

# Suho Shin

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

☎ (+1)240-268-4984 | ✉ suhoshin@umd.edu | 📱 | 🏠

## RESEARCH INTEREST

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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 delegates 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

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**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

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$(\alpha, \beta)$  denotes alphabetical order of authorship.

**Optimal Contest for Recommender Systems**

Working paper, [SSRN link](#)

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

- Job Market Paper

- [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

<sup>$\alpha, \beta$</sup> K. Banihashem, M. Hajiaghayi, P. Krysta, S. Shin

- submitted to 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. Esmaili, M. Hajiaghayi

## Robust and Performance Incentivizing Algorithms for Bandits with Strategic Agents

AAAI'25

S. Esmaili, S. Shin, A. Slivkins

## Gains-from-Trade in Bilateral Trade with a Broker

SODA'25

<sup>$\alpha, \beta$</sup> I. Hajiaghayi, M. Hajiaghayi, G. Peng, S. Shin

## Online Advertisements with LLMs

SIGecom Exchanges Vol 22.2, 2025

<sup>$\alpha, \beta$</sup> S. Feizi, M. Hajiaghayi, K. Rezaei, S. Shin

## Ad Auctions for LLMs via Retrieval Augmented Generation

NeurIPS'24

<sup>$\alpha, \beta$</sup> 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

<sup>$\alpha, \beta$</sup> S. Branzei, M. Hajiaghayi, R. Phillips, S. Shin, K. Wang

- submitted to Math of Operations Research

## Fairness and Efficiency in Online Class Matching

NeurIPS'24

<sup>$\alpha, \beta$</sup> M. Hajiaghayi, S. Jahan, M. Sharify, S. Shin, M. Springer

## A Regret Analysis of Repeated Delegated Choice

AAAI'24

<sup>$\alpha, \beta$</sup> M. Hajiaghayi, M. Mahdavi, K. Rezaei, S. Shin

## An Improved Relaxation for Oracle-Efficient Adversarial Contextual Bandits

NeurIPS'23

<sup>$\alpha, \beta$</sup> K. Banihashem, M. Hajiaghayi, S. Shin, M. Springer

## Bandit Social Learning under Myopic Agents

NeurIPS'23, under review at MOR

<sup>$\alpha, \beta$</sup> K. Banihashem, M. Hajiaghayi, S. Shin, A. Slivkins

- submitted to Math of Operations Research

- EC'24 Workshop on Information Acquisition

- AMLS'24 (best poster award)

## Delegating to Multiple Agents

EC'23

<sup>$\alpha, \beta$</sup> 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

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### 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

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### 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

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### 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

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### Program Committee

AAAI'26, WINE'25, AAAI'25

### Reviewer

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

## MENTORING/ADVISING

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### Mentoring

Gary Peng (Undergrad at UMD)

Dec. 2023 - WIP

- Received [CRA](#) award ([link](#))

### Mentoring

Aya Sghiouar (High school student at Bouskoura High School)

[HSRI'24](#)

Summer 2024

## TALK

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### Delegated Choice 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**

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**Advanced Topics in Theory of Computing; Algorithmic Game Theory (CMSC858J)***Guest Lecturer (4 full lectures)*

Fall 2025

UMD

**Introduction to Computer Systems***Teaching Assistant*

Fall 2024

UMD

**Introduction to Computational Game Theory (CMSC474)***Teaching Assistant*

Fall 2023

UMD

**Design and Analysis of Computer Algorithms (CMSC451)***Teaching Assistant*

Spring 2023

UMD

**Introduction to Computational Game Theory (CMSC474)***Teaching Assistant*

Fall 2022

UMD

**Data Structure and Algorithms for Electrical Engineering (EE205)***Teaching Assistant*

Fall 2017

KAIST

**Computer Networks (EE323)***Teaching Assistant*

Spring 2017

KAIST