

WEI QI

Operations Management Area, Desautels Faculty of Management, McGill University
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RESEARCH AND TEACHING INTERESTS

Main context: Smart-city analytics and operations.

Other contexts: Retail logistics, energy and transportation systems optimization, sharing economy.

Methodology: Optimization, location theory, machine learning, queueing theory.

Teaching topics: Smart-city analytics, data analytics, decision analytics.

EMPLOYMENT

McGill University Operations Management Area, Desautels Faculty of Management	Montreal, Quebec, Canada
<i>Associate Professor (tenured)</i>	Since June 2021
<i>Assistant Professor</i>	August 2017 - May 2021
Lawrence Berkeley National Laboratory <i>Strategic Advisor</i> , China Energy Group	Berkeley, CA, U.S. 2018 – Present
<i>Postdoctoral Fellow</i> , China Energy Group – U.S.-China Climate Change Working Group. – BEAM (Behavior Energy Autonomy Mobility): modelling large-scale urban transportation systems.	March 2016 - June 2017
<i>Researcher</i> , Sustainable Energy Systems Group – ARPA-E project: life-cycle supply chain cost analysis for an advanced energy-efficiency technology.	2012 - 2014
AOL Inc. <i>Data Scientist Intern</i> , Algorithm Research Group	Palo Alto, CA, U.S. May – August 2014
University of California, Los Angeles <i>Research Associate</i> , Process Control & Applied Mathematics Laboratory	Los Angeles, CA, U.S. February – May 2010

EDUCATION

University of California, Berkeley <i>Ph.D. in Industrial Engineering and Operations Research (IEOR)</i> Minors: Statistics, Economics	Berkeley, CA, U.S. 2011 - December 2015
University of California, Los Angeles <i>M.S. in Process Systems Engineering</i>	Los Angeles, CA, U.S. 2010 - 2011
Zhejiang University <i>B.Eng. in Control Science and Engineering</i> <i>Chu Kochen Honor School</i>	Hangzhou, China 2006 - 2010

PUBLICATIONS

OPERATIONS RESEARCH & OPERATIONS MANAGEMENT

- [1] *Charging an Electric Vehicle Sharing Fleet.*
He, Long, Guangrui Ma, **Wei Qi** and Xin Wang.
Manufacturing & Service Operations Management, 23.2 (2021): 471-487.
- [2] *A Smart-City Scope of Operations Management.*
Wei Qi and Zuo-Jun Max Shen.
Production and Operations Management, 28.2 (2019): 393-406.
 - Among top 10% most read papers in 2018-2019, Production and Operations Management.
- [3] *Shared Mobility for Last-Mile Delivery: Design, Operational Prescriptions and Environmental Impact.*
Wei Qi, Lefei Li, Sheng Liu and Zuo-Jun Max Shen.
Manufacturing & Service Operations Management, 20.4 (2018): 737-751.
 - Among top 15 most downloaded papers in 2019, M&SOM.
- [4] *Joint Planning of Energy Storage and Transmission for Wind Energy Generation.*
Wei Qi, Yong Liang and Zuo-Jun Max Shen.
Operations Research, 63.6 (2015): 1280-1293.

