Zishuo Zhao 赵梓硕

zishuoz2@illinois.edu, wiku30.0@gmail.com, wiku30.xyz

PhD Candidate (ABD), ISE, University of Illinois Urbana-Champaign

(they/them/theirs, he/him/his)

Background

- **2025/07 - now** Research Intern, Gradient Network [Website]
  Research Topic: Incentive & protocol design of decentralized AI systems.

- **2021/01 - now** PhD Candidate (ABD), Department of Industrial & Enterprise Systems Engineering, University of Illinois Urbana-Champaign
  Research Area: Operations Research
  Advisor: Yuan Zhou
  Expected Graduation: 2026
  Tentative Thesis Title: *Incentive Design for Digital Economy and AI Platforms*

- **2023/09 - 2024/08** Visiting Student, Institute for Data Systems and Society (IDSS), Massachusetts Institute of Technology
  Research Topic: Data-Driven Dynamic Mechanism Design
  Advisor: David Simchi-Levi

- **2020/08 - 2021/01** Research Assistant, Haihua Institute for Frontier Information Technology
  Research Topic: Network Optimization
  Advisor: Longbo Huang

- **2016/05 - 2020/07** Undergraduate Student, Institute for Interdisciplinary Information Sciences (Yao Class), Tsinghua University
  Research Topic: Geometry-Based Visual SLAM
  Advisor: Shi-Min Hu

- **2015/08 - 2016/05** Undergraduate Student, Department of Computer Science and Technology, Tsinghua University

Research Interest

I am a fifth-year PhD candidate in UIUC, majoring in operations research. My general research interest lies in the incentive design for digital economy and AI platforms, with applications in both centralized and decentralized platforms.

I have a special interest in the mechanism design for blockchain and decentralized economics, with a (starry-eyed) dream [i*] on the exploration of the design and theoretical boundaries of **decentralized trustworthy AI** platforms, including (particularly) the current concern and initiative of **AI safety** for the upcoming AGI era.

Particularly, I am recently interested in the exploration into a novel paradigm of *incentive security* on blockchain and AI platforms, which aims to combine game-theoretic and systematic/cryptographic methodologies to prevent dishonest behavior of *untrusted but rational* parties.

Selected Papers

Bayesian Mechanism Design for Blockchain Transaction Fee Allocation [Link]

Xi Chen*, David Simchi-Levi*, <u>Zishuo Zhao</u>*, Yuan Zhou*. (alphabetical order)

Operations Research, 73(4), 1944-1964, 2025.

Best Paper Award, *NeurIPS Workshop on Decentralization and Trustworthy Machine Learning in Web3 (NeurIPS DMLW'22)*.

Crypto Economics Security Conference (CESC 2022).

Invited to OR Talk by 运筹OR帷幄 (OR China) in 2024.

Invited to *INFORMS Annual Meeting 2022*.

It Takes Two: A Peer-Prediction Solution for Blockchain Verifier's Dilemma [i*] [Link]

<u>Zishuo Zhao</u>, Xi Chen, Yuan Zhou.

Under review in Operations Research (2025).

Invited to OR Talk by 运筹OR帷幄 (OR China) in 2024.

Proof-of-Learning with Incentive Security [i*] [Link]

<u>Zishuo Zhao</u>, Zhixuan Fang, Xuechao Wang, Xi Chen, Hongxu Su, Haibo Xiao, Yuan Zhou.

In preparation for an extended version (2025).

Invited to *INFORMS Conference on Security (IConS'24)*.

ACM EC Workshop on Foundation Models and Game Theory (ACM EC FMGT'24).

A preliminary version presented on *INFORMS Annual Meeting 2023*.

Other Papers

Multi-agent Adaptive Mechanism Design [Link]

Qiushi Han*, David Simchi-Levi*, Renfei Tan*, <u>Zishuo Zhao</u>*.

