Suho Shin

Ph.D. Student at University of Maryland, College Park

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RESEARCH INTEREST

I am interested in mechanism design and market design, broadly construed. A core thread throughout my research is the development of the algorithmic foundations of delegated decision-making under uncertainty, a theme at the intersection of computer science, operations research, and economics. Across classical markets, modern digital platforms, and AI systems, decision-makers increasingly rely on autonomous or strategic agents to act on their behalf. For instance, non-experts delegate decision-making to experts, content platforms delegate high-quality production to creators, and individuals even largely delegate information-seeking to large language models these days. A critical challenge in such settings is that delegatees may have ulterior motives, misaligned incentives, or incomplete information, which can lead to undesirable outcomes for the delegator. How can delegation be structured so that the resulting system remains efficient, fair, and economically sustainable?
I study how a principal—such as a regulator, platform, or algorithm designer—can design mechanisms, learning procedures, and information structures that align the incentives of self-interested or bounded agents. My ultimate goal is to build a coherent framework of delegation mechanisms that unifies incentive design and decision optimization for human-AI systems, online marketplaces, and various organizations.

EDUCATION

University of Maryland, College Park — Maryland, USA
Ph.D. in Computer Science — Sep. 2022 –

- Advisor: Prof. MohammadTaghi Hajiaghayi

Korea Advanced Institute of Science and Technology — Daejeon, South Korea
M.S. in Electrical Engineering — Mar. 2016 – Jan. 2018

- Advisor: Prof. Yung Yi

Korea Advanced Institute of Science and Technology — Daejeon, South Korea
B.S. in Mathematical Sciences — Mar. 2011 – Feb. 2016

PUBLICATION

(α, β) *denotes alphabetical order of authorship.*

Optimal Contest for Recommender Systems — Working paper
$^{\alpha,\beta}$*N. Golrezaei, M. Hajiaghayi, S. Shin*

- *Job Market Paper (SSRN link)*
- *2025 Market Innovation Workshop*
- *2025 PSOR best video competition, finalists (Youtube link)*

Algorithmic Delegated Choice: An Annotated Reading List — SIGecom Exchanges Vol 23.1, 2025
$^{\alpha,\beta}$*M. Hajiaghayi, S. Shin*

Delegation with Costly Inspection — EC'25
$^{\alpha,\beta}$*M. Hajiaghayi, P. Krysta, M. Mahdavi, S. Shin*

Delegated Choice with Combinatorial Constraints EC'25
$^{\alpha,\beta}$*K. Banihashem, M. Hajiaghayi, P. Krysta, S. Shin*

- *Under review at Operations Research*

Tokenized Bandit for LLM Decoding and Alignment ICML'25
S. Shin, C. Yang, H. Xu, M. Hajiaghayi

- *EC'25 workshop on Info/Econ/LLMs*
- *EC'25 workshop on Human-AI collab*

Replication-proof Bandit Mechanism Design with Bayesian Agents AAAI'25 (oral)
S. Shin, S. Esmaeili, M. Hajiaghayi

Robust and Performance Incentivizing Algorithms for Bandits with Strategic Agents AAAI'25
S. Esmaeili, S. Shin, A. Slivkins

Gains-from-Trade in Bilateral Trade with a Broker SODA'25
$^{\alpha,\beta}$*I. Hajiaghayi, M. Hajiaghayi, G. Peng, S. Shin*

Online Advertisements with LLMs SIGecom Exchanges Vol 22.2, 2025
$^{\alpha,\beta}$*S. Feizi, M. Hajiaghayi, K. Rezaei, S. Shin*

Ad Auctions for LLMs via Retrieval Augmented Generation NeurIPS'24
$^{\alpha,\beta}$*M. Hajiaghayi, S. Lahaie, K. Rezaei, S. Shin*

- *EC'24 Workshop on Frontiers of Online Advertising: Autobidding, GenAI, and Beyond*

Dueling Over Dessert, Mastering the Art of Repeated Cake Cutting NeurIPS'24
$^{\alpha,\beta}$*S. Branzei, M. Hajiaghayi, R. Phillips, S. Shin, K. Wang*

- *Under review at Math of Operations Research*

Fairness and Efficiency in Online Class Matching NeurIPS'24
$^{\alpha,\beta}$*M. Hajiaghayi, S. Jahan, M. Sharify, S. Shin, M. Springer*

A Regret Analysis of Repeated Delegated Choice AAAI'24
$^{\alpha,\beta}$*M. Hajiaghayi, M. Mahdavi, K. Rezaei, S. Shin*

An Improved Relaxation for Oracle-Efficient Adversarial Contextual Bandits NeurIPS'23
$^{\alpha,\beta}$*K. Banihashem, M. Hajiaghayi, S. Shin, M. Springer*

Bandit Social Learning under Myopic Agents NeurIPS'23
$^{\alpha,\beta}$*K. Banihashem, M. Hajiaghayi, S. Shin, A. Slivkins*

- *Under review at Math of Operations Research*
- *EC'24 Workshop on Information Acquisition*
- *AMLS'24 (best poster award)*