SPECIALTY: ENERGY AND TRANSPORTATION SYSTEMS

- [5] *A Second Order Cone Programming Model for PEV Fast-Charging Station Planning.*
Hongcai Zhang, Scott Moura, Zechun Hu, **Wei Qi** and Yonghua Song.
IEEE Transactions on Power Systems, 33.3 (2018): 2763-2777.
- [6] *Joint Planning of PEV Fast-Charging Network and Distributed PV Generation Using the Accelerated Generalized Benders Decomposition.*
Hongcai Zhang, Scott Moura, Zechun Hu, **Wei Qi** and Yonghua Song.
IEEE Transactions on Transportation Electrification, 4.3 (2018): 789-803.
- [7] *Sharing Demand-Side Energy Resources - A Conceptual Design.*
Wei Qi, Bo Shen, Hongcai Zhang and Zuo-Jun Max Shen.
Energy, vol.135, 15 September 2017, Pages 455-465.
- [8] *Hierarchical Coordinated Control of Plug-in Electric Vehicles Charging in Multi-family Dwellings.*
Wei Qi, Zhiwei Xu, Zuo-Jun Max Shen, Zechun Hu and Yonghua Song.
IEEE Transactions on Smart Grid, 5.3 (2014): 1465-1474.
- [9] *Distributed Supervisory Predictive Control of Distributed Wind and Solar Energy Generation Systems.*
Wei Qi, Jinfeng Liu and Panagiotis D. Christofides.
IEEE Transactions on Control Systems Technology, 21.2 (2013): 504-512.
- [10] *Supervisory Predictive Control for Long-Term Scheduling of an Integrated Wind/Solar Energy Generation and Water Desalination System.*
Wei Qi, Jinfeng Liu and Panagiotis D. Christofides.
IEEE Transactions on Control Systems Technology, 20.2 (2012): 504-512.
- [11] *A Distributed Control Framework for Smart Grid Development: Energy/Water System Optimal Operation and Electric Grid Integration.*
Wei Qi, Jinfeng Liu and Panagiotis D. Christofides.
Journal of Process Control, 21.10 (2011): 1504-1516.

- [12] *Supervisory Predictive Control of Stand-Alone Wind-Solar Energy Generation Systems.*
Wei Qi, Jinfeng Liu, Xianzhong Chen and Panagiotis D. Christofides.
IEEE Transactions on Control Systems Technology, 19.1 (2011): 199-207.

PAPERS UNDER REVIEW / REVISION

- [1] *When Shared Autonomous Electric Vehicles Meet Microgrids: Citywide Energy-Mobility Orchestration.*
Wei Qi, Mengyi Sha and Shanling Li.
Under review at *Manufacturing & Service Operations Management* after minor revision.
- [2] *Scaling Up Battery Swapping Services in Cities.*
Wei Qi, Yuli Zhang and Ningwei Zhang.
Under major revision at *Management Science*.

OTHER PUBLICATIONS

CONFERENCE PAPERS

- [1] *On Data-driven Multi-Product Pricing.*
Tianyu Wang, Chenye Wu, Wei Qi.
American Control Conference (ACC), New Orleans, Louisiana, May 2021.
Also published in *IEEE Control Systems Letters*, vol. 5, no. 5, pp. 1687-1692, Nov. 2021.
- [2] *Planning Hydrogen Refueling Stations with Coordinated On-Site Electrolytic Production.*
Hongcai Zhang, Wei Qi, Zechun Hu and Yonghua Song.
IEEE PES General Meeting. Chicago, 2017.
- [3] *Joint PEV Charging Station and Distributed PV Generation Planning.*
Hongcai Zhang, Scott Moura, Zechun Hu, Wei Qi and Yonghua Song.
IEEE PES General Meeting. Chicago, 2017.
- [4] *A Two-Time-Scale Framework for Supervisory Predictive Control of an Integrated Wind/Solar Energy Generation and Water Desalination System.*
Wei Qi, Jinfeng Liu and Panagiotis D. Christofides.
American Control Conference (ACC), pages 2677-2682, San Francisco, California, 2011.
- [5] *Supervisory Predictive Control of an Integrated Wind/Solar Energy Generation and Water Desalination System.*
Wei Qi, Jinfeng Liu and Panagiotis D. Christofides.
In *Proceedings of the 9th International Symposium on Dynamics and Control of Process Systems*, pages 821-826, Leuven, Belgium, 2010.

TECHNICAL REPORTS

- [6] *Power Consumption, Demand and Competition Cooperation: Recommendations for the Pilots in Guangdong, Jilin, Jiangsu, and Shanghai. 2017.*
Dupuy, Max, Fredrich Kahrl, Frederick Weston, Bo Shen, Andy Satchwell, Peter Cappers, Jennifer Potter, Wei Qi, Ella Zhou, Yingchen Zhang, John Barnett, Travis Lowder, and Lars Bregnbæk.
- [7] *Unit Price Scaling Trends for Chemical Products.*
Wei Qi, Roger Sathre, William Morrow and Arman Shehabi. 2015.
Berkeley, CA: Lawrence Berkeley National Laboratory. **LBNL-189844**.

