28.
24. Yu L.[#], **Zhang C.**, Yang H., and Miao L. Novel Methods for Resource Allocation in Humanitarian Logistics Considering Human Suffering. *Computers & Industrial Engineering*, May 2018, 119: 1-20.
25. Liu C.[#], **Zhang C.**, and Zheng L. A Bi-objective Model for Robust Yard Allocation Scheduling for Outbound Containers. *Engineering Optimization*, 2017, 49(1): 113-135.
26. Liu C.[#], Xiang X., **Zhang C.**, and Zheng L. A Decision Model for Berth Allocation Under Uncertainty Considering Service Level Using an Adaptive Differential Evolution Algorithm. *Asia-Pacific Journal of Operational Research*, December 2016, 33(6): 1-28.

27. Liu C.[#], Zheng L., and **Zhang C.*** Behavior perception-based disruption models for berth allocation and quay crane assignment problems. *Computers & Industrial Engineering*, July 2016, 97: 258-275.
28. **Zhang C.**, Xie F., Huang K., Wu T., and Liang Z. MIP models and a hybrid method for the capacitated air-cargo network planning and scheduling problems. *Transportation Research Part E: Logistics and Transportation Review*, July 2017, 103: 158-173.
29. He Y., Wu T., **Zhang C.**, and Liang Z. An improved MIP heuristic for the intermodal hub location problem. *Omega - International Journal of Management Science*, December 2015, 57, Part B: 203-211.
30. Xue Z.[#], Lin W.-H., Miao L., and **Zhang C.** Local container drayage problem with tractor and trailer operating in separable mode. *Flexible Services and Manufacturing Journal*, September 2015, 27(2-3): 431-450.
31. Xue Z.[#], **Zhang C.**, Yang P., and Miao L. A Combinatorial Benders' Cuts Algorithm for the Local Container Drayage Problem. *Mathematical Problems in Engineering*, 2015.
32. **Zhang C.**, Wu T., Zhong M., Zheng L., and Miao L. Location Assignment for Outbound Containers with Adjusted Weight Proportion. *Computers & Operations Research*, December 2014, 52: 84-93.
33. **Zhang C.**, Wu T., Kim K. H., and Miao L. Conservative Allocation Models for Outbound Containers in Container Terminals. *European Journal of Operational Research*, October 2014, 238(1): 155-165.
34. Xue Z.[#], **Zhang C.**, Lin W.-H., Miao L., and Yang P. A tabu search heuristic for the local container drayage problem under a new operation mode. *Transportation Research Part E: Logistics and Transportation Review*, February 2014, 62: 136-150.
35. Lin J.[#], Gao B., and **Zhang C.** Simulation-based investment planning for Humen Port. *Simulation Modelling Practice and Theory*, January 2014, 40: 161-175.
36. **Zhang C.**, Wu T., Zheng L., and Miao L. A Lagrangian Relaxation-based Algorithm for the Allocation of Yard Cranes for Yard Activities with Different Priorities. *Journal of Systems Science and Systems Engineering*, June 2013, 22(2): 227-252.
37. Xue Z.[#], **Zhang C.**, Miao L., and Lin W.-H. An Ant Colony Algorithm for Yard Truck Scheduling and Yard Location Assignment Problems with Precedence Constraints. *Journal of Systems Science and Systems Engineering*, March 2013, 22(1): 21-37.
38. **Zhang C.**, Zhang Z., Zheng L., and Miao L. A decision support system for the allocation of yard cranes and blocks in container terminals. *Asia-Pacific Journal of Operational Research*, December 2011, 28(6): 803-829.
39. **Zhang C.**, Chen W., Shi L., and Zheng L. A note on deriving decision rules to locate export containers in container yards. *European Journal of Operational Research*, September 2010, 205(2): 483-485.
40. **Zhang C.**, Zheng L., Zhang Z., Shi L., and Armstrong A. The allocation of berths and quay cranes by using a sub-gradient optimization technique. *Computers & Industrial Engineering*, February 2010, 58(1): 40-50.

