

# Lan Peng

## Ph.D. Candidate

Department of Industrial and Systems Engineering  
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## EDUCATION

- Ph.D. Industrial Engineering, Operations Research (GPA 3.979/4.0)  
Department of Industrial and Systems Engineering, University at Buffalo, SUNY  
Advisor: Dr. Chase Murray  
2018 - In progress (Expected Dec. 2022)
- M.S. Industrial Engineering, Operations Research,  
Department of Industrial and Systems Engineering, University at Buffalo, SUNY  
2018 - 2020
- M.S. Control Science and Engineering,  
School of Reliability and Systems Engineering, Beihang University,  
Advisor: Dr. Lin Ma  
2015 - 2018
- B.S. Quality and Reliability Engineering,  
School of Reliability and Systems Engineering, Beihang University,  
2011 - 2015

## RESEARCH AREAS

Vehicle Routing Problem: Drone Delivery

## PUBLICATIONS

<sup>†</sup> Advisor

### Journal Articles

- 2022 **Peng, Lan.,** and Murray, Chase<sup>†</sup>. “VeRoViz: A vehicle routing visualization toolkit.” *INFORMS Journal on Computing*, published online. <https://doi.org/10.1287/ijoc.2022.1159>

### Manuscripts In Preparation

- 2022 **Peng, Lan.,** and Murray, Chase<sup>†</sup>. “Parallel Drone Scheduling Traveling Salesman Problem with Weather Impacts.” *To be submitted in June.*
- 2022 **Peng, Lan.,** and Murray, Chase<sup>†</sup>. “The Dynamic Pickup-and-Delivery Bundling Problem.” *To be submitted in June.*
- 2022 **Peng, Lan.,** and Murray, Chase<sup>†</sup>. “Staffing Optimization in Parallel Drone Scheduling Traveling Salesman Problem with Weather Impacts.” *In preparation.*

## Conference Proceedings

- 2017 **Peng, Lan.**, Liu, Baocheng., Ma, Lin<sup>†</sup>., Naichao, Wang. and Liu, Qiannan. “Mixed arithmetic reduction model for two-unit system maintenance” *2017 Second International Conference on Reliability Systems Engineering (ICRSE)* (EI). Beijing, China.  
<https://ieeexplore.ieee.org/abstract/document/8030798>
- 2017 **Peng, Lan.**, Ma, Lin<sup>†</sup>., and Naichao, Wang. “A fleet-level selective maintenance model for long-distance highway transportation considering stochastic repair quality.” *2017 2nd International Conference on System Reliability and Safety (ICSRS)* (EI). Milan, Italy.  
<https://ieeexplore.ieee.org/abstract/document/8272847>

## DISSERTATIONS

- 2022 Ph.D. Thesis. “Emerging Topics in Coordinated Vehicle Routing Problem: Application from Last-Mile Drone Delivery to Nation-wide Bulk Item Shipping”
- 2018 Master Thesis. “Maintenance policy for multi-unit system considering negative repair performance” (In Chinese)

## PRESENTATION

### Conference Presentation

3. **Peng, Lan.**, and Murray, Chase<sup>†</sup>. “Parallel Drone Scheduling Traveling Salesman Problem with Weather Impacts.” *INFORMS Annual Meeting*. Virtual, Nov. 2021.
2. **Peng, Lan.**, and Murray, Chase<sup>†</sup>. “Optimization Of Pick-up And Delivery Orders Bundling Problem.” *INFORMS Annual Meeting*. Virtual, Nov. 2020.
1. Murray, Chase<sup>†</sup>., and **Peng, Lan.** “A Vehicle Routing Visualization Toolkit for Drones.” *INFORMS Annual Meeting*. Seattle, WA, U.S., Oct. 2019.

## RESEARCH EXPERIENCE

### Dissertation, University at Buffalo

2021 - ~ “Drone Delivery Considering Weather Impacts”

Research Problem: A fleet of drones and a truck deliver packages in parallel; the truck leaves the depot and visits customers in sequence, while drones fly between the depot and customers and deliver to customers one at a time. The winds and precipitation impact the operation of drones - the energy consumption rate changes according to wind speed and payload; also, moving no-fly zones are modeled to simulate rainfall. In this research, the optimization of staff configuration is also investigated - to minimize the long-term personnel costs increased due to the deviation of work hours because of weather variation.

### Dissertation, University at Buffalo

2020 - ~ “Dynamic Pickup and Delivery Bundling Problem”

Research Problem: An online car dealership is moving inventories nationwide. When an inventory is set up for delivery, a request will be posted online for moving companies to take the order. The car dealership will bundle the delivery requests in which the origin and destination are close, and the moving companies will accept bundles only if they are interested.

Those requests arrive throughout the day with a time-dependent arrival rate, and all need to be posted within a specific time limit. The objective is to optimize the policy of deciding the time for the requests to wait to find attractive bundles.

### **Research Assistant, University at Buffalo**

2019 *ACV Auctions, Inc.* (Online B2B car dealership)

Develop web-based toolkit for graphical view of available inventory.

Develop algorithm for optimizing the bundle generation of pickup-and-delivery requests in dynamic environment.

## **TEACHING EXPERIENCE**

### **Teaching Assistant, University at Buffalo**

2018 IE 320 Engineering Economy

2019 IE 374 System Modeling and Operations Research II

2020 IE 411/511 Social Network Behavior Models

2020 IE 550/STL 502 Introduction to Operations Research

2021 IE 101 Introduction to Industrial Engineering

2021 IE 691 Research Seminar

2021 IE 550/STL 502 Introduction to Operations Research

2021 IE 677 Network Optimization

2022 IE 421/521 Sustainable Manufacturing

2022 IE 555 Programming for Analytics

## **MEMBERSHIPS**

INFORMS Student Member

Served as Vice President for the University at Buffalo Student Chapter from 2020 - 2022

## **SKILLS**

Language: Chinese (Native), English (Working proficiency)

Programming: Python, C#, JavaScript, HTML/CSS, SQL

Software: Gurobi, CPLEX, LaTeX, PostgreSQL

## **PHD-LEVEL COURSES**

A IE 572 Linear Programming

A IE 575 Stochastic Methods

A IE 582 Robotic Systems

A	IE 573 Discrete Optimization
A	IE 576 Applied Stochastic Process
A	IE 670 Topics in Operations Research (Data Visualization)
A-	CSE 522 Object Oriented Design
A	IE 671 Nonlinear Programming
A	IE 677 Network Optimization
A	CSE 531 Algorithms Analysis and Design I
A	GEO 597 Geostatistics
A	IE 670 Topics in Operations Research (Simulation)
A	IE 670 Topics in Operations Research (Heuristic Optimization)
A	IE 670 Topics in Operations Research (Logistics Optimization)
A	IE 670 Topics in Operations Research (Urban Transportation Systems)
A	IE 504 Facilities Design