Delegating to Multiple Agents EC'23
$^{\alpha,\beta}$*M. Hajiaghayi, K. Rezaei, S. Shin*

Multi-armed Bandit Algorithm against Strategic Replication. AISTATS'22
S. Shin, S. Lee, J. Ok

Power of Bonus in Pricing for Crowdsourcing. SIGMETRICS'22
S. Shin, H. Choi, Y. Yi, J. Ok

HONOR & AWARD

Outstanding Graduate Assistant Award AY 23-24 USA
University of Maryland Dec 2023

Gradute School Summer Research Fellowship USA
University of Maryland (declined) Summer 2023

Dean's Fellowship USA
University of Maryland Fall 2022 – Fall 2024

The National Scholarship for Science and Engineering South Korea
Korea Student Aid Foundation Spring 2011 – Fall 2017

Dean's Award for Entrance South Korea
Korea Advanced Institute of Science and Technology Spring 2011

Gold Medal, Korean Mathematical Olympiad South Korea
Korean Mathematical Society Fall 2008

VISIT & INTERNSHIP

Visiting Student University of Chicago
Host: Prof. Haifeng Xu Summer 2024

Visiting Student University of Liverpool
Host: Prof. Piotr Krysta Jul. 2023

Visiting Student SLMath, UC Berkeley
Topic: Mathematics and Computer Science of Market and Mechanism Design Jun. 2023

Research Intern Machine Learning Lab, Postech
Host: Prof. Jungseul Ok Summer 2022

INDUSTRY EXPERIENCE

LINE plus Corporation, LINE Advertisement Platform Seongnam, South Korea
Data scientist, ML engineer Oct. 2020 – Apr. 2022

Coupang, Product, Search and Discovery Platform Jamsil, South Korea
Software Engineer Aug. 2018 – Sep. 2020

SERVICE

Program Committee
AAAI'26,WINE'25,AAAI'25

Reviewer
SODA'26,ICML'25,NeurIPS'24,ICML'24,NeurIPS'23,AISTATS'22

MENTORING/ADVISING

Mentoring
Gary Peng (Undergrad at UMD) Dec. 2023 - WIP

- Received CRA award (link)

Mentoring HSRI'24
Aya Sghiouar (High school student at Bouskoura High School) Summer 2024

TALK

Delegated Choice with Costly Inspection Georgia, USA
INFORMS Annual Meeting, Auctions and Market Design Award Session Oct. 2025

Tokenized Bandit for LLM Decoding and Alignment Georgia, USA
INFORMS Annual Meeting, Invited Session Oct. 2025

Optimal Contest for Recommender Systems Georgia, USA
INFORMS Annual Meeting, PSOR Business Meeting Award Session Oct. 2025

Delegation with Costly Inspection Stanford, USA
ACM Conference on Economics and Computation (EC) Jul. 2025

Delegated Choice with Combinatorial Constraints Stanford, USA
ACM Conference on Economics and Computation (EC) Jul. 2025

Replication-proof Bandit Mechanism Design with Bayesian Agents Philadelphia, USA
Association for the Advancement of Artificial Intelligence (AAAI) Feb. 2025

Gains-from-Trade in Bilateral Trade with a Broker New Orleans, USA
Symposium on Discrete Algorithm (SODA) Jan. 2025

Prophet Inequality, Posted Pricing, and Delegated Choice Seoul, South Korea
Microecon Theory Seminar, Sungkyunkwan University Sep. 2024

Combinatorial Delegated Choice Jeju, South Korea
East Asia Game Theory Conference Aug. 2024

Ad Auctions for LLMs via Retrieval Augmented Generation New Haven, USA
EC'24 Workshop on Frontiers of Online Advertising: Autobidding, GenAI, and Beyond Jul. 2024

Delegated Choice, Prophet Inequality, and Beyond Chicago, USA
Sigma Lab, UChicago Jun. 2024

Topics in Economics and Computation — Pohang, South Korea
Machine Learning Lab, Postech — Jan. 2024

Delegating to Multiple Agents — London, UK
ACM Conference on Economics and Computation (EC) — Jul. 2023

Mechanism Design and Multi-armed Bandits — Virtual
Machine Learning Lab, Postech — Feb. 2022

TEACHING

Advanced Topics in Theory of Computing; Algorithmic Game Theory (CMSC858J) — Fall 2025
Guest Lecturer (4 full lectures) — UMD

Introduction to Computer Systems — Fall 2024
Teaching Assistant — UMD

Introduction to Computational Game Theory (CMSC474) — Fall 2023
Teaching Assistant — UMD

Design and Analysis of Computer Algorithms (CMSC451) — Spring 2023
Teaching Assistant — UMD

Introduction to Computational Game Theory (CMSC474) — Fall 2022
Teaching Assistant — UMD

Data Structure and Algorithms for Electrical Engineering (EE205) — Fall 2017
Teaching Assistant — KAIST

Computer Networks (EE323) — Spring 2017
Teaching Assistant — KAIST