Refereed Journals – associated with Production Systems

1. Guo X.[#], Cote J.-F., **Zhang C.***, and Miao L. A Logic-Based Benders Decomposition for the Car Resequencing Problem with a Painted Body Storage. *INFORMS Journal on Computing*, 2025, forthcoming.
2. Jiang B.[#], Kang Y., Liu X., and **Zhang C.***. Exact and Matheuristic Algorithms for Robust Lot-Sizing and Scheduling Problems with Uncertain Capacity. *Computers & Operations Research*, December 2025, 184: 107218.

3. Li X.[#], **Zhang C.***, and Zhu J. A Profit Maximization Problem of Equipment Rental and Scheduling with Split Services. *IIE Transactions*, October 2025, 57(10): 1133-1154.
4. Hao X.[#], Liu C., Liu M., **Zhang C.**, and Zheng L. Solving a Real-world Large-scale Cutting Stock Problem: A Clustering-assignment-based Model. *IIE Transactions*, November 2023, 55(11): 1160-1173.
5. Wu T., **Zhang C.***, Chen W., Liang Z., and Zhang X. Unsupervised Learning-driven Matheuristic for Production-distribution Problems. *Transportation Science*, November-December 2022, 56(6): 1677-1702.
6. Hao X.[#], Zheng L., Li N., and **Zhang C.***. The integrated bin packing and lot-sizing problem considering the configuration-dependent bin packing process. *European Journal of Operational Research*, December 2022, 303(2): 581-592.
7. Wu T., Huang L., Liang Z., Zhang X., and **Zhang C.** A Supervised Learning-Driven Heuristic for Solving the Facility Location and Production Planning Problem, *European Journal of Operational Research*, September 2022, 301(2): 785-796.
8. Li X.[#], Yang X., **Zhang C.**, and Qi M.*. A simulation study on the robotic mobile fulfillment system in high-density storage warehouses, *Simulation Modelling Practice and Theory*, November 2021, 112:1-17.
9. Duan G.[#], **Zhang C.**, Gonzalez P., and Qi M.* Performance evaluation for Robotic Mobile Fulfillment Systems with time-varying arrivals. *Computers & Industrial Engineering*, August 2021, 158: 1-22.
10. **Zhang C.**, Zhang D., and Wu T.* Data-driven Branching and Selection for Lot-sizing and Scheduling Problems with Sequence-dependent Setups and Setup Carryover. *Computers & Operations Research*, August 2021, 132: 1-16.
11. Wu T., Shi Z., Liang Z., Zhang X., and **Zhang C.*** Dantzig-Wolfe Decomposition for the Facility Location and Production Planning Problem. *Computers & Operations Research*, December 2020, 124: 1-19.
12. Wei M.[#], Guan H., Liu Y., Gao B., and **Zhang C.*** Production, Replenishment and Inventory Policies for Perishable Products in a Two-echelon Distribution Network. *Sustainability*, June 2020, 12(11): 1-26.
13. Wei M.[#], Qi M., Wu T., and **Zhang C.*** Distance and Matching-Induced Search Algorithm for the Multi-level Lot-Sizing Problem with Substitutable Bill of materials. *European Journal of Operational Research*, September 2019, 277(2): 521-541.
14. Liu C.[#], Xiang X., **Zhang C.**, Wang Q., and Zheng L. A column generation based distributed scheduling algorithm for multi-mode resource constrained project scheduling problem. *Computers & Industrial Engineering*, November 2018, 125: 258-278.
15. Wu T., Xiao F., **Zhang C.**, He Y., and Liang Z. The green capacitated multi-item lot sizing problem with parallel machines. *Computers & Operations Research*, October 2018, 98: 149-164.
16. Qi M., Li X., Yan X., and **Zhang C.*** On the evaluation of AGVS-based warehouse operation performance. *Simulation Modelling Practice and Theory*, September 2018, 87: 379-394.
17. Wu T., Liang Z., and **Zhang C.** Analytics Branching and Selection for the Capacitated Multi-Item Lot Sizing Problem with Non-Identical Machines. *INFORMS Journal on Computing*, Spring 2018, 30(2): 236-258.
18. Yang H.[#], Low V., **Zhang C.***, Zheng L., and Miao L. Behaviour perception-based disruption models for the parallel machine capacitated lot-sizing and scheduling problem. *International Journal of Production Research*, 2017, 55(11): 3058-3072.
19. Liang Z., He Y., Wu T., and **Zhang C.*** An informative column generation and decomposition method for a production planning and facility location problem. *International Journal of Production Economics*, December 2015, 170, Part A: 88-96.

