

Soheun Yi

E-mail: soheunyi@gmail.com
Homepage: soheunyi.github.io

Education

Ph.D. in Statistics at Carnegie Mellon University.

09.2023–Present

B.S. in Mathematical Sciences at Seoul National University.

03.2017–08.2023

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

Research Interests

- **Optimization theory** and its applications including **causality**.
- **Causal discovery**, including linear structural equation models.

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, *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

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

- Top 4/150 = 3% of participants.

Undergraduate Scholarship from Korea Foundation for Advanced Studies, *3k/year*. 03.2019–Present

Dean's List, *Dept. of Mathematical Sciences*, Seoul National University. 2017–2022

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

Presidential Science Scholarship from Korea Student Aid Foundation, *Full enrollment fee + 4k/year*. 03.2017–Present

Korea Final Candidates for International Mathematical Olympiad (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. [↗](#)