GRANTS

- [1] Fonds de recherche du Québec – Société et culture (FRQSC) and National Science Foundation of China (NSFC) Research Program on Smart Cities and Big Data.
Role: **Principal Investigator**.
Title: Data-Driven Smart City Operations Management: a System Coupling Perspective.
Length: 2020-2023.
Total Amount: **\$145,061** (Quebec Side).
Team members: Maxime Cohen, Michel Gendreau, Xue (Steve) Liu.
- [2] Social Sciences and Humanities Research Council (SSHRC) Insight Development Grant.
Role: **Principal Investigator**.
Title: Tackling Inequality in Urban On-demand Bikeshare Services.
Length: 2020 – 2022.
Total Amount: **\$46,060**.
Team member: Michelle Lu, Minkyung Kim.
- [3] IVADO Funding Program for Fundamental Research Projects.
Role: **Principal Investigator**
Title: Joint OR/ML Methodologies for Retail on Wheels.
Length: 2020-2022.
Total Amount: **\$171,645**.
Team members: Xue (Steve) Liu, Michelle Lu, Zuo-Jun Max Shen.
- [4] Natural Sciences and Engineering Research Council (NSERC) Discovery Grant.
Role: **Principal Investigator**
Title: Towards a Smart-City Future: Urban-Scale Integration of Mobility and Energy Systems.
Length: 2019-2024.
Total Amount: **\$130,000 (Share: 100%)**.
- [5] Natural Sciences and Engineering Research Council (NSERC) Early Career Supplement.
Role: **Principal Investigator**
Title: Towards a Smart-City Future: Urban-Scale Integration of Mobility and Energy Systems.
Length: 2019-2020.
Total Amount: **\$12,500 (Share: 100%)**.
- [6] Fonds Québécois de la Recherche sur la Société et la Culture (FQRSC) New Researcher.
Role: **Principal Investigator**
Title: Sharing Sustainable Mobility in Smart Cities.
Length: 2019-2022.
Total Amount: **\$45,000 (Share: 100%)**.
- Ranked 1st/12 in the evaluation group.
- [7] Internal Social Sciences and Humanities Development Grant.
Role: **Principal Investigator**
Title: Promoting Electrical Vehicle Sharing Through Integrated Planning and Operations.
Length: 2018-2020.
Total Amount: **\$6,200 (Share: 100%)**.

[8] Start-up Grant, Desautels Faculty of Management, McGill University.

Role: **Principal Investigator**

Length: 2017-2020.

Total Amount: **\$45,000 (Share: 100%).**

INDUSTRY AND PUBLIC PRESENTATIONS

[1] Panelist: The Convergent Innovation Webinar Series. 19 June 2020.

[2] **Plenary Speaker and Panelist:** Smart City Analytics, 4th Canada-China Youth Business Forum, Montreal, March 2019.

[3] Shared Mobility for Last-Mile Delivery, Amazon, Seattle, WA, January, 2017.

[4] Recursive Learning Algorithm Design for Online Display Advertising Based on a Mixture Model, AOL Advertising R&D Center, Palo Alto, CA, August 2014.

CONFERENCE PRESENTATIONS

[INFORMS: Institute for Operations Research and the Management Sciences; M&SOM: Manufacturing & Service Operations Management. POMS: Production & Operations Management Society. CORS: Canadian Operational Research Society.]

[1] **Plenary Speaker:** Citywide Mobility-Energy Orchestration: From Shared Electric Vehicles to Self-Sufficient and Resilient Microgrids, Workshop on Smart Cities Optimization, Fields Institute at the University of Toronto, Toronto, January 2020.

[2] **Plenary Speaker:** Citywide Mobility-Energy Orchestration, the 6th Seminar on Management Science for Young Scholars, Hangzhou, China January 2020.

[3] When Shared Autonomous Electric Vehicles Meet Microgrids: Citywide Energy-Mobility Orchestration, POMS Annual Conference, Online, May 2021.