20. Xiao J.[#], Yang H., **Zhang C.**, Zheng L., and Gupta J. N. D. A Hybrid Lagrangian-Simulated Annealing-based heuristic for the parallel-machine capacitated lot-sizing and scheduling problem with sequence-dependent setup times. *Computers & Operations Research*, November 2015, 63:72-82.
21. Xiao J.[#], **Zhang C.**, Zheng L., and Gupta J. N. D. MIP-based fix-and-optimize algorithms for the parallel machine capacitated lot-sizing and scheduling problem. *International Journal of Production Research*, August 2013, 51(16): 5011-5028.
22. Wu T., **Zhang C.**, Liang Z., and Leung S. C. H. A Lagrangian relaxation-based method and models evaluation for multi-level lot sizing problems with backorders. *Computers & Operations Research*, July 2013, 40(7): 1852-1863.
23. **Zhang C.**, and Chen W. A note on ‘A new dynamic programming formulation of $(n \times m)$ flowshop sequencing problems with due dates’. *International Journal of Production Research*, 2012, 50(16): 4631-4634.

Refereed Conference Proceedings and Others

1. Feng X., Zhao Z., **Zhang C.*** Simulation Optimization Framework for Online Deployment and Adjustment of Reconfigurable Machines in Job Shops, in *Proceedings of 2020 IEEE International Conference on Industrial Engineering and Engineering Management*, IEEM 2020, Singapore, December 14-17, 2020.
2. **Zhang C.**, and Guan H. A data-driven exact algorithm for the container relocation problem, in *Proceedings of 16th IEEE International Conference on Automation Science and Engineering*, CASE 2020, Hongkong, China, August 20-21, 2020: 1349-1354.
3. Yuan G., and **Zhang C.*** Conservative Allocation Model for Outbound Containers with Estimated Adjusted Weight Proportion, in *Proceedings of 2020 IEEE 7th International Conference on Industrial Engineering and Applications*, ICIEA 2020, Bangkok, Thailand, April 16-21, 2020: 414-418.
4. Li X., Zhu Q., **Zhang C.**, and Wu T. Solving the intermodal hub location problem with Fenchel heuristics, in *Proceedings of 49th International Conferences on Computers and Industrial Engineering*, CIE 2019, Beijing, China, October 18-21, 2019.
5. Wang W., Shang X., Yang W., **Zhang C.**, and Liao Q. A Universal Fusion Strategy for Image Super-Resolution Jointly from External and Internal Examples, in *Proceedings of 10th International Conference on Image and Graphics*, ICIG 2019, Beijing, China, August 23-25, 2019: 714-723.
6. Guo H., Yang P., Xu T., and **Zhang C.** Local Return Routing Strategy in a Flow-Picking System, in *Proceedings of 2019 IEEE 6th International Conference on Industrial Engineering and Applications*, ICIEA 2019, Tokyo, Japan, May 14-16, 2019: 903-907.
7. Li B., Miao L., **Zhang C.***, and Yang W. A Lagrange Multiplier-based Regularization Algorithm for Image Super-resolution, in *Proceedings of the 2018 IEEE International Conference on Industrial Engineering and Engineering Management*, IEEM 2018, Bangkok, Thailand, December 16-19, 2018: 422-426.
8. Jiang M., Zhang Y., Zhang Y., **Zhang C.**, Zhang K., Zhang G., and Zhao Z. Operation and Scheduling of Pure Electric Buses under Regular Charging Mode, in *Proceedings of the 2018 IEEE Conference on Intelligent Transportation Systems*, ITSC, November, 2018, v513: 1894-1899.
9. Li X., **Zhang C.**, Yang W., and Qi M. Multi-AGVs conflict-free routing and dynamic dispatching strategies for automated warehouses, in *Proceedings of the 2018 International Conference on Mobile and Wireless Technology*, ICMWT 2018, 277-286.
10. Zhang D., and **Zhang C.*** Study on column generation for the lot-sizing and scheduling problem with sequence dependent setup time, in *Proceedings of the 2018 2nd International Conference on Material Engineering and Advanced Manufacturing Technology*.

