

Suhoo 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

Ph.D. in Computer Science

Maryland, USA

Sep. 2022 –

- Advisor: Prof. MohammadTaghi Hajiaghayi

Korea Advanced Institute of Science and Technology

M.S. in Electrical Engineering

Daejeon, South Korea

Mar. 2016 – Jan. 2018

- Advisor: Prof. Yung Yi

Korea Advanced Institute of Science and Technology

B.S. in Mathematical Sciences

Daejeon, South Korea

Mar. 2011 – Feb. 2016

PUBLICATION

(α, β) denotes alphabetical order of authorship.

Optimal Contest for Recommender Systems

$^{\alpha, \beta}N. Golrezaei, M. Hajiaghayi, S. Shin$

Working paper

- Job Market Paper ([link](#))

- 2025 Market Innovation Workshop

- 2025 PSOR best video competition, finalists ([Youtube link](#))

Algorithmic Delegated Choice: An Annotated Reading List

$^{\alpha, \beta}M. Hajiaghayi, S. Shin$

SIGecom Exchanges Vol 23.1, 2025

Delegation with Costly Inspection

$^{\alpha, \beta}M. Hajiaghayi, P. Krysta, M. Mahdavi, S. Shin$

EC'25

Delegated Choice with Combinatorial Constraints α, β K. Banihashem, M. Hajiaghayi, P. Krysta, S. Shin

EC'25

- Under review at *Operations Research***Tokenized Bandit for LLM Decoding and Alignment**

S. Shin, C. Yang, H. Xu, M. Hajiaghayi

ICML'25

- EC'25 workshop on Info/Econ/LLMs

- EC'25 workshop on Human-AI collab

Replication-proof Bandit Mechanism Design with Bayesian Agents

S. Shin, S. Esmaeili, M. Hajiaghayi

AAAI'25 (oral)

Robust and Performance Incentivizing Algorithms for Bandits with Strategic Agents

S. Esmaeili, S. Shin, A. Slivkins

AAAI'25

Gains-from-Trade in Bilateral Trade with a Broker α, β I. Hajiaghayi, M. Hajiaghayi, G. Peng, S. Shin

SODA'25

Online Advertisements with LLMs α, β S. Feizi, M. Hajiaghayi, K. Rezaei, S. Shin

SIGecom Exchanges Vol 22.2, 2025

Ad Auctions for LLMs via Retrieval Augmented Generation α, β M. Hajiaghayi, S. Lahaie, K. Rezaei, S. Shin

NeurIPS'24

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

Dueling Over Dessert, Mastering the Art of Repeated Cake Cutting α, β S. Branzei, M. Hajiaghayi, R. Phillips, S. Shin, K. Wang

NeurIPS'24

- Under review at *Math of Operations Research***Fairness and Efficiency in Online Class Matching** α, β M. Hajiaghayi, S. Jahan, M. Sharify, S. Shin, M. Springer

NeurIPS'24

A Regret Analysis of Repeated Delegated Choice α, β M. Hajiaghayi, M. Mahdavi, K. Rezaei, S. Shin

AAAI'24

An Improved Relaxation for Oracle-Efficient Adversarial Contextual Bandits α, β K. Banihashem, M. Hajiaghayi, S. Shin, M. Springer

NeurIPS'23

Bandit Social Learning under Myopic Agents α, β K. Banihashem, M. Hajiaghayi, S. Shin, A. Slivkins

NeurIPS'23

- Under review at *Math of Operations Research*

- EC'24 Workshop on Information Acquisition

- AMLS'24 (*best poster award*)**Delegating to Multiple Agents** α, β M. Hajiaghayi, K. Rezaei, S. Shin

EC'23

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

University of Maryland

USA

Dec 2023

Graduate School Summer Research Fellowship

University of Maryland (declined)

