

# Soheun Yi

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## Education

Carnegie Mellon University, *PhD, Statistics*.

09.2023–Present

Seoul National University, *BS, Mathematical Sciences*.

03.2017–08.2023

◦ *Summa Cum Laude*, GPA: 4.19/4.3.

◦ Fall 2019–Spring 2021: On leave for mandatory military service.

## Research Interests

◦ **Statistics and Optimization Theory**.

◦ **Machine Learning** and its applications to **Physical Sciences**.

## Publications

(\* for equal contribution.)

- [1] J. Lee\*, **Soheun Yi\***, and E. K. Ryu. "Convergence Analyses of Davis–Yin Splitting via Scaled Relative Graphs". *Accepted in SIAM Journal on Optimization* (2024).
- [2] **Soheun Yi**, J. Alison, and M. Kuusela. "Toward Model-Agnostic Detection of New Physics Using Data-Driven Signal Regions". *ML4PS Workshop at the 38th conference on Neural Information Processing Systems, Machine Learning and the Physical Sciences* (2024). arXiv: 2409.06960.
- [3] **Soheun Yi** and S. Lee. "Filter, Rank, and Prune: Learning Linear Cyclic Gaussian Graphical Models". *Proceedings of The 27th International Conference on Artificial Intelligence and Statistics*. 2024.
- [4] **Soheun Yi** and E. K. Ryu. "Convergence Analyses of Davis–Yin Splitting via Scaled Relative Graphs II: Convex Optimization Problems" (2022). arXiv: 2211.15604.

## Research Experience

**Graduate Research Assistant**, *Dept. of Statistics & DS, CMU*,

01.2024–Present

**Advisor: John Alison and Mikael Kuusela.**

*Topic: Toward Model-Agnostic Detection of New Physics Using Data-Driven Signal Regions. [2]*

**Visiting Researcher**, *Deep Learning Div., Krafton*.

04.2023–07.2023

*Topic: Contrastive Learning, Neural Radiance Field*

**Research Intern**, *Graduate School of Data Science, Seoul National Univ.*,

03.2022–08.2023

**Advisor: Sanghack Lee.**

*Topic: Causal discovery on linear cyclic Gaussian graphical models. [3]*

**Research Intern**, *Dept. of Mathematical Sciences, Seoul National Univ.*,

01.2022–12.2022

**Advisor: Ernest K. Ryu .**

*Topic: Convergence Analyses of Davis–Yin Splitting via Scaled Relative Graphs. [1]*

## Employment

**Quantitative Analyst**, *Hyperithm*, Seoul.

08.2019–08.2021

- Developed and implemented quantitative trading strategies.
- Maintained transaction review systems.
- Programming experiences:
  - Transaction log parsing (RegEx, BigQuery),
  - Processing and visualizing market data (Pandas),
  - Options pricing and trading simulation (NumPy, SciPy).

## Teaching Experience

**Teaching Assistant**, *Intermediate Statistics (36705)*.

Fall 2024

- PhD level course on mathematical statistics.

**Teaching Assistant**, *Advanced Data Analysis (36402)*.

Spring 2024

**Teaching Assistant**, *Modern Regression (36401)*.

Fall 2023

**Teaching Assistant**, *Mathematical and Numerical Optimization*.

Fall 2022

**Deputy Leader**, *Team Korea at Romanian Master of Mathematics*.

02.2019

**Teaching Assistant**, *Korea Mathematics Olympiad Winter School*.

01.2018

## Awards and Honors

**Korea Foundation for Advanced Studies**, *Overseas PhD Scholarship*.

2023–Present

**Simon Marais Mathematics Competiton**, *Pair Merit Prize*.

2020

- Top 4/150 = 3% of participants.

**Korea Foundation for Advanced Studies**, *Undergraduate Scholarship*.

2019–2023

**Korea Undergraduates Mathematics Competition**, *Field 1 Gold Prize*.

12.2018

**Korea Student Aid Foundation**, *Presidential Science Scholarship*.

2017–2023

**Korean Mathematical Society**, *Final Candidates for International Mathematical Olympiad*.

2016

- Top 13 participants in Korea.

**Romanian Master of Mathematics**, *Silver Medal*.

2016

## Selected Graduate Courses

- Scalable High Performance Computing.
  - Implemented the fastest CUDA program among 100 participants in the term project. [↗](#)