11. Zhang Y., Lu Y., and **Zhang C.*** Resource-reconfigured flow shop scheduling and lot-sizing problems in semiconductor test, in *Proceedings of the 2018 5th International Conference on Industrial Engineering and Applications*, ICIEA 2018, Singapore, April 26 - 28, 2018: 326-332.
12. Wei M., Yuan Y., and **Zhang C.*** A modified relax-and-fix algorithm for the multi-level lot-sizing problem with replaceability, in *Proceedings of the 2018 5th International Conference on Industrial Engineering and Applications*, ICIEA 2018, Singapore, April 26 - 28, 2018: 262-267.
13. Yuan Y., **Zhang C.**, and Huang T. Height-Based Heuristics for Relocating Containers during Loading Operations, in *Proceedings of the 2018 5th International Conference on Industrial Engineering and Applications*, ICIEA 2018, Singapore, April 26 - 28, 2018: 268-273.
14. Yan X., **Zhang C.**, and Qi M.*. Multi-AGVs Collision-Avoidance and Deadlock-Control for Item-to-Human Automated Warehouse. in *Proceedings of the 2017 International Conference on Industrial Engineering, Management Science and Application*, ICIMSA 2017, Seoul, Republic of Korea, June 13-15, 2017.
15. Yang H., Miao L., and **Zhang C.** Capacitated lot-sizing problem with one-way substitution: A robust optimization approach, in *Proceedings of the 2017 3rd International Conference on Information Management*, ICIM 2017, Chengdu, China. April 21, 2017 - April 23, 2017, 159-163.
16. Zhang K., Ma Z., **Zhang C.***, and Miao L. A survey of Hub location problem for the new network structure research, in *Proceedings of the 46th International Conferences on Computers and Industrial Engineering*, CIE 2016, Tianjin, China, October 29, 2016 - October 31, 2016.
17. **Zhang C.**, Zhu G., and Liu S. A two-staged algorithm to the stowage planning for container ships, in *Proceedings of the 46th International Conferences on Computers and Industrial Engineering*, CIE 2016, Tianjin, China, October 29, 2016 - October 31, 2016.
18. Xie F., Huang K. and **Zhang C.** New Models for Capacitated Air-cargo Scheduling Problems, in *Proceedings of the 2016 international conference on management science and management innovation*, Guilin, Guangxi, China, August 13-14, 2016, 10: 174-177.
19. Fan Y., and **Zhang C.** Robust Models for Location and Inventory Decisions in Emergency-grain Depots, in *Proceedings of the 2016 international conference on management science and management innovation*, Guilin, Guangxi, China, August 13-14, 2016, 10: 187-190.
20. Shen Y., and **Zhang C.*** Loading Sequencing with Consideration of Container Rehandling, in *Proceedings of the 2016 IEEE International Conference on Industrial Engineering and Engineering Management*, Singapore, January, 2016. 1237-1241.
21. Ren Z., and **Zhang C.*** An iterative three-stage algorithm for the pre-marshalling problem in container terminals, in *Proceedings of the 2016 IEEE International Conference on Industrial Engineering and Engineering Management*, Singapore, January, 2016. 1232-1236.
22. **Zhang C.**, Zhong M., and Miao L. Location assignments for outbound container terminals. *Journal of Tsinghua University (Science & Technology)*, 2015, 55 (10): 1150-1156.
23. Yang J., and **Zhang C.*** Study on the (s, S) policy for the manufacturing enterprises inventory management. *Advanced Materials Research*, 2014, Vols. 926-930: pp 3978-3983.
24. **Zhang C.***, Yang J., Huang K., and Liu S. A new model for location assignment for outbound containers in container terminals, in *Proceedings of the 2013 IEEE International Conference on Computers and Industrial Engineering*, Hongkong, China, 2013, 878-884.
25. Xiao J., **Zhang C.**, and Zheng L. MIP based fix-and-optimize algorithm for parallel machine lot sizing and scheduling. *Journal of Tsinghua University (Science & Technology)*, 2012, 52(4): 436-441.
26. Jia T., **Zhang C.**, and Xu Y. Supply Chain Revenue Sharing Contract under Consignment with Supplier's Sales Effort. *Journal of Management Sciences*, 2007, 20(5): 2-8.
27. **Zhang C.**, Zhang Z., Zheng L., and Cai L. The Assignment of Customers in Multidepot Vehicle Routing Problem with Fleet Size Constraint for Each Depot, in *Proceedings of the IEEE International Conference on Automation and Logistics*, Jinan, China, 2007, 1897-1901.

