

# Cheng Ge

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🏠 Massachusetts Institute of Technology | 📍 MA, USA

## EDUCATION

### Massachusetts Institute of Technology

Sep. 2023 – Present

DOCTOR OF PHILOSOPHY(EXPECTED)

*Aeronautics and Astronautics*

Cambridge, MA, USA

- **Cumulative GPA:** 5.0/5.0

### Tsinghua University

Aug. 2019 – Jun. 2023

BACHELOR OF ENGINEERING

*Institute for Interdisciplinary Information Sciences(IIS), Yao Class*

Beijing, China

- **Cumulative GPA:** 3.92/4.0

### Shanghai High School

Sep. 2016 – Jun. 2019

*Mathematical Class*

Shanghai, China

## WORKING PAPER AND PUBLICATION

### Solving Minimum-Cost Reach Avoid using Reinforcement Learning

Oswin So\*, **Cheng Ge\***, Chuchu Fan

Accepted by 38th Annual Conference on Neural Information Processing Systems(NeurIPS), 2024

[\[arxiv\]](#)[\[paper\]](#)[\[website\]](#)

### Auditing the Training Process of Artificial Intelligence Algorithm of Platform Companies

**Cheng Ge\***, Shusheng Xu\*, Yi Wu, Yang Yu

Submitted to Policy Studies Journal(PSJ),

### Cost Splitting for Multi-Objective Conflict-Based Search

**Cheng Ge\***, Han Zhang\*, Jiaoyang Li, Sven Koenig\*

Accepted by 33rd International Conference on Automated Planning and Scheduling(ICAPS), 2023

[\[arxiv\]](#)[\[paper\]](#) [\[code\]](#)

## RESEARCH INTERESTS

Artificial Intelligence, Reinforcement Learning, Planning and Searching, Transportation System, Game Theory, Mechanism Design

## RESEARCH EXPERIENCES

### Reinforcement Learning with Both Safety Guarantee and Cost Minimization

September 2023 - May 2024

**Advisor:** Prof. Chuchu Fan

MIT, Aeronautics and Astronautics

- Formulated goal-reaching task with safety guarantee under the framework of Reinforcement Learning
- Extended the above framework for cost minimization by introducing auxiliary state
- Contributed to detailed algorithm design and comparison against safe reinforcement learning baselines

### Monopoly Hunting in Immediate Ride-Hailing Service by Reinforcement Learning

July 2022 - June 2023

**Advisor:** Prof. Yang Yu & Prof. Yi Wu

Tsinghua University, IIS

- Exploited Reinforcement Learning algorithms to find possible monopoly policies in Ride-Hailing System, thus guiding algorithm regulation
- Contributed to detailed Ride-Hailing environment design, writing and scaling up the environment and data analysis

### Switchback experiments Design

July 2022 - December 2022

**Advisor:** Prof. David Simchi-Levi & Dr. Michelle Wu

MIT, Institute for Data, Systems, and Society(IDSS)

- Introduced Covariates which is a common focus of causal inference into Switchback experiments Design
- Contributed to the exact optimal design of the new model with Covariates
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### Cost Based Multi-Agent Path Finding

March 2022 - July 2022

**Advisor:** Prof. Sven Koenig & Dr. Zhang Han

USC, Computer Science Department

- Extended Multi-Agent Path Finding Problem to Multi-Objective scenario
- Introduced cost splitting techniques in Multi-objective Multi-Agent Path Finding Problem
- Contributed to detailed algorithm implementation in Python and formalization of the new method

### Shanghai QiZhi Institution

June 2021 – August 2021

*Summer Intern*

Shanghai, China

- Built several benchmarks for a new **Distributed RL Framework** designed for **Efficient Zero**
- Improved **Replay Buffer** design in this new Framework

## HONORS AND AWARDS

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Tsinghua University Scholarship

Junior year

Geru Zheng Scholarship

Sophomore year

Second Prize Scholarship for Freshmen

Freshman year

Bronze medal in 11<sup>th</sup> Romanian Master of Mathematics

February 2019

Gold medal in National Mathematical Olympiad(CMO) and qualified to attend further selection

November 2018

## SKILLS

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- Experienced in essential programming and tools
  - \* **Language:** C, C++, Python
  - \* **Library:** Numpy, Pandas, Pytorch
  - \* **Tools:** Git, Bash Scripts, Docker

## EXTRA CURRICULUM ACTIVITY

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- Active member of the IIIS baseball team
- Active participant of the schools chorus and performed on 110th Anniversary Celebration of Tsinghua University