[4] Stall Economy: The Value of Mobility and Precision Deployment of Retail on Wheels, POMS Annual Conference, Online, May 2021.

[5] Stall Economy: The Value of Mobility and Precision Deployment of Retail on Wheels, INFORMS Annual Conference, Online, November 2020.

[6] Potential of Shared Autonomous Electric Vehicles for Supporting Future Urban Microgrids, INFORMS Annual Conference, Seattle, WA, October 2019.

[7] Charging an Electric Vehicle Sharing Fleet, M&SOM 2019 Conference, National University of Singapore, Singapore, July 2019.

[8] Potential of Shared Autonomous Electric Vehicles for Supporting Future Urban Microgrids, POMS Annual Conference, Washington, DC, May 2019.

[9] Charging an Electric Vehicle Sharing Fleet, POMS Annual Conference, Washington, DC, May 2019.

[10] Planning Electric Vehicle Charging Stations on Coupled Transportation and Power Networks, POMS Annual Conference, Washington, DC, May 2019.

- [11] Potential of Shared Autonomous Electric Vehicles for Supporting Future Urban Microgrids, INFOMRS Annual Conference, Phoenix, AZ, November 2018.
- [12] Shared Mobility for Last-Mile Delivery, M&SOM 2018 Conference, University of Texas, Dallas, July 2018.
- [13] Discussion on Pollution Regulation Under Imperfect Competition, M&SOM Special Interest Group (SIG) Conference, University of Texas, Dallas, July 2018.
- [14] Shared Mobility for Last-Mile Delivery: Design, Operational Prescriptions and Environmental Impact, CORS Annual Conference, Halifax, NS, June 2018.
- [15] Planning Electric Vehicle Charging Stations on Coupled Transportation and Power Networks, POMS Hong Kong Annual Conference, Hong Kong, January 2018.
- [16] Shared Mobility for Last-Mile Delivery: Design, Operational Prescriptions and Environmental Impact, INFORMS Annual Conference, Houston, TX, October 2017.
- [17] Planning PEV Charging Stations on Coupled Transportation and Power Networks, INFORMS Annual Conference, Houston, TX, October 2017.
- [18] Shared Mobility for Last-Mile Delivery, the Tenth Annual International Conference of Chinese Scholars Association for Management Science (CSAMSE), Sun Yat-Sen University, Guangzhou, China, July 2017.
- [19] Shared Mobility for Last-Mile Delivery: Design, Operational Prescriptions and Environmental Impact, POMS Annual Conference, Seattle, WA, May 2017.
- [20] Shared Mobility for Last-Mile Delivery: Design, Operational Prescriptions and Environmental Impact, INFORMS Annual Conference, Nashville, TN, November 2016.
- [21] D-OPTIMA: Demand-Side Optimized Power Transaction for Integration - Modeler and Analyzer, INFORMS Annual Conference, Nashville, TN, November 2016.
- [22] Joint Planning of Wind Energy Storage and Transmission, INFORMS Annual Conference, Philadelphia, PA, November 2015.
- [23] Joint Planning of Wind Energy Storage and Transmission, M&SOM 2015 Conference, University of Toronto, ON, July 2015.
- [24] Joint Planning of Wind Energy Storage and Transmission, INFORMS Annual Conference, Minneapolis, MN, October 2013.
- [25] Hierarchical Coordinated Control of Plug-in Electric Vehicles Charging in Multi-family Dwellings, INFORMS Annual Conference, Minneapolis, MN, October 2013.

INVITED SEMINAR PRESENTATIONS

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- [1] Scaling Up Battery Swapping Services in Cities, Department of Industrial Engineering, Tsinghua University, online, February 2021.
 - [2] Stall Economy: The Value of Mobility for Retail on Wheels, School of Economics and Management, Beijing Institute of Technology, online, Jan 2021.
 - [3] Scaling Up Battery Swapping Services in Cities, Dongbei University of Finance and Economics, Dalian, online, October 2020.