RESEARCH GRANTS

Grants by Governments at Different Levels

1. National Natural Science Foundation of China, “Data-driven Algorithms for the Container Drayage Problem with the Drop-and-pull Separable Operation Mode” (PI), 1/2024 to 12/2027.
2. National Natural Science Foundation of China, “Study on Container Relocation Problems using Dynamic Decision-making and Data Mining” (PI), 1/2019 to 12/2022.
3. National Natural Science Foundation of China, “The Planning and Scheduling of Resources in Container Terminals with Consideration of Uncertainties” (PI), 1/2015 to 12/2018.
4. National Natural Science Foundation of China, “Location Assignment for Outbound Containers with Consideration of Container Reshuffling” (PI), 1/2012 to 12/2014.
5. National Natural Science Foundation of China, “Research on Robust Optimization of Service Network Considering System Elasticity” (Co-PI, with Prof. Mingyao Qi), 1/2018 to 12/2021.
6. National Natural Science Foundation of China, “Spatio-temporal Optimization of Mobile Facility Routing under Uncertain Conditions” (Co-PI, with Prof. Mingyao Qi), 1/2013 to 12/2016.
7. National Key R&D Program of China, “Study on Reconstruction and Key Technology of HCPS-based Self-adaptive Intelligent Factory and Unmanned Production Line” (Co-PI, with Prof. Shaoyuan Li, Prof. Zhibin Jiang, Prof. Chao Fu, et al.), 12/2019 to 12/2022.
8. Guangdong Province Natural Science Foundation for Distinguished Young Scholars, “Operation Optimization in Container Terminals” (PI), 1/2021 to 12/2024.
9. Shenzhen Municipal Science and Technology Innovation Committee, “Study on the Key Technology in the Decision Support System for the Fabrication and Test of Semiconductors” (PI), 9/2016 to 9/2018.
10. Shenzhen Municipal Science and Technology Innovation Committee, “Research on the Key Technology of Reconfigurable Flexible Assembly Center” (Co-PI, with Prof. Pingfa Feng and Prof. Long Zeng), 1/2021 to 12/2023.
11. Shenzhen Municipal Science and Technology Innovation Committee, “Research on the Key Technology of Logistic Robots for End-point Delivery” (Co-PI, with Prof. Mingyao Qi), 7/2017 to 7/2020.
12. Beijing Municipal Science and Technology Innovation Committee, “Research on Key Technologies of Collaborative Production Control System under Headquarter-Factories Mode” (Co-PI, with Prof. Li Zheng), 1/2018 to 12/2019.

Grants by Collaborated Partners

1. Hengli Smart Technologies Co. Ltd., “Cutting Stock Planning and Cutting Scheduling for Thin Film Production” (PI), 7/2023 to 4/2024.
2. Alibaba Cloud Computing Co. Ltd., “Buffer-based vehicle body shop, paint shop and assembly shop joint scheduling and sequencing problem” (PI), 9/2022 to 9/2023.
3. Huawei Technology Co., Ltd., “Planning and Scheduling for the Semiconductor Production” (PI), 12/2021 to 12/2022.
4. Huawei Hisilicon Co., Ltd., “Coordinated Control System for Warehousing Operations Using Kiva-like Logistic Robots” (PI), 6/2017 to 6/2020.
5. Huawei Hisilicon Co., Ltd., “Decision Support System for Warehousing Operations” (PI), 6/2015 to 6/2018.
6. Huawei Hisilicon Co., Ltd., “Advanced Planning and Scheduling System for the Fabrication and Test of Semiconductors” (PI), 4/2012 to 12/2014.
7. Economic Promotion Bureau, Yantian District, “The 13th Five-year Planning for the Logistic Industry in Yantian District” (PI), 1/2015 to 3/2016.

