HYEONAH KIM

Ph.D. Candidate
Department of Industrial and Systems Engineering
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RESEARCH INTEREST AND SKILLS

Interests: Deep learning, combinatorial optimization, chemical discovery, routing problems, integer programming
Skills: Python, PyTorch, julia, Gurobi, PL/SQL

EDUCATION

3/2021 - 2/2025 (expected) **Ph.D. Candidate in Industrial and Systems Engineering** — **KAIST**
System Intelligence Lab. & Computational Optimization Methods Lab.

3/2019 - 2/2021 **MS in Industrial Engineering** — **Seoul National University**
Optimization and Operational Research Lab.

3/2011 - 2/2015 **BS in Industrial Engineering** — **Hanyang University**
Information Design Lab.

IN PROGRESS

Under review **Ant Colony Sampling with GFlowNets for Combinatorial Optimization [arXiv]**
Minsu Kim*, Sanghyeok Choi*, Hyeonah Kim, Jiwoo Son, Jinkyoo Park, Yoshua Bengio

CONFERENCE

NeurIPS, 2024 **Genetic-guided GFlowNets for Sample Efficient Molecular Optimization [arXiv]**
Hyeonah Kim, Minsu Kim, Sanghyeok Choi, Jinkyoo Park

NeurIPS, 2024 (Workshop) **Improved Off-policy Reinforcement Learning in Biological Sequence Design [arXiv]**
NeurIPS 2024 Workshop: AI for New Drug Modalities (AIDrugX)
Hyeonah Kim, Minsu Kim, Taeyoung Yun, Sanghyeok Choi, Emmanuel Bengio, Alex Hernández-García, Jinkyoo Park

INFORMS, 2024 **Neural Genetic Operators for the Traveling Salesmen Problem**
Hyeonah Kim, Jaehyeok Lee, Jinkyoo Park, Changhyun Kwon

ICML, 2024 **Symmetric Replay Training: Enhancing Sample Efficiency in Deep Reinforcement Learning for Combinatorial Optimization [arXiv]**
Hyeonah Kim, Minsu Kim, Sungsoo Ahn, Jinkyoo Park

AAAI, 2024 **Equity-Transformer: Solving NP-hard Min-max Routing Problems as Sequential Generation with Equity Context [Paper Link]**
Jiwoo Son*, Minsu Kim*, Sanghyeok Choi, Hyeonah Kim, Jinkyoo Park

NeurIPS, 2023 (Workshop) **RL4CO: a Unified Reinforcement Learning for Combinatorial Optimization Library [Paper Link]**
NeurIPS 2023 Workshop: New Frontiers in Graph Learning
Federico Berto*, Chuanbo Hua*, Junyoung Park*, Minsu Kim, Hyeonah Kim, Jiwoo Son, Haeyeon Kim, Joungho Kim, Jinkyoo Park

ICML, 2023 **Meta-SAGE: Scale Meta-Learning Scheduled Adaptation with Guided Exploration for Mitigating Scale Shift on Combinatorial Optimization [Paper Link]**
Jiwoo Son*, Minsu Kim*, Hyeonah Kim, Jinkyoo Park

JOURNAL PUBLICATION

Published online (23 Jan 2024) **A Neural Separation Algorithm for the Rounded Capacity Inequalities [Paper Link]**
INFORMS Journal on Computing (IJOC)
Hyeonah Kim, Jinkyoo Park, Changhyun Kwon

WORK EXPERIENCE

9/2020 – 2/2021 **LGE ERP Manufacturing/Sales** — **LGCNS**
- **Software Engineer.** Developing HLDS (Hitach-LG Data Storage) ERP system
- `Oracle PL/SQL`

1/2015 – 6/2017 **LGE ERP Manufacturing** **LGCNS**

- **Software Engineer.** Developing and maintaining ERP manufacturing system of LG Electronics
- Plan/FP Module
- `Oracle PL/SQL`, `java`

RESEARCH PROJECT

11/2021 – 10/2023 **Learning to schedule multi-service robots using reinforcement learning** **Korea Telecome**

- **Role:** Project leader
- Algorithm design

10/2019 – 12/2019 **Design and implementation of key algorithms for autonomous operation and control of trains based on congestion** **Korea Railroad Research Institute**

- Algorithm design & implementation