# 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

- **Applied Statistics** and **Machine Learning for Sciences**.
- **Optimization Theory** and its applications.

## 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". *arXiv preprint* (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". *arXiv preprint* (2022). arXiv: 2211.15604.

## Experience

### *Research*

**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]*

**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 expriences:
  - Transaction log parsing (`RegEx`, `BigQuery`),
  - Processing and visualizing market data (`Pandas`),
  - Options pricing and trading simulation (`NumPy`, `SciPy`).

### *Teaching*

**Teaching Assistant**, *Intermediate Statistics (36705)*. **Fall 2024**

- PhD level course on mathemtical 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*. **09.2023–Present**

**Simon Marais Mathematics Competiton**, *Pair Merit Prize*. **10.2020**

- Top $4/150 = 3\%$ of participants.

**Korea Foundation for Advanced Studies**, *Undergraduate Scholarship*. **03.2019–03.2023**

**Korea Undergraduates Mathematics Competition**, *Field 1 Gold Prize*. **12.2018**

**Korea Student Aid Foundation**, *Presidential Science Scholarship*. **03.2017–03.2023**

**Korean Mathematical Society**, *Final Candidates for IMO*. **03.2016**

- Top 13 participants in Korea.

**Romanian Master of Mathematics**, *Silver Medal*. **02.2016**

## Selected Graduate Courses

- Scalable High Performance Computing.
  - Implemented the fastest CUDA program among 100 participants in the term project.
- Recent Advances of Applied Statistics: Causal Inference.
  - Proposed a data-driven prognostic score estimation.