

Donghyun Son

happydh1@snu.ac.kr / Google Scholar / Personal Website

EDUCATION

University of Texas at Austin , Exchange Student, Computer Science	Sep 2025 — Present
Seoul National University , B.S. in Computer Science	March 2018 — Feb 2026 (expected)
Three-year leave of absence for mandatory military service, served as an industrial technical personnel	
• GPA: 4.04/4.3 (4.11/4.3 in major), expected to graduate <i>Summa Cum Laude</i>	
• Relevant Coursework: Scalable High-Performance Computing (Graduate Course; 1st out of 100+ students in CUDA competition); Natural Language Processing (Graduate Course); Computer Vision; Mathematical Statistics; Linear Algebra;	

EXPERIENCE

Undergraduate Researcher	August 2025 — Present
UTNS Research Group @ UT Austin	Austin, Texas
Supervised by Prof. Aditya Akella	
• Researching agentic systems for efficient multi-agent coordination and resource management	
Undergraduate Research Intern	September 2024 — August 2025
CMALab @ SNU	Seoul, South Korea
Supervised by Prof. Sungjoo Yoo	
• Investigated a calibration-free vector quantization method for KV cache, incorporating a novel normalization algorithm and efficient CUDA kernels for 1–2 bit inference (NeurIPS25).	
Machine Learning Engineer, Moderation ML Team	March 2022 — July 2023
Hyperconnect (Acquired by Match Group)	Seoul, South Korea
• Developed an ML-based system for moderating images and audio across Match Group brands (e.g., Tinder, Hinge)	
• Designed an efficient human-in-the-loop system for content moderation, managing AI flywheel	
• Devised a threshold optimization algorithm based on GD to optimize the tradeoff between reliability and cost (WSDM23, Oral)	
• Proposed a training algorithm for ML models to generalize effectively across different services and domains (OOD-CV@ICCV23)	
Research Engineer, R&D Team	August 2020 — March 2022
VisualCamp	Seoul, South Korea
• Designed and implemented modern C++ based multi-threaded ML inference pipeline for gaze estimation SDK	
• Built a robust training procedure to train an appearance-based gaze estimation model and improved accuracy by 30%	
• Proposed a transformer-based calibration algorithm that predicts user-specific latent vectors using users' samples	

PUBLICATIONS

NSNQuant: A Double Normalization Approach for Calibration-Free Low-Bit Vector Quantization of KV Cache

Donghyun Son, Euntae Choi, Sungjoo Yoo

Advances in Neural Information Processing Systems (NeurIPS 2025, to appear)

In-Context Learning with Noisy Labels

Junyong Kang, Donghyun Son, Hwanjun Song, Buru Chang

Preprint

Gradient Estimation for Unseen Domain Risk Minimization with Pre-Trained Models

Byounggyu Lew[†], Donghyun Son[†], Buru Chang

Workshop and Challenges for Out-of-Distribution Generalization in Computer Vision @ ICCV2023 (OOD-CV@ICCV23)

Looking to Personalize Gaze Estimation Using Transformers

Seung Hoon Choi, Donghyun Son, Yunjong Ha, Seonghun Hong, Taejung Park

Journal of Computing Science and Engineering (JCSE), Vol. 17, No. 2, pp.41-50

Reliable Decision from Multiple Subtasks through Threshold Optimization: Content Moderation in the Wild

Donghyun Son[†], Byounggyu Lew[†], Kwanghee Choi[†], Yongsu Baek, Seungwoo Choi, Beomjun Shin, Sungjoo Ha, Buru Chang

ACM International Conference on Web Search and Data Mining (WSDM 2023, Oral)

PATENTS

Apparatus and Method for Setting Criteria on Data Classification

Yong Su Baek, Dong Hyun SON, Beom Jun Shin, Byoung Gyu Lew, Bu Ru CHANG, Kwang Hee CHOI, Seung Woo Choi, Sung Joo Ha
US Patent Application No. 18/542,409 (2024)

Apparatus for Domain Generalization of Machine Learning Models, Methods and Computer Readable Recording Mediums Therefor

Bu Ru CHANG, Byoung Gyu Lew, Dong Hyun SON
US Patent Application No. 18/466,617 (2024)

HONORS & AWARDS

Programming Contests

- **2nd prize**, at Union of Clubs Programming Contest (UCPC) 2025
- **5th prize**, at Samsung Collegiate Programming Contest (SCPC) 2021
- **5th place**, at ICPC NERC Huawei Challenge 2020: Cloud Scheduling Challenge
- **1st place**, at Seoul National University Programming Contest (SNUPC) 2019, div. 2

Scholarships

- **Samsung Software Membership**, from Samsung Research (November 2021 — Present)
- **Korea-U.S. STEM Student Exchange Scholarship (\$9000)**, from Ministry of Trade, Industry and Energy (2025.09)
- **Full Tuition Academic Scholarship** (merit-based, \$2300), from Seoul National University (2020-1, 2023-2, 2024-1, 2024-2)

Others

- **4th place**, at CXR-LT Challenge Task 1 (MICCAI 2024)
- **Bronze Prize**, at 42nd Undergraduate Mathematics Contest div.1 (for mathematical majors)
- **Microsoft Azure Champ Prize : Hack For Social Good**, at TartanHacks 2021 in CMU
- **Best Paper Award**, at Human & Cognitive Language Technology (HCLT) 2020
- **Silver Prize**, at The International Mathematics Tournament of the Towns (ToT) 2015

PRESENTATIONS

- **KV Cache Compression for Long Context Inference**, Weekly Seminar @ Deepest S16 (January 2025)
- **Efficient Algorithms for LLM Inference**, Weekly Seminar @ Deepest S15 (July 2024)

ADDITIONAL INFORMATION

Interests: Table Tennis, Math Puzzles, Mind Sports (4 Dan in Go)

Technical Skills: C++, Python, Pytorch, Tensorflow, Jax, CUDA, OpenCL, MPI, OpenMP

Problem Solving: Codeforces (handle: **diordhd**, rating: 2200+) / BOJ (handle: **dhdroid**)

TOEFL iBT: 108 (R29/L29/S22/W28)