PETER ZHANG

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EMPLOYMENT

Carnegie Mellon University
Assistant Professor   *2019 - Present*
Heinz College of Information Systems and Public Policy
Courtesy appointment at Civil and Environmental Engineering

EDUCATION

Massachusetts Institute of Technology
PhD in Engineering Systems   *2013 - 2019*
Institute for Data, Systems, and Society

University of Toronto
MASc, Mechanical and Industrial Engineering   *2011 - 2013*
BASc, Engineering Science   *2005 - 2011*

UNDER REVIEW AND WORKING PAPERS

1. *Approximating Multiple Robust Optimization Solutions in a Single Pass* (with Hao)

2. *Fair Optimization of Mobility Subsidies in Multimodal Transportation Networks* (with Lindsay Graff, Sean Qian, Katherine Flanigan)

3. *The City of Dakar Reveals Traffic Crash Hotspots and Optimizes Emergency Dispatching* (with Bintou Mbathie, Mor Diao, Mark Brennan, and Babacar Mbaye Ndiaye)

4. *Teaching Applied Optimization with Large Language Models*

5. *Enhancing spatial-temporal demand prediction in transportation systems through region generation using soft clustering* (with Kyoungok Kim)

6. *Redefining Coherent Risk Measure: From Gauge Set to Regularization* (with Ningji Wei and Xian Yu)

7. *OPTIMA: Optimized Policy for Intelligent Multi-Agent Systems Enables Coordination-Aware Autonomous Vehicles* (with Rui Du, Kai Zhao, Jinlong Hou, and Qiang Zhang)

8. *Improving Basic Retail Coverage in Africa: Modeling Geographic Disadvantage Among Farmers in Senegal* (with Mark Brennan, Steve Graves, Babacar Mbaye Ndiaye et al)

9. *Information Basis in Dynamic Robust Optimization* (with Ningji Wei)

10. *Cost and Emissions Tradeoffs for a Decarbonization Hydrogen Aviation Supply Chain* (with Jaih Hunter-Hill)

11. *Distributionally Robust Principal-Agent Problems and Optimality of Contracts*

12. *A Mathematical Programming Approach to Optimal Classification Forests* (with Alberto Japon Saez, Victor Blanco, Justo Puerto Albandoz)

13. *Structural Properties of Equitable Solutions* (book with Ozgun Elci and John Hooker)

14. *Rating and Service Quality Prediction in Online Labor Markets: Models and Implications* (with Hai Wang and Guanting Wu)

PUBLICATIONS

1. Lu, T., Lu, X., Yang, H., and Zhang, P. *Being emotionally supportive: exploring the value of emotional appeals retargeting in recovering consumers of fintech services.* Production and Operations Management.

2. Wei, N., Zhang, P. *Adjustability in Robust Linear Optimization.* Mathematical Programming.

   - INFORMS Junior Faculty Paper Competition first place (2022)

3. Shehadeh, K., Wang, H., Zhang, P. (2021) *Fleet sizing and allocation for on-demand last-mile transportation systems.* Transportation Research Part C, Volume 132, November 2021.

4. Streitmatter, L., Zhang, P. (2021) *Travel cadence and epidemic spread.* Winter Simulation Conference 2021.

5. Simchi-Levi, D., Trichakis, N., Zhang, P. Y. (2019) *Designing response supply chain against bioattacks.* Operations Research, 67(5):1246-1268.

   - INFORMS Koopman Prize (2020)
   - Second place in POMS HOCM paper competition (2018)
   - Second place in POMS SCM student paper competition (2017)
   - MSOM SIG (2017)

6. Tran, T.T., Zhang, P.Y., Li, H., Down, D., Beck, J.C. (2018) *Multi-Stage Resource-Aware Scheduling for Data Centers with Heterogenous Servers.* Journal of Scheduling, 21(2):251-267.

7. Zhang, P. Y., Kuo, J. Y. J., Romero, D. A., Chan, T. C. Y., Amon, C. H. (2017) *Robust Wind Farm Layout Optimization.* Advances and Trends in Optimization with Engineering Applications. 367-375.

8. Simchi-Levi, D., Schmidt, W., Wei, Y., Zhang, P. Y., Combs, K., Ge, Y., Gusikhin, O., Sander, M., and Zhang, D. (2015) *Identifying risks and mitigating disruptions in the automotive supply chain.* INFORMS Journal on Applied Analytics, 45(5):375-390.

   - Ford Engineering Excellence Award (2015)
   - INFORMS Daniel H. Wagner Prize for Excellence in Operations Research Practice (2014)

9. Tran, T.T., Zhang, P.Y., Li, H., Down, D., Beck, J.C. (2015) *Resource-Aware Scheduling for Data Centers with Heterogenous Servers.* Multidisciplinary International Conference on Scheduling: Theory & Applications, Prague, Czech Republic, August 25th-28th, 2015.