- [4] Scaling Up Battery Swapping Services in Cities, CIRRELT, online, June 2020.
- [5] Sharing Sustainable Mobility in Smart Cities, Department of Mathematics and Statistics, McGill University, February 2020.
- [6] Sharing Sustainable Mobility in Smart Cities, GÉRAD (Group for Research in Decision Analysis), Université de Montréal, Montreal, QC, June 2019.
- [7] Potential of Shared Autonomous Electric Vehicles for Supporting Future Urban Microgrids, School of Economics and Management, Beijing Institute of Technology, Beijing, March 2019.
- [8] Promoting Urban Shared Mobility: Service Integrations and Electrification, School of Economics and Management, Tsinghua University, Beijing, March 2018.
- [9] Promoting Urban Shared Mobility: Service Integrations and Electrification, School of Economics and Management, Beijing Institute of Technology, Beijing, March 2018.
- [10] Shared Mobility for Last-Mile Delivery: Design, Operational Prescriptions and Environmental Impact, Desautels Faculty of Management, McGill University, January 2017.
- [11] Shared Mobility for Last-Mile Delivery: Design, Operational Prescriptions and Environmental Impact, School of Business, Alberta University, January 2017.
- [12] Joint Planning of Energy Storage and Transmission, Department of Industrial Engineering, Tsinghua University, Beijing, October 2015.

TEACHING

Instructor at McGill University

- **Recipient of the Distinguished Teaching Award, 2020.**

- [1] MGSC 404: Foundations of Decision Analytics (Undergraduate Data Analytics Concentration).
- [2] (Off-load) MGSC 603: Foundations of Data Analytics (MBA / Master in Management, the Global Manufacturing and Supply Chain Management (GMSCM) Program with Zhejiang University, China).
- [3] MGCR 271: Business Statistics (Undergraduate core course).
- [4] Guest Lecturer:
 - “Optimization in Smart-City Operations” for MKT 705: Precision Retailing: Decision Making Science for Convergence Insights, Analytics, and Innovation, Winter 2020.
 - “Statistical Inference of Population Means” for RETL 407: Retail Management Project, Winter 2020.
 - “Basics of Python and Data Visualization through Python” for RETL 407: Retail Management Project, Winter 2019.

COURSE DEVELOPMENT

- [1] (Off-load) Spring 2019, solely designed a new course for MBA / Master in Management, the Global Manufacturing and Supply Chain Management (GMSCM) Program with Zhejiang University, China: MGSC 603: Foundations of Data Analytics.
- [2] Spring 2019, co-developed the Experiential Retail course outline for the Master of Management in Retailing Program.
- [3] Fall 2018, solely designed a new course for Business Analytics Concentration: MGSC 404: Foundations of Decision Analytics.
- [4] Fall 2017 - present, continuously co-improving the BCom core course MGCR 271: Introduction to Business Statistics.

SERVICE

FACULTY-LEVEL

Graduate Advisor of the operations management area, 2019-present.

Committee Member

Undergraduate Program Committee, 2020-2021.

Teaching Awards Committee, 2020-2021.

PhD Program Committee, 2019-2020.

Management Science Research Centre, 2019-2020.

Integrated Management Advisory Committee, 2019-2020.

Desautels Undergraduate Awards Committee, 2018-2019.

First Desautels Business Hackathon Judge Committee, March 2018.

Presenter

A Smart-City Scope of Operations Management, Thematic Lunch Seminar, Desautels Faculty of Management, McGill University, Montreal, QC, January 2020.

Special Research Presentations to Desautels International Advisory Board, October 2017.

Operations management faculty search in 2018-2020.

FIELD-LEVEL

Conference Co-organizer

2020 Virtual Smart-City Operations and Analytics Conference, Montreal, October 2020.

Fashion Retailing Conference, Montreal, April 2018.

Invited Conference Program Committee Member

MSOM Annual Meeting, Banff, Canada, June 2020.

Invited Conference Cluster Chair

Environmental Operations Management Track, POMS Annual Meeting, Washington DC, 2019.
Transportation and Logistics Cluster, CORS Annual Meeting, Toronto, Canada, 2020.

