

Zhicheng Du

Updated on July 2026

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Summary

A fourth-year PhD candidate in the Department of Artificial Intelligence at Renmin University of China (RUC), advised by Prof. Zihe Wang, with an expected graduation date of June 2027.

Broadly, I am interested in decision-making problems at the intersection of computer science, economics, and operations research. Recently, my research has focused on **information design**, with particular emphasis on competitive information design games (the information competition among multiple senders). I am also interested in the decision-making problems arising from large language models, such as token pricing, advertising in LLM ecosystems, and strategic interactions among AI agents.

I will be on the job market this year and am also seeking postdoctoral opportunities starting in Sept 2027.

Education

Central South University	Changsha	Bachelor	Sept 2018 – June 2022
• Department : Computer Science and Technology (Turing Honors Program)			
Renmin University of China	Beijing	PhD Candidate	Sept 2022 – June 2027
• Department : Gaoling School of Artificial Intelligence			
• Advisor : Prof. Zihe Wang			

Experiences

National University of Singapore	Singapore	Visiting Scholar	Sept 2025 – Mar 2026
• Department : Economics			
• Host : Prof. Yingkai Li			
Huawei Technologies Co., Ltd.	Beijing	Research Intern	June 2026 – Sept 2026
• Department : Tailor Lab (TCS Theory Lab)			
• Host : Xiang Yan and Chunxue Yang			

Publications

Competitive Information Design with Asymmetric Senders pdf	July 2024
<i>Accepted by the 25th ACM Conference on Economics and Computation (EC'24)</i>	
<i>Submitted to Operations Research in 2026.</i>	
$(\alpha\text{-}\beta)$ Zhicheng Du , Wei Tang, Zihe Wang, and Shuo Zhang	
SRAP-Agent: Simulating and Optimizing Scarce Resource Allocation Policy with LLM-based Agent pdf	May 2024
<i>Accepted by the 2024 Conference on Empirical Methods in Natural Language Processing (EMNLP'24) as Findings</i>	
Jiarui Ji, Yang Li, Hongtao Liu, Zhicheng Du , Zhewei Wei, Weiran Shen, Qi Qi, and Yankai Lin	

Working Papers

Algorithmic Information Design for Searchers with Uncertain Alternatives pdf	Feb 2025
<i>Submitted to the 22nd Conference on Web and Internet Economics (WINE'26)</i>	
$(\alpha\text{-}\beta)$ Zhicheng Du , Hu Fu, Ying Qin, and Zihe Wang	
Optimal Calibrated Signaling in Digital Auctions pdf	May 2025
<i>Submitted to the 38th ACM-SIAM Symposium on Discrete Algorithms (SODA'27)</i>	
$(\alpha\text{-}\beta)$ Zhicheng Du , Wei Tang, Zihe Wang, and Shuo Zhang	

CHBench: A Cognitive Hierarchy Benchmark for Evaluating Strategic Reasoning Capability of LLMs pdf Zhicheng Du , Hongtao Liu, Zihe Wang, and Weiran Shen	Aug 2025
Going Public: Communication in Collective Decisions pdf (α - β) Zhicheng Du , Yingkai Li, and Boli Xu	Feb 2026
Prices as Signals: Joint Design of Information and Pricing <i>Submitted to the 22nd Conference on Web and Internet Economics (WINE'26)</i> (α - β) Zhicheng Du , Yanwei Sun, Zihe Wang, and Jiahua Wu	Feb 2026

Representative Work

Competitive Information Design with Asymmetric Senders

Abstract: We study a competitive information design game in which multiple *ex-ante asymmetric* senders compete for a receiver by strategically disclosing private information about their respective realized states. Such competition is common in modern markets, where sellers, platforms, and service providers disclose information to attract customers or users, while differing *ex ante* in their quality, reliability, reputation, or informational precision. The main message is that this heterogeneity fundamentally reshapes both the structure and the outcomes of information competition. We first show by example that equilibrium may fail to exist, and then establish existence when senders' priors are atomless. We next develop necessary and sufficient conditions for a strategy profile to constitute an equilibrium. This characterization reveals equilibrium structures that are absent from the symmetric benchmark, including payoff-relevant multiplicity, disconnected support, and the failure of full disclosure in the large-market limit. Finally, we specialize to the general two-sender game and provide a complete equilibrium characterization together with a computational procedure.

Keywords: Information design, competition, *ex-ante* asymmetry, Nash equilibrium

Talks

Competitive Information Design with Asymmetric Senders Conference proceedings talk, EC 2024, Yale University, USA	July 2024
Competitive Information Design with Asymmetric Senders Conference proceedings talk, GAMES 2024, Peking University, China	Sept 2024
Competitive Information Design with Asymmetric Senders Invited talk, Theory Lunch of Economics, National University of Singapore, Singapore	Sept 2025

Teaching

Mathematical Foundations of Artificial Intelligence (Graduate) Renmin University of China (RUC), Teaching Assistant	Spring 2023
AI-Driven Social Science Research (Undergraduate) Renmin University of China (RUC), Teaching Assistant	Fall 2023
Computational Economics (Undergraduate) Renmin University of China (RUC), Teaching Assistant	Spring 2026

Skills

Languages: Chinese (native), English

Technical Skills: Theoretical Analysis; Codes (C++, Java, Python, Pytorch, LLMs)