Kyeongin Hong

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Education

Seoul National University Mar 2021 – Feb 2025

B.S. in Industrial Engineering

- GPA: 3.89/4.00 (2nd of 38 graduating students); Summa Cum Laude
- **Undergraduate thesis:** *Heuristic Algorithm for Efficient Bundle-Delivery Route Design in a Multi-Modal PDPTW*
  - Designed heuristic filters for partial routes and bundles, reducing candidates by 77% and runtime by 47% on a 300-order instance, with no observed change in average delivery cost
- **Selected coursework:** Operations Research I & II, Linear and Nonlinear Optimization, Graph Theory†, Mathematical Analysis, Engineering Mathematics I (Linear Algebra), Engineering Mathematics II (Probability), Introduction to Algorithms, Inventory Management†, Scalable High-Performance Computing†

† Graduate-level course

Academic Training

Faculty-Guided Reading Seminars

Advised by Prof. Boram Park (Seoul National University)

- Delivered 30+ two-hour presentations using original slides reconstructing proofs and solutions to problems
- Discussed the material with PhD students at Seoul National University and researchers from the Korea Institute for Advanced Study (KIAS)

Combinatorics Jan 2025 – Dec 2025

A Course in Combinatorics, J. H. van Lint and R. M. Wilson, 2nd ed.

- **Selected topics:** matching and systems of distinct representatives; network flows and integrality; Dilworth's theorem and extremal set theory; combinatorial designs; projective and combinatorial geometry

Matroid Theory Jan 2026 – Aug 2026

Matroid Theory, James Oxley, 2nd ed.

- **Selected topics:** greedy optimization and transversal matroids; representability, regular matroids, and total unimodularity; higher connectivity; Seymour's decomposition theorem

Work Experience

Research Engineer, ML Optimization Feb 2025 – Present

ENERZAi R&D Center — Seoul, Korea

- Served under Korea's Industrial Technical Personnel program in lieu of mandatory military service
- Optimized on-device ML inference through model training, kernel optimization, and development of runtime components and compiler passes

YOLOv8n Inference Optimization on CPU

- Developed a mixed-precision INT4/INT8 QAT pipeline and optimized ARM NEON kernels for YOLOv8n
- Improved COCO mAP from 23.0% with PTQ to 34.2% with QAT. Reduced end-to-end latency by 18.5% and peak memory usage by 52% relative to TFLite INT8

Qwen3-0.6B Inference Optimization on GPU

- Designed and implemented OpenCL kernels and GPU execution paths for W1.58 inference on Mali-G610
- Achieved 5.8× speedup in time to first token and 4.3× in token generation over llama.cpp W4

Teaching Experience

Tutor, Operations Research I Sep 2024 – Dec 2024
Seoul National University

- Selected for a paid departmental tutoring role to lead ten weekly two-hour group tutorials on concepts and problem-solving
- **Selected topics:** simplex and LP duality; shortest paths and flows; integer programming and branch-and-bound

Private Mathematics Instructor Feb 2023 – Dec 2024
Independent

- Provided 500+ hours of small-group instruction for mathematically advanced middle school students
- Created original problem sets and examinations emphasizing mathematical reasoning and proof

Teaching Assistant, SNU AI & Big Data Camp Jan 2024

- Assisted high-school students with Python and Selenium exercises in dynamic web crawling

Leadership and Service

SNU College of Engineering Student PR Group "Gongsang" Mar 2021 – Feb 2024
Member (Operations Team: Mar 2022 – Feb 2023)

- Produced science and technology content and organized the SNU Engineering Frontier Camp, mentoring high-school students

Student Council, Department of Industrial Engineering Jan 2022 – Dec 2022
Member

- Planned student programs and helped relaunch *IE Night*, a department-wide student–alumni event

Honors and Awards

Semifinalist, Optimization Grand Challenge 2024 – KIIE, LG CNS Oct 2024

Kwanjeong Foundation Scholarship, Full tuition and living stipend Mar 2023 – Feb 2025

SNU Alumni Association Scholarship, Full tuition Mar 2022 – Feb 2023

Technical Skills

Programming: C, C++, Python

Optimization: Gurobi, FICO Xpress

Scientific & ML Computing: NumPy, PyTorch, TensorFlow

Parallel & Low-Level Computing: Arm Neon, CUDA, Vulkan, OpenCL, MPI

Language Proficiency

English: TOEFL iBT 5.5/6.0

Japanese: JLPT N2

Korean: Native

Research Interests

Combinatorial optimization using combinatorial structure and polyhedral methods. Interests include LP formulation and strengthening, integrality and objective-dependent exactness, and fractional extreme-point analysis for approximation algorithms. Applications of interest include transportation and logistics.