

# Zicheng Wang

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## ACADEMIC APPOINTMENTS

<b>The Chinese University of Hong Kong, Shenzhen</b> Assistant Professor, School of Data Science	Shenzhen, Guangdong 2023 - present
<b>University of Minnesota</b> Post-Doctoral Associate, Department of Laboratory Medicine and Pathology	Minneapolis, MN 2021 - 2023

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## EDUCATION

<b>University of Minnesota</b> Ph.D. in Industrial and Systems Engineering <b>Dissertation Title:</b> “Mathematical Analysis of Cancer Recurrence” <b>Committee:</b> Kevin Leder (advisor), William Cooper, Sherwin Doroudi and Jasmine Foo	Minneapolis, MN 2015 - 2021
<b>University of Minnesota</b> B.A. in Mathematics	Minneapolis, MN 2011 - 2015

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## RESEARCH INTERESTS

My research interests lie in the interface between theories in **Stochastic Processes** and **Cancer Data Science** (and **Operations Management**). My research aims to analyze the evolution of **Stochastic Systems** using both a **Theoretical** and a **Data Science** approach and solving related **Optimization** problems.

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## PUBLICATIONS AND PREPRINTS (\*AUTHORS IN ALPHABETICAL ORDER)

- Stochastic Processes and Cancer Data Science

\*Pranav Hanagal, Kevin Leder, and Zicheng Wang. Large Deviations of Cancer Recurrence Timing. **Stochastic Processes and their Applications** **147**, 1-50 (2022)

Link: <https://www.sciencedirect.com/science/article/pii/S0304414922000011>

\*Kevin Leder, Xin Liu, and Zicheng Wang. Splitting Algorithms for Rare Events of Semimartingale Reflecting Brownian Motions. **Stochastic Systems** **11**(4), 291-325 (2021)

Link: <https://pubsonline.informs.org/doi/abs/10.1287/stsy.2021.0076>

Zicheng Wang, Yunong Xia, Lauren Mills, Athanasios N. Nikolakopoulos, Nicole Maeser, Jason Sheltzer, and Ruping Sun. Evolving Copy Number Gains Promote Tumor Expansion and Bolster Mutational Diversification. **Nature Communications**, Accepted, 2024

Link: <https://www.biorxiv.org/content/10.1101/2022.06.14.495959v1>

\*Kevin Leder and Zicheng Wang. Clonal Diversity at Cancer Recurrence. Under Review, 2024

Link: <https://arxiv.org/abs/2108.13472>

- Operations Management

\*Saif Benjaafar, Zicheng Wang, and Xiaotang Yang. Human in the Loop Automation: Ride-Hailing with Remote (Tele-) Drivers. **Management Science**, Accepted, 2024

Link: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4130757](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4130757)

\*Saif Benjaafar, Zicheng Wang, and Xiaotang Yang. The Impact of Automation on Workers when Workers are Strategic: The Case of Ride-Hailing. Major Revision at **Manufacturing & Service Operations Management**, 2024

Link: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3919411](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3919411)

## RESEARCH IN PROGRESS

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Parameter Estimation from Single Patient, Single Time-Point Sequencing Data of Recurrent Tumors.

- Co-authors: Kevin Leder, Ruping Sun, and Xuanming Zhang

Relative Fitness Inference from Reconstructed Phylogenetic Trees.

- Co-authors: Jasmine Foo, Kevin Leder, Aaron Li, Nicole Maeser, Ruping Sun, and Yunong Xia

Temporal Orders of Driver Events in Cancer Evolution.

- Co-authors: Ruping Sun

The Superiority of Hourly Pay in Ride-Hailing.

- Co-authors: Saif Benjaafar, Jingyuan Wan, and Xiaotang Yang

## EXPERIENCE

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### Research Assistant

Department of Industrial and Systems Engineering

University of Minnesota

2017 - 2021

- Worked with Dr. Kevin Leder on mathematical modeling of cancer evolution.

### Computational Software Teaching Assistant

Department of Industrial and Systems Engineering

University of Minnesota

2020

- Assisted ISyE students with R, Matlab, AMPL, and Python.

### Summer School in Monte Carlo Methods for Rare Events

Division of Applied Mathematics

Brown University

2016

- Coursework in rare event simulation, importance sampling, and large deviation.

## HONORS AND AWARDS

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University of Minnesota, Second Place in the Initiative on the Sharing Economy Student Competition.

2019

## PROFESSIONAL ACTIVITIES

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Reviewer for Probability in the Engineering and Informational Sciences, PLOS Computational Biology.

## PRESENTATIONS

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### Clonal Diversity at Cancer Recurrence.

- Informs Applied Probability Society Conference

2023

### Evolving Copy Number Gains Promote Tumor Expansion and Bolster Mutational Diversification.

- Research in Computational Molecular Biology (RECOMB)

2022

- Masonic Cancer Center Research Symposium (Poster)

2022

### Splitting Algorithms for Rare Events of Semimartingale Reflecting Brownian Motions.

- POMS International Conference

2019

### Autonomous Vehicles for Ride-Hailing.

- POMS Annual Conference

2023

- Stochastic Networks Conference (Poster)

2022

### Two-sided Matching.

- POMS Annual Conference

2019

## RELEVANT COURSES

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### Optimization

- Optimization (Shuzhong Zhang)
- Stochastic Nonlinear Optimization (Qie He)
- Discrete Optimization (Jean-Philippe Richard)

### Applied Probability

- Stochastic Processes and Queues (Kevin Leder)
- Advanced Stochastic Processes and Queueing Systems (Kevin Leder)
- Modeling and Analysis of Queueing Systems (Sherwin Doroudi)
- Topics in Math Biology: Stochastic Simulation (Jasmine Foo)
- Analytics for Personalized Medicine (Kevin Leder)

### Operations Management

- Production Planning and Inventory Control (Saif Benjaafar)
- Behavioral Operations (Karen Donohue)

### Economics

- Decision Analysis (Darin England)
- Introduction to Network Science (Ankur Mani)
- Noncooperative Game Theory (Aldo Rustichini)

### Mathematics

- Theory of Probability I and II (Maury Bramson)
- Stochastic Processes (Maury Bramson)
- Theory of Partial Differential Equations (Hao Jia)
- High Dimensional Probability (Wei-Kuo Chen)
- Random Matrix Theory (Arnab Sen)

## SKILLS

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**Programming/Software:** Matlab, Python, R

**Language:** English (fluent), Chinese (native)

## REFERENCES

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### **Ruping Sun** (Postdoc Advisor)

Assistant Professor  
Department of Laboratory Medicine and Pathology  
University of Minnesota  
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### **Saif Benjaafar**

Seth Bonder Collegiate Professor  
Department of Industrial and Operations Engineering  
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### **Kevin Leder** (Ph.D. Advisor)

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### **Jasmine Foo**

Northrop Professor  
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### **Xin Liu**

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