

# Hanseul Cho (조한슬)

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## Personal Profile

I am a Master's student in the [Optimization & Machine Learning \(OptiML\) Laboratory](#), advised by [Prof. Chulhee Yun](#) at [Kim Jaechul Graduate School of AI \(GSAI\)](#) in [Korea Advanced Institute of Science and Technology \(KAIST\)](#). Before this, I received my Bachelor's degree in Mathematical Sciences (major) and Computing Sciences (minor) at KAIST in 2022.

My primary research interests lie in optimization, machine learning, and deep learning, mainly focusing on theoretical analysis of them. Recently, I have been looking at bi-level optimization for stochastic/finite-sum settings—including minimax optimization (*i.e.*, saddle point problem), actor-critic algorithms for reinforcement learning, fair machine learning, and more—with particular interest.

## Education

### Korea Advanced Institute of Science and Technology (KAIST)

Seoul, Republic of Korea

M.Sc. in Artificial Intelligence

Mar. 2022 - Current

- Advisor: Prof. [Chulhee Yun](#) (Optimization & Machine Learning ([OptiML](#)) Laboratory, Kim Jaechul Graduate School of AI (GSAI), KAIST)

### Korea Advanced Institute of Science and Technology (KAIST)

Daejeon, Republic of Korea

B.Sc. in Mathematical Sciences

Mar. 2017 - Feb. 2022

- Minor in Computer Sciences
- Summa Cum Laude (GPA: 4.05/4.3)

### University of Twente

Enschede, Netherlands

Exchange Student Program

Feb. 2020 - Jul. 2020

- Major in Applied Mathematics

### Incheon Science High School

Incheon, Republic of Korea

High School

Mar. 2015 - Feb. 2017

- Early Graduation

## Publication

### INTERNATIONAL CONFERENCES/JOURNALS

- [Cho, Hanseul](#) and [Chulhee Yun](#). SGDA with shuffling: faster convergence for nonconvex-P $\epsilon$  minimax optimization. **ICLR 2023**. [[OpenReview](#)] [[arXiv](#)]

### DOMESTIC CONFERENCES/JOURNALS

- [Cho, Hanseul](#) and [Chulhee Yun](#). SGDA with shuffling: faster convergence for nonconvex-P $\epsilon$  minimax optimization. Short version in 2022 [Korea AI Association](#) + [NAVER Autumnal Joint Conference \(JKAIA 2022\)](#).
  - **NAVER Outstanding Theory Paper Award & Spotlight presentation.**

## Experiences

### Machine/Deep Learning Theory + Physics (MDLTP) Seminar

Seoul, Republic of Korea

(Co-)Organizer

Jul. 2022 - Current

- Homepage: [sites.google.com/view/mdlt-p](https://sites.google.com/view/mdlt-p)
- Jointly organized by [OSI Lab](#), [OptiML](#), and [CSSPL](#)
- Topics: Learning theory, loss landscape, trajectory analysis, (stochastic) optimization, high-dimensional statistics, statistical/mathematical physics, scientific machine learning, and more.

### KAIST 2021 Post-AI Research Project

Daejeon, Republic of Korea

Undergraduate Researcher

May 2021 - Dec. 2021

- Jointly advised by [Prof. Sangyoon Yi](#) ([SOIL Lab](#), GSFS, KAIST) & [Prof. Jinkyoo Park](#) ([Sys. Int. Lab](#), ISyE, KAIST)
- Project: Research on 'AI-augmented Organizations' of Collaborative Decision Making and Learning
- Contribution: (1) Devised a model-based randomized algorithm for single-player finite-horizon NK landscape optimization game; (2) Conducted some experiments on human-AI cooperation based on the algorithm that I devised

## Korea Advanced Institute of Science and Technology (KAIST)

Daejeon, Republic of Korea

Individual Study

Mar. 2021 – Jun. 2021

- Advised by Prof. Jinwoo Shin (ALIN Lab, GSAI, KAIST)
- Learned: (1) gradient-based optimizers for large-batch setting (e.g., LARS & LAMB); (2) theoretical analysis on gradient clipping

## Korea Advanced Institute of Science and Technology (KAIST)

Daejeon, Republic of Korea

Individual Study

Sep. 2020 – Feb. 2021

- Advised by Prof. Jong-chul Ye (BISPL, BBE, KAIST)
- Assignment: Semantic Segmentation of Kidney Tumor with U-Net (with KiTS19 Challenge Dataset)

## Korea Advanced Institute of Science and Technology (KAIST)

Daejeon, Republic of Korea

Individual Study

Jun. 2020 – Aug. 2021

- Advised by Prof. Yeonseung Chung (MAS, KAIST)
- Study: Statistical Learning Theory

## Awards

2022	<b>NAVER Outstanding Theory Paper Award</b> , JKAIA 2022	Republic of Korea
2022	<b>Summa Cum Laude</b> , Bachelor's, KAIST	Republic of Korea
2017 – 2020	<b>The National Scholarship for Science and Engineering</b> , Korea Student Aid Foundation	Republic of Korea
2017 Fall	<b>Dean's List</b> , The School of Freshman, KAIST	Republic of Korea

## Skills

<b>Programming</b>	Familiar: Python (PyTorch, NumPy, Scikit-learn, Jupyter, Pandas, etc.), MATLAB.    Novice: C, C++, R, HTML/CSS, Scalar
<b>Miscellaneous</b>	Familiar: $\text{\LaTeX}$ (Overleaf/VSCode), Git, Microsoft Office.    Novice: Adobe (Lightroom, Premiere Pro, After Effects, Photoshop).

## Languages

<b>English</b>	Sufficient for academic activities: TOEIC score 925 (LC 460, RC 465) (2021.04.11)
<b>Korean</b>	Native proficiency
<b>Others</b>	Had some introductory courses on French, German, Classical Latin, & Chinese.