Invited Discussant

Sustainable OM Special Interest Group, MSOM Annual Conference, University of Texas, Dallas, July 2018.

Invited Judge

Sustainable OM SIG, MSOM Annual Conference, Singapore, July 2019.
Sustainable OM SIG, MSOM Annual Conference, Online, July 2021.
POMS College of Sustainable Operations Student Paper Competition, 2021

Invited Session Chair

“Energy, Resources and Environment,” CORS Annual Conference, online, 2021.
“Energy and Water Supply Chains,” POMS Annual Conference, online, 2021.
“Emerging Location Analysis,” INFORMS Annual Meeting, online, 2020.
“Smart Cities,” GERAD Optimization Days 2020, Montreal, QC, Canada, 2020. .
“Emerging Urban Facilities and Logistics,” INFORMS Annual Meeting, Phoenix, AZ, 2018.
“Delivery Services,” INFORMS Annual Meeting, Houston, TX, 2017.
“Electric Vehicles,” INFORMS Annual Meeting, Houston, TX, 2017.
“Sharing Logistics,” INFORMS Annual Meeting, Nashville, TN, 2016.

Grant, Conference, and Book Chapter Reviewer

Natural Sciences and Engineering Research Council (NSERC) Discovery Grant, 2020 and 2021.
Proceedings of M&SOM Annual Conference, 2019.
Proceedings of IEEE International Conference on Smart Grid Communications, 2016.
Proceedings of IEEE 5th International Conference on Cloud Networking (CloudNet), 2016.
Proceedings of the International Conference on Advances in Computing and Data Sciences, 2016.
Fundamentals of Supply Chain Theory, Second Edition, Wiley, 2019.
The Practice of Statistics for Business and Economics, Fifth Edition, Freeman, 2019.

Journal Referee: 75 reviews

OR & OM: Operations Research
 Management Science
 Manufacturing & Service Operations Management
 Production and Operations Management
 Naval Research Logistics
 IISE Transactions
 Service Science
 Transportation Science
 Decision Sciences
 Omega
 Journal of Cleaner Production
 Computers & Operations Research
 Socio-Economic Planning Sciences

Engineering: IEEE Transactions on Smart Grid
 IEEE Transactions on Power Systems
 IEEE Transactions on Control Systems Technology
 IEEE Transactions on Industrial Electronics
 IEEE Transactions on Intelligent Transportation Systems
 IEEE Transactions on Sustainable Energy
 IEEE Intelligent Systems
 IEEE Access
 International Transactions on Electrical Energy Systems
 Journal of Intelligent Systems
 Solar Energy
 Energies

Policy: Energy Policy

AWARDS

Fetherstonhaugh Family Foundation Distinguished Teaching Award - Top Undergraduate Teacher of Year 2019-2020 of Desautels Faculty of Management.

M&SOM Meritorious Service Award, 2019 and 2020.

AOL ACE Internship Award for Excellent Contribution, Palo Alto, CA, 2014.

Meritorious Winner of International Mathematical Contest in Modeling, 2009.

UC Berkeley Full Fellowship, 2011-2012.

UCLA Full Engineering Graduate Research Fellowship, 2010-2011.

Extraordinary Excellence Certificate of Chu Kochen Honor School, Zhejiang University, China, 2010.

IN THE NEWS

Can crowdshipping solve last-mile delivery shortages? Trucknews.com, December 2020.

Can Smart Cities Be Smarter? Delve, February 2021.

MEMBERSHIPS IN PROFESSIONAL SOCIETIES

Group for Research in Decision Analysis (GÉRAD), since 2019.

Centre interuniversitaire de recherche sur les reseaux d'entreprise, la logistique et le transport (CIRRELT, Interuniversity Research Centre on Enterprise Networks, Logistics and Transportation), since 2019.

The Institute for Operations Research and Management Sciences (INFORMS), since 2013.

Manufacturing and Service Operations Management Society (M&SOM), since 2013.

Production and Operations Management Society (POMS), since 2017.

Canadian Operational Research Society (CORS), since 2018.

Decision Analysis Society (DAS), since 2013.