USA

Summer 2023

Dean's Fellowship

University of Maryland

USA

Fall 2022 – Fall 2024

The National Scholarship for Science and Engineering

Korea Student Aid Foundation

South Korea

Spring 2011 – Fall 2017

Dean's Award for Entrance

Korea Advanced Institute of Science and Technology

South Korea

Spring 2011

Gold Medal, Korean Mathematical Olympiad

Korean Mathematical Society

South Korea

Fall 2008

VISIT & INTERNSHIP

Visiting Student

Host: Prof. Haifeng Xu

University of Chicago

Summer 2024

Visiting Student

Host: Prof. Piotr Krysta

University of Liverpool

Jul. 2023

Visiting Student

Topic: Mathematics and Computer Science of Market and Mechanism Design

SLMath, UC Berkeley

Jun. 2023

Research Intern

Host: Prof. Jungseul Ok

Machine Learning Lab, Postech

Summer 2022

INDUSTRY EXPERIENCE

LINE plus Corporation, LINE Advertisement Platform

Data scientist, ML engineer

Seongnam, South Korea

Oct. 2020 – Apr. 2022

Coupang, Product, Search and Discovery Platform

Software Engineer

Jamsil, South Korea

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 Outstanding Undergraduate Researcher Awards* ([link](#))

Mentoring

Aya Sghiouar (High school student at Bouskoura High School)

HSRI'24

Summer 2024

TALK

Delegation with Costly Inspection

INFORMS Annual Meeting, Auctions and Market Design Award Session

Georgia, USA

Oct. 2025

Tokenized Bandit for LLM Decoding and Alignment

INFORMS Annual Meeting, Invited Session

Georgia, USA

Oct. 2025

Optimal Contest for Recommender Systems

INFORMS Annual Meeting, PSOR Business Meeting Award Session

Georgia, USA

Oct. 2025

Delegation with Costly Inspection

ACM Conference on Economics and Computation (EC)

Stanford, USA

Jul. 2025

Delegated Choice with Combinatorial Constraints

ACM Conference on Economics and Computation (EC)

Stanford, USA

Jul. 2025

Replication-proof Bandit Mechanism Design with Bayesian Agents

Association for the Advancement of Artificial Intelligence (AAAI)

Philadelphia, USA

Feb. 2025

Gains-from-Trade in Bilateral Trade with a Broker

Symposium on Discrete Algorithm (SODA)

New Orleans, USA

Jan. 2025

Prophet Inequality, Posted Pricing, and Delegated Choice

Microecon Theory Seminar, Sungkyunkwan University

Seoul, South Korea

Sep. 2024

Combinatorial Delegated Choice

East Asia Game Theory Conference

Jeju, South Korea

Aug. 2024

Ad Auctions for LLMs via Retrieval Augmented Generation

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

New Haven, USA

Jul. 2024

Delegated Choice, Prophet Inequality, and Beyond

Sigma Lab, UChicago

Chicago, USA

Jun. 2024

Topics in Economics and Computation

Machine Learning Lab, Postech

Pohang, South Korea

Jan. 2024

Delegating to Multiple Agents

ACM Conference on Economics and Computation (EC)

London, UK

Jul. 2023

Mechanism Design and Multi-armed Bandits

Machine Learning Lab, Postech

Virtual

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

REFERENCES

Prof. MohammadTaghi Hajiaghayi

Jack and Rita G. Minker Professor

- Affiliated Professor

hajiagha@umd.edu

Computer Science, University of Maryland

Robert H. Smith School of Business, University of Maryland

Prof. Negin Golrezaei

Associate Professor

- Theresa Seley Associate Professor

- Affiliated Professor

- Affiliated Professor

golrezaei@mit.edu

Operations Management, MIT Sloan

Management Science, MIT Sloan

Operations Research Center, MIT Sloan

Management Science, MIT IBM Watson AI Lab

Prof. Haifeng Xu

Assistant Professor

haifeng.hxu@gmail.com

Computer Science, University of Chicago

Dr. Sébastien Lahaie

Research Scientist

slahaie@google.com

Market Algorithms, Google Research, NY