Changwon Lee

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Overview

I am a **MS–Research** student in the Department of Industrial and Systems Engineering at the University of Wisconsin–Madison, advised by Professor Jeff Linderoth.

My research interest lies at the **intersection of mathematical optimization and machine learning**, with a recent focus on analyzing mixed-integer linear programming (MILP) aspects in simple neural networks.

Education

University of Wisconsin-Madison, Madison, WI ⟶ Aug 2024 – May 2026
MS-Research in Industrial Engineering ⟶ (Expected)

- Advised by Jeff Linderoth
- GPA: 3.83/4.0 (in progress)
- **Coursework:** Linear Opt(**ranked top**), Integer Opt, Combinatorial Opt, Adv Topics in Nolinear Opt, Mathematical&Theorerical Foundation of ML, Dynamic Programming, Nonparametric Methods for Data Science

Seoul National University, Seoul, Republic of Korea ⟶ Mar 2017 – Feb 2024
B.S. in Industrial Engineering ⟶ (Mandatory Military Leave: Sep 2019-Feb 2021)

University of New South Wales, Sydney, Australia ⟶ Sep 2022 – Dec 2022
Exchange Student, Engineering

Research Interest

Optimization, Mixed Integer Programming, Machine Learning, Reinforcement Learning, Bandit Algorithm, Nonparametric Methods, Scalability of Discrete Optimization techniques in ML problems

Current Research Project: ⟶ github.com/changwon22/Maximizing-Sparsity-in-
Compressing Sparse Neural Network using MIP ⟶ NN-with-MIP

Experience

MS-Research Student, UW-Madison ⟶ Sep 2024 – Present
Linderoth Optimization Group

- **Applying MIP formulations in sparsifying Neural Network problem**
- Explored reinforcement-learning-based approaches for branching rule in general MIP
- Finding empirically optimal stepsizes in two-stage stochastic optimization

Full-Time Engineer, Samsung Electronics ⟶ Mar 2024 – Jun 2024
DRAM Product Engineering Team

- Data processing in DRAM manufacturing

Undergraduate Research Intern, SNU ⟶ Jul 2023 – Aug 2023
Operations Management Lab

- Analyzed inventory management and operational decision-making under uncertainty of non i.i.d. demand

Scholarships & Awards

Fulbright U.S.–Korea Presidential STEM Initiative Award ⟶ Aug 2024-May 2026
$100,000, Fulbright, USA

Academic Scholarship, Seoul National University ⟶ Sep 2017 – Feb 2019

Conferences

2025 Informs Annual Meeting, Atlanta, GA - Attendee	Oct 2025
Midwest ML Symposium 2025, U of Chicago - Attendee	Jun 2025
MIP Workshop 2025, U of Minnesota - Attendee	Jun 2025
Midwest Optimization&Statistical Learning 2025, Northwestern University - Attendee	May 2025

Visiting Programs & Services

INFORMS UW-Madison Student Chapter, Secretary	Fall 2025-Present
Technion, Haifa, Israel Summer in Entrepreneurship & Internship	Summer 2019
SNU Creative California Program, UCI & USC	Winter 2018
Sergeant, Republic of Korea Army — Signaller	Sep 2019 – Apr 2021
Peer Tutor, Seoul National University Introductory & Intermediate Korean	Spring 2019

Projects

UW-Madison

Active Learning in Sparse Neural Network, (ISyE 723 DP)	Fall 2025

- Applied approximate DP in an active data labeling problem in Sparse Neural Network

Extending CP-HiFi Decomposition for Quasitensors	Spring 2025

- (CS 761 Mathematical Foundation for ML) Extended the noise distributions and smoothing techniques generally

SNU

- **Commute Time Reduction Effect of "Sillim Line (Subway)" using Arena** *Course: Simulation*
- **Electric Vehicle Delivery Delay Analysis due to Semiconductor Crisis (COVID-19)** *Course: Logistics Management*
- **Map-Based Seoul Monthly Rent and Lease Information Services** *Course: Industrial Applications of Big Data*
- **Machine Learning of "Yut Nori" Game Agent Using DQN** *Course: Data Science and Reinforcement Learning*

Selective Courses Taken

Optimization/Operations Research:

(UW-Madison) LP(**ranked top**), IP, Combinatorial Opt, Adv topics in Nonlinear Opt, Dynamic Programming, Stochastic Programming(Audit)
(SNU) Linear and Nonlinear Optimization, Convex Optimization (Graduate), OR1(Linear / Nonlinear / Integer Programming), OR2(Stochastic Process, MDP), Production Control, Logistics Management, Simulation(ARENA), Production Planning and Control (Graduate), Strategic Planning and Control (Graduate)

Mathematics / Statistics:

(SNU) Mathematical Analysis, Introduction to Linear Algebra, Theory of Sets, Statistics for Industrial Engineering, Engineering Mathematics I (Linear Algebra), Engineering Mathematics II (Stochastic Distribution), Calculus I&II, Statistics&Lab

AI/ML/DS:

(UW-Madison) Mathematical Foundation of ML, Theoretical Foundation of ML, Nonparametric Methods for Data Science(Audit)
(SNU) Introduction to Computing for Industrial Engineering, Data Management and Analysis(SQL), Industry Applications of Big Data, Data Science and Reinforcement Learning (Graduate)

Languages & Skills

Programming: Python, PyTorch, TensorFlow (Proficient)
R, C#, Arena, Gurobi, SCIP, Xpress-MP, LaTeX (Working Knowledge)

Languages: English (Fluent), Korean (Native)