VeriLLM: A Lightweight Framework for Publicly Verifiable Decentralized Inference [Link]

Ke Wang, <u>Zishuo Zhao</u>, Xinyuan Song, Bill Shi, Libin Xia, Chris Tong, Lynn Ai, Felix Qu, Eric Yang

Personalized Pricing with Group Fairness Constraint [Link]

Xin Chen*, Zexing Xu*, <u>Zishuo Zhao</u>*, Yuan Zhou*. (alphabetical order)

ACM Conference on Fairness, Accountability, and Transparency (ACM FAccT 2023)

Dynamic Car Dispatching and Pricing: Revenue and Fairness for Ridesharing Platforms [Link]

<u>Zishuo Zhao</u>, Xi Chen, Xuefeng Zhang, Yuan Zhou

International Joint Conference on Artificial Intelligence (IJCAI 2022), **Long Oral (3.75%)**.

Invited to *INFORMS Annual Meeting 2021*.

ClusterSLAM: A SLAM Backend for Simultaneous Rigid Body Clustering and Motion Estimation [Link]

Jiahui Huang, Sheng Yang, <u>Zishuo Zhao</u>, Yukun Lai, Shi-Min Hu.

Computational Visual Media (CVM), Volume 7, pages 87–101 (2021).

International Conference on Computer Vision (ICCV 2019).

Working Projects

T'AIMER: Trustworthy AI Multi-round pEer veRification mechanism [i*]

(Collaborators TBA)

Awards

Academic

- **Best Paper Award**, NeurIPS Workshop on Decentralization and Trustworthy Machine Learning in Web3, 2022

- Crypto Economics Security Conference (CESC) Travel Award, 2022

- UIUC Graduate College Conference Presentation Award, 2021

- Xuetang Scholarship in Tsinghua University, 2016-2020

- 12th place in 2nd THUCTF Cybersecurity Contest in Tsinghua University, 2020

- 12th place in 24th Artificial Intelligence Programming Contest in Tsinghua University, 2020

- 15th place in 20th Artificial Intelligence Programming Contest in Tsinghua University, 2016.

- Second Prize in Chinese Mathematical Olympiad (CMO), 2014

- First Prize in National Olympiad in Informatics in Provinces (NOIP), 2013

Arts

- Finalist Award in the "一盏茶时 (*IIIS Tea Time*)" photography exhibition for the 12th Anniversary of IIIS, Tsinghua University, 2023.

- Scholarship for Arts Excellence in Tsinghua University, 2018.

- Third Prize in the Art Festival of No.1 Middle School affiliated to CCNU, for piano performance *Hatsukoi*, 2013.

Academic Activities

Academic Services

- Invited to MIT DSL Seminar for the talk "Decentralized AI: Economics of Trust" in Oct 2025.

- Invited to OR Talk by 运筹OR帷幄 (OR China) for two talks in 2024.

- Facilitator in section Revenue & Pricing, INFORMS Annual Meeting, 2021.

- Invited to the Alumni Forum for the 10th Anniversary of IIIS, Tsinghua University in 2021.

Conference & Journal Reviewing

- Journal Reviewing: Operations Research (2025)

- Conference Reviewing: ESA (2024)

Mentoring

- Renfei Tan (PhD student at MIT)

- Qiushi Han (Undergraduate at UIUC. Next step: MIT ORC PhD)

- Haibo Xiao (Undergraduate at Tsinghua University. Next step: Tsinghua PhD)

- Hongxu Su (PhD student at HKUST(GZ))

Teaching

- Guest lecture on decentralized AI, IE598 Foundations of Modern Machine Learning, UIUC, Fall 2025.

- Guest lecture on blockchain transaction fee mechanism, IE524 Optimization in Finance, UIUC, Fall 2025.

- Teaching Assistant, Causal & Statistical Inference, Tsinghua University, Fall 2018.

- Discussion Session, Calculus, Tsinghua University, Fall 2015.

Miscellaneous

Languages

- Mandarin Chinese (native)

- English (fluent)

- Classical Chinese (writing as a hobby)

Coding Skills

- Mainly using C++, MATLAB and Mathematica, also with command of Python, Java, PHP.

- With some knowledge in ROS, Verilog HDL and assembly language.

- Open to learn new programming languages when in need.

Extracurricular Activities

- I have an amateur interest in Capture-The-Flag (CTF) cybersecurity competitions, and developed two Reverse challenges in the TQLCTF 2022.

- I have a wide scope of hobbies in arts and aerobic sports, especially in vocal music, photography, piano, calligraphy, table tennis and orienteering.

(Updated on Dec 31, 2025)