8. Yantian Port International Information Co., Ltd., “Capacity Evaluation Index System for Seaport Logistics” (PI), 10/2014 to 2/2016.
9. Five Continents International Container Terminal, Tianjin Seaport, “Decision Support System of Yard Planning and Scheduling” (Co-PI, with Prof. Li Zheng), 5/2006 to 5/2008.

HONORS AND AWARDS

- Guangdong Province Natural Science Foundation for Distinguished Young Scholars, 2020
- Annual Award for Teaching Excellence, Tsinghua University, 2018
- Inaugural Annual Award for Teaching Excellence, Tsinghua University, 2017
- High-level Professional, Shenzhen Municipality, 2017
- Oversea High-caliber Personnel, Shenzhen Municipality, 2014
- Inaugural Award for Mentoring Excellence, Graduate School at Shenzhen, 2013.
- NSK Sino-Japan Friendship Outstanding Paper, NSK-Tsinghua University, 2010
- Best Paper Award, IEEE International Conference on Automation and Logistics, 2007

PRESENTATIONS

Invited Talks

Machine learning-driven algorithms for the container relocation problem, Department of Industrial Engineering, Tsinghua University, Beijing, September 7th, 2022. (online)

Digital Transformation for the Production Industry, Neijiang Municipality, Sichuan, China, December 27th, 2021.

Improvement and Upgrading on Operations Management via Optimization, China Resources (Holdings) Co., Ltd., Shenzhen, China, June 3rd, 2021. (online)

Some Key Issues in Implementing the Manufacturing Executive System in Semiconductor Industry, Huawei Hisilicon Co., Ltd., Suzhou, China, November 6th, 2020.

What Are the Topics that Matter in Building Next-generation Production Systems, Huawei Technology Co., Ltd., Dongguan, China, June 6th, 2019.

How to Facilitate the Material Movement between Warehouse and Production Line, Foxconn, Shenzhen, China, May 16th, 2019.

Key Technologies on Smart Warehousing Systems, Suning Corporation, Nanjing, China, June 22nd, 2017.

Dealing with Exceptional Orders with Assignment Models, Huawei Hisilicon Co., Ltd., Shenzhen, China, March 29th, 2016.

Exact and Heuristic Methods for the Warehousing Flow Shop Operation, Huawei Hisilicon Co., Ltd., Shenzhen, China, April 8th, 2016.

Exact and Heuristic Methods for the Advanced Planning and Scheduling System, Huawei Hisilicon Co., Ltd., Shenzhen, China, January 11th, 2013.

Conference Presentations

Machine learning-driven algorithms for the container relocation problem, Stochastic Service and Operation Management Annual Meeting, Guangzhou, December, 2021 (invited talk, online).

Data-driven Branching and Selection for Lot-sizing and Scheduling Problems with Sequence-dependent Setups and Setup Carryover, The Research Society of Guangdong Province for Technological Economy and Management Modernization, Guangzhou, January, 2021 (invited talk).

A Data-driven Exact Algorithm for the Container Relocation Problem, 2020 INFORMS Conference on Service Science (ICSS2020), December, 2020 (invited talk, online).

A Data-driven Exact Algorithm for the Container Relocation Problem, IEEE 16th International Conference on Automation Science and Engineering (CASE), Hongkong, China, August, 2020 (invited talk, online).

Branch-and-Price Algorithms for the Integrated Berth and Quay Crane Allocation Problem, IEEE International Conference on Automation Science and Engineering, Workshop on Data Analytical Approach for Large-Scale Optimization, Xi'an, China, August, 2017 (invited talk).

MIP Models and a Hybrid Method for Capacitated Air-cargo Network Planning and Scheduling Problems, The 8th International Annual Conference of the Chinese Scholars Association for Management Science and Engineering (CSAMSE), Shenyang, China, July, 2015 (invited talk).

