

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

- **High-dimensional statistics** and **theoretical machine learning**.
- **Optimization theory** and its application in **causal discovery**.

Publications

(* for equal contribution.)

- [1] Jongmin Lee*, **Soheun Yi***, and Ernest K. Ryu. “Convergence Analyses of Davis–Yin Splitting via Scaled Relative Graphs”. In: *arXiv preprint* (2022). arXiv: 2207.04015.
- [2] **Soheun Yi** and Ernest K. Ryu. “Convergence Analyses of Davis–Yin Splitting via Scaled Relative Graphs II: Convex Optimization Problems”. In: *arXiv preprint* (2022). arXiv: 2211.15604.

Experience

Research

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.

- Developed a new method for causal discovery on linear cyclic Gaussian models from observational data.
- Reached the state-of-the-art performance in terms of the BIC score.

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

01.2022–12.2022

Advisor: [Ernest K. Ryu](#).

Topic: Convergence analyses of the three operator splitting (TOS).

- Analyzed the convergence of the TOS with scaled relative graphs [1, 2].
- Improved tight convergence rates of the fixed point iteration with the TOS.
- Improved tight convergence rates of the TOS-based optimization algorithm.

Employment

- Quantitative Analyst**, *Hyperithm*, Seoul. **08.2019–08.2021**
- Served as an alternative for **mandatory military service**.
 - 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

- Teaching Assistant**, *Modern Regression (36-401)*. **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**
- Voluntary Teaching for Low-income Children**. **03.2014–06.2019**

Awards and Honors

- Korea Foundation for Advanced Studies**, *Overseas PhD Scholarship*. **09.2023–Present**
- Simon Marais Mathematics Competitor**, *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. [↗](#)
- Data Science and Reinforcement Learning.
 - Implemented a modified bootstrapped DQN agent. Resulted top 10% in the term project. [↗](#)
- Recent Advances of Applied Statistics: Causal Inference.
 - Proposed a data-driven prognostic score estimation. [↗](#)