10. Turner, S. D. O., Zhang, P. Y., Romero, D., Chan, T. C. Y. (2014) *A new mathematical programming approach to optimizing wind farm layouts.* Renewable Energy, 63:674-680.

11. Zhang, P. Y., Romero, D., Beck, J. C., Amon, C. (2014) *Solving Wind farm layout optimization with mixed integer programs and constraint programs.* EURO Journal on Computational Optimization, 2(3):195-219.

12. Kwong, P., Zhang, P. Y., Romero, D., Moran, J., Morgenroth, M., and Amon, C. (2014) *Multi-objective wind farm layout optimization with non-dominated sorting genetic algorithm (NSGA-II).* Journal of Mechanical Design, 136(9):091010.

13. Zhang, P.Y., Metcalfe, M., Cheng, Y.-L. (2013) *Redefining affluence in China: carbon emission from private transportation.* The 3rd Climate Change Technology Conference, Montreal, Quebec, May 27-29, 2013.

14. Zhang, P.Y., Romero, D., Beck, J.C., Amon, C. (2013) *Solving wind farm layout optimization with mixed-integer programming and constraint programming.* CPAIOR 2013: 10th International Conference on Integration of Artificial Intelligence and Operations Research Techniques in Constraint Programming, IBM T. J. Watson Research Center, Yorktown Heights, New York, May 18-22, 2013.

15. Kwong, P., Zhang, P.Y., Romero, D., Moran, J., Morgenroth, M., and Amon, C. (2012) *Wind farm layout optimization considering energy generation and noise propagation.* Proceedings of the ASME International Design Engineering Technical Conferences, Chicago, Illinois, August 12-15, 2012.

PATENTS

Global optimizer for supply chain
Blockchain-enabled what-if simulator to estimate impact of information sharing in supply chain

TEACHING

94-867 Decision Analytics for Business and Policy
95-760 Decision Making Under Uncertainty

GRANTS AND SPONSORED RESEARCH

- Efficiency and Safety Optimization in Human-Robot Interaction: A Curriculum for Generative Automation. *Block Center Build Back Better Award*

- Designing and Maintaining Resilient Sensor Systems for Smart Corridors and Future Transportation Technologies (PI). *Pennsylvania Infrastructure Technology Alliance*

- Incentive Compatible and Robust Workforce Transition Support (PI). *Manufacturing Futures Institute*

- The PennSTART Safety Standards Project (PI). *Safety21, USDOT National University Transportation Center*

- Controlled Deployment of Analytical Solutions for Essential Transportation Services in Low-Income Neighborhoods (PI). *Mobility21, USDOT National University Transportation Center.*

- Bayer AG Supply Chain Resilience. *Sponsored Research.*

- Critical technology and critical supply chains (technical lead). *Carnegie Mellon University Moonshot Grant.*

- Demand learning and supply optimization for last-mile transportation in disadvantaged neighborhoods (PI). *Mobility21, USDOT National University Transportation Center.*

- Joint optimization of school bus routes and last mile services (PI). *Mobility21, USDOT National University Transportation Center.*

AWARDS & FELLOWSHIPS

Carnegie Mellon University Generative AI Teaching as Research Fellowship (2024)
INFORMS Junior Faculty Forum Paper Competition first place (2022)
INFORMS Koopman Prize winner (2020)
POMS Humanitarian Operations and Crisis Management Paper Competition second place (2018)
POMS Supply Chain Management Student Paper Competition second place (2017)
Ford Engineering Excellence Award (2015)
INFORMS Wagner Prize for Excellence in Operations Research Practice winner (2014)
Gordon Cressy Student Leadership Award (University of Toronto) (2013)

Natural Sciences & Engineering Research Council of Canada Summer Research Award (2011)
Top score, Canadian Euclid Mathematics Contest (2004)
Bronze medal, International Physics Olympiad (2004)

REVIEW SERVICE

Management Science, Math Programming, Transportation Science, Transportation Research, Decision Analysis, Naval Research Logistics, Production and Operations Management, European Journal of Operational Research, Computers and Operations Research, MSOM SIG, American Society of Mechanical Engineers conferences, INFORMS Koopman Prize Committee.

PROFESSIONAL SOCIETIES

Institute for Operations Research and the Management Sciences, Canadian Operational Research Society, American Mathematical Society, American Economic Association

MENTORSHIP

Postdoc

- Ningji Wei (2020 – 2022). Current position: assistant professor at Texas Tech University.
- Alberto Japón (2022 – 2023).

PhD

- Hao Hao (2021 – 2026)
- Guanting Wu (2022 – 2027)
- Yidi Miao (2023 – 2028)