

SIMO RYU

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HONORS AND AWARDS

2021 Google HashCode Qualification Round <u>4th Place in South Korea (55th Place WorldWide), Team <i>boots jeon cats</i></u>	Spring 2021
2020 Google HashCode Qualification Round <u>2nd Place in South Korea (61th Place WorldWide), Team <i>boots jeon cats</i></u>	Spring 2020
Jane Street Virtual Electronic Trading Challenges <u>1st Place WorldWide (APAC Region), Team SSSG</u>	Fall 2023
2021 MAIC Sleep AI Challenge <u>8th Place, Team <i>BOREL</i></u>	Spring 2021
ICPC Seoul Regional <u>17th Place, Team <i>Amoeba</i></u>	Winter 2020
ICPC Seoul Regional <u>28th Place, Team <i>Cat Is All You Need</i></u>	Winter 2021
2021 University Students Contest of Mathematics (2nd Track) <u>Silver Award</u>	Winter 2021
2019 University Students Contest of Mathematics (2nd Track) <u>Silver Award</u>	Fall 2019
Samsung AI Challenge for Scientific Discovery <u>12th Place</u>	Fall 2021
Graduation Thesis on Mathematics (Seoul Science High School) <u>Grand Prize</u>	Winter 2018
Research Project Competition on Mathematics (Seoul Science High School) <u>Grand Prize, Team participation</u>	Winter 2017
2019 KCPC (1st Track) <u>Excellence award</u>	Winter 2019
31th Korean Mathematical Olympiad Silver Prize	Winter 2017
30th Korean Mathematical Olympiad Gold Prize	Winter 2016

EDUCATION

Korea Advanced Institute of Science & Technology (KAIST) M.S. in Mechanical Engineering Advisor : Jemin Hwangbo	March 2023 – Present Daejeon, Korea
Korea University Double Major : Cyber Defense & Business School GPA : 3.88/4.5	March 2019 – February 2023 Seoul, Korea
Seoul Science High School	March 2016 – December 2018 Seoul, Korea

WORK EXPERIENCE

Research Intern

Korea University Department of Information Security, SPAI Lab

January 2020 – December 2020

Seoul, Korea

- Worked as research intern. Research on graph based mutual information model and sentiment analysis of major cryptocurrencies.
- Skillset : Spectral Graph theory, Information theory, Pytorch, Huggingface, networkx

Machine Learning Engineer

Corca AI

April 2021 – November 2022

Seoul, Korea

- Promotion Optimization: Developed and deployed mixture of Deep learning and optimization algorithm for retail supply prediction and promotion optimization. Created over 5% increase in gross profit
- DSP-Side Advertisement Auction Bidder : Developed Multitasking CTR prediction model and control-based algorithm for calibrated & provably optimal bidder
- Skillset : Time series forecasting, Neural ODE, Convex optimization (& Mixed Integer Programming), ONNX, Pytorch, GCP

Machine Learning Engineer (Contract Work)

Replicate

January 2022 – February 2023

Berkeley, US (Remote)

- Deploy and manage Parameter-efficient fine-tuning of Stable Diffusion model to the cloud, enabling customization of stable-diffusion with warm-starting cloud instances.

Machine Learning Engineer

Naver

Septemb 2023 – Present

Seoul, Korea

- Reinforcement Learning From Human Feedback on Korean Language Model, Hyperclova-X. Experimented & enhanced ReST, PPO, and various analysis on the language agent.

PROJECTS

Efficient Storage of Fine-Tuned Models via Low-Rank Approximation of Weight Residuals

Simo Ryu, Seunghyun Seo, Jaejun Yoo

Preprint

Using Low-rank adaptation to quickly fine-tune diffusion models (5.8K ☆)

Open source project. We adapted parameter-efficient fine-tuning (LoRA) that was explored in LLMs for diffusion models.

Paint-with-words, with Stable Diffusion (564 ☆)

Open source project. We adapted paint-with-word trick from ediff-I with stable-diffusion.

SKILLS

Languages: Korean(Native), English (Fluent, TOEIC score 970)

Algorithms, Problem Solving: C/C++

Machine Learning: Pytorch, Pytorch-lightning, Huggingface, LightGBM, onnx, BentoML

Optimization: or-tools

Web Frontend: React, Gatsby, Threejs (novice)

Web Backend: Django, Nestjs, FastAPI (novice)

Accelerated Programming, DSL:CUDA, Triton