Improving the Stacking Quality for Receiving Containers in Container Terminals Using Optimization Technique, Academic exchange meeting of the Youth Science Foundation of Business Administration, Xi'an, China, October, 2012 (contributed talk).

A Decision Support System for the Allocation of Yard Cranes and Blocks in Container Terminals, Cross-strait academic symposium between two Tsinghua Universities, Jinmen, Taiwan, China, September, 2012 (contributed talk).

The Assignment of Customers in Multi-depot Vehicle Routing Problem with Fleet Size Constraint for Each Depot, the IEEE International Conference on Automation and Logistics, Jinan, China, August, 2007 (contributed talk).

PROFESSIONAL ACTIVITIES

Editorial Service

-Area Editor, *Computers & Industrial Engineering*

Journal Reviewer

Transportation Research Part B: Methodological; European Journal of Operational Research; Computers & Industrial Engineering; Flexible Services and Manufacturing; International Journal of Production Economics; International Journal of Production Research; IEEE Transactions on Automation Science and Engineering; IIE Transactions; Transportation Research Part E: Logistics and Transportation Review; Journal of the Operational Research Society; IIE Transactions on Healthcare Systems Engineering; Transactions on Intelligent Transportation Systems; Simulation Modelling Practice and Theory; Engineering

Optimization

Conference Service

Program chair, 2022 INFORMS Conference on Service Science, July 2-4, 2022, Shenzhen.

Session chair, 2021 IEEE International Conference on Industrial Engineering, December 13-16, 2021, Online.

Track chair, 2021 INFORMS Conference on Service Science, August 10-12, 2021, Online.

Track chair, 2020 INFORMS Conference on Service Science, December 19-21, 2020, Online.

Co-organizer, 2019 Annual Conference of Institute for Quality and Reliability at Tsinghua University, Shenzhen, China, June 8-9, 2019.

Co-organizer, Workshop on Data Analytical Approach for Large-Scale Optimization, IEEE International Conference on Automation Science and Engineering, Xi'an, China, August 2017.

Technical Committee Member, the 3rd International Conference on Information Management, (ICIM2017), Chengdu, China, April 21-23, 2017.

Organizer, Tsinghua and Huawei Hisilicon joint workshop on order fulfillment, January, 2015.

Memberships

-Institute for Operations Research and the Management Science (INFORMS)

UNIVERSITY SERVICE

Ph.D. Candidate Advisory

-Yin Hao, 2024-

-Wang Naiyu, 2023-

-Wang Qi (co-advised with Prof. Lixin Miao), 2023-

-Wu Jiatao, 2022-

-Li Xinyi, 2021-

-Guo Xinyi (co-advised with Prof. Lixin Miao), 2021-

-Wang Chong (co-advised with Prof. Lixin Miao), graduated in 2024, Huawei Technology Co., Ltd

-Duan Hongda (co-advised with Prof. Lixin Miao), graduated in 2024, China Development Bank

-Hao Xinye (co-advised with Prof. Li Zheng), graduated in 2022, Huawei Technology Co., Ltd

-Wang Mengtong (co-advised with Prof. Lixin Miao), graduated in 2021, National University of Singapore

- Wei Mingyuan, graduated in 2020, State Tobacco Monopoly Administration
- You Jintao (co-advised with Prof. Lixin Miao), graduated in 2020, Huawei Technology Co., Ltd
- Xiang Xi (co-advised with Prof. Lixin Miao), graduated in 2019, Beijing Institute of Technology
- Liu Changchun (co-advised with Prof. Li Zheng), graduated in 2019, National University of Singapore
- Yu Lina (co-advised with Prof. Lixin Miao), graduated in 2018, Capital University of Economics and Business
- Yang Huasheng (co-advised with Prof. Li Zheng), graduated in 2016, China Resources
- Xue Zhaojie (co-advised with Prof. Lixin Miao), graduated in 2014, Shenzhen University
- Xiao Jing (co-advised with Prof. Li Zheng), graduated in 2012

School Service

- Deputy Director: Office of Academic Affairs
- Member: Teaching Steering Committee
- Member: Student Affairs Steering Committee
- Member: MOOC Education Executive Committee

Department Service

- Deputy Director: Division of Logistics and Transportation