AKANG WANG

GENERAL INFORMATION

Nationality: People's Republic of China
Languages: Mandarin (native), English (fluent)
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EDUCATION

Ph.D., Chemical Engineering, Carnegie Mellon University, Pittsburgh, USA *Aug. 2015 - May 2020*

- Thesis title: "Optimization Algorithms for Vehicle Routing under Uncertainty and Packing Problems"
- Thesis advisor: Chrysanthos E. Gounaris
- GPA: 3.95/4.00

B.S., Chemical Engineering, Tianjin University, Tianjin, China *Sept. 2011 - Jul. 2015*

- Thesis title: "The Bioinspired Fabrication, Modification and Application of Fiber-Optical SRP Sensors"
- Thesis advisor: Rongxin Su
- GPA: 3.85/4.00

B.A., Finance, Nankai University, Tianjin, China *Mar. 2013 - Jul. 2015*

- Thesis title: "The Study on Diversification of China's Foreign Exchange Reserve"
- Thesis advisor: Fenglong Gao

RESEARCH EXPERIENCE

Ph.D. Research, Process Systems Engineering, Carnegie Mellon University *Sept. 2015 - May 2020*

Supply Chain Optimization

- Developed branch-price-and-cut codes to solve various types of vehicle routing problems (time windows, intermediate replenishment facilities, heterogeneous fleets, uncertain demands)
- Proposed a sample average approximation method to estimate the marginal cost of serving individual customers (delivered codes to the company Air Liquide)
- Proposed a novel branch-and-cut approach for solving continuous-time inventory routing problems and obtained compared results against the state-of-the-art approach

Global Optimization

- Developed a customized branch-and-bound approach for irregular shape nesting problems and solved five-polygon nesting instances to global optimality for the firsts time in the literature
- Incorporated strengthened intersection cuts to deal with reverse convex quadratic constraints and achieved superior computational performance over the state-of-the-art global solvers on solving circle-packing instances

PUBLICATIONS

A. Wang, J. E. Arbogast, G. Bonnier, and C. E. Gounaris. Estimation of marginal cost to serve individual customers. *In Preparation*, 2019

A. Wang and C. E. Gounaris. On tackling circle-circle non-overlapping constraints. *In Preparation*, 2019

A. Subramanyam, A. Wang, and C. E. Gounaris. A scenario decomposition algorithm for strategic time window assignment vehicle routing problems. *Transportation Research Part B: Methodological*, 117:296–317, 2018

A. Wang, C. L. Hanselman, and C. E. Gounaris. A customized branch-and-bound approach for irregular shape nesting. *Journal of Global Optimization*, 71(4):935–955, 2018b

S. Shi, L. Wang, A. Wang, R. Huang, L. Ding, R. Su, W. Qi, and Z. He. Bioinspired fabrication of optical fiber spr sensors for immunoassays using polydopamine-accelerated electroless plating. *Journal of Materials Chemistry C*, 4(32):7554–7562, 2016

PRESENTATIONS

A. Wang and C. E. Gounaris. A customized branch-and-bound approach for circle packing. *INFORMS Annual Meeting*, 2018

A. Wang, C. L. Hanselman, and C. E. Gounaris. A novel branching scheme for problems with reverse convex quadratic constraints and its application to packing problems. *AIChE Annual Meeting*, 2018a

A. Wang, C. L. Hanselman, and C. E. Gounaris. Irregular shape nesting via branch-and-bound using custom relaxations. *INFORMS Annual Meeting*, 2017

A. Wang and C. E. Gounaris. A branch-price-and-cut approach for robust vehicle routing. *INFORMS Annual Meeting*, 2017

HONORS & AWARDS

H. William and Ruth Hamilton Prengle Graduate Fellowship, Carnegie Mellon University *Apr. 2018*
James C. Meade Graduate Fellowship, Carnegie Mellon University *Dec. 2016*
Institutional Honor, Tianjin University *Jul. 2015*
Shanghai Pudong Development Bank Endeavour Fellowship, Tianjin University *Dec. 2014*
National Scholarship, Ministry of Education of the People's Republic of China *Dec. 2013*
Shanghai Pudong Development Bank Scholarship, Tianjin University *Dec. 2012*

JOURNAL REVIEWER

Optimization Letters, *Optimization and Engineering*, *Integer Programming and Combinatorial Optimization 2019* (subreviewer)

SKILLS

Mathematical Optimization, Operations Research, Process Optimization, CPLEX, CBC, GAMS, C++, Python

TEACHING EXPERIENCE

Teaching Assistant, Carnegie Mellon University *Jan. 2016 - May 2019*

- Optimization Modeling and Algorithms, Chemical Process Systems Design, Special Topics in Process Systems Engineering (CMU courses for undergraduate and graduate students)
- Models and Algorithms for Supply Chain Optimization (CAPD short course for industrial participants)