SANGHYEOK CHOI
MS student @ KAIST

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🌐 hyeok9855.github.io

RESEARCH INTEREST

Deep learning, generative flow networks, reinforcement learning, deep generative models, probabilistic reasoning, decision-making, and their applications.

EDUCATION

9/2023 - Current	**MS student in Industrial and Systems Engineering**	***KAIST***
	Supervised by Jinkyoo Park.	Current GPA: 4.18/4.3
3/2017 - 8/2023	**BBA and BS in Industrial Engineering**	***Seoul National University***
		Summa Cum Laude, GPA: 4.08/4.3

PUBLICATIONS

*: Equal Contribution

Ant Colony Sampling with GFlowNets for Combinatorial Optimization   *Under review*
Minsu Kim*, <u>Sanghyeok Choi</u>*, Hyeonah Kim, Jiwoo Son, Jinkyoo Park, Yoshua Bengio   *2024*

Genetic-guided GFlowNets: Advancing in Practical Molecular Optimization Benchmark   *Under review*
Hyeonah Kim, Minsu Kim, <u>Sanghyeok Choi</u>, Jinkyoo Park   *2024*

Equity-Transformer: Solving NP-Hard Min-Max Routing Problems as Sequential Generation with Equity Context   *AAAI* *2024*
Jiwoo Son*, Minsu Kim*, <u>Sanghyeok Choi</u>, Hyeonah Kim, Jinkyoo Park

Rl4co: an extensive reinforcement learning for combinatorial optimization benchmark   *Under review*
Federico Berto*, Chuanbo Hua*, Junyoung Park*, Laurin Luttmann, Yining Ma, Fanchen Bu, Jiarui Wang, Haoran Ye, Minsu Kim, <u>Sanghyeok Choi</u>, Nayeli Gast Zepeda, André Hottung, Jianan Zhou, Jieyi Bi, Yu Hu, Fei Liu, Hyeonah Kim, Jiwoo Son, Haeyeon Kim, Davide Angioni, Wouter Kool, Zhiguang Cao, Qingfu Zhang, Joungho Kim, Jie Zhang, Kijung Shin, Cathy Wu, Sungsoo Ahn, Guojie Song, Changhyun Kwon, Kevin Tierney, Lin Xie, Jinkyoo Park   *2023*

Multi-agent reinforcement learning based actuator control for EV HVAC systems   *IEEE Access*
Sungho Joo, Dongmin Lee, Minseop Kim, Taeho Lee, <u>Sanghyeok Choi</u>, Seungju Kim, Jeyeol Lee, Joongjae Kim, Yongsub Lim, Jeonghoon Lee   *2022*

RESEARCH EXPERIENCE

9/2022 – 8/2023	**Undergraduate Resercher**	***Systems Intelligence Lab, KAIST***

· Supervised by Jinkyoo Park.
· Research Area: Neural combinatorial optimization and reinforcement learning
  + Developing and benchmarking learning-based combinatorial optimization solver for routing problems.

| 1/2022 – 8/2022 | **Machine Learning Research Engineer (Intern)** | *MakinaRocks* |

- Research Area: Industrial applications of AI
  - Developing a deep dynamics model with a novel heterogeneous attention-based LSTM architecture (KR Patent 10-2573643-0000).
  - Implementing offline model-based RL algorithms and deploying them to the real-world HVAC system in an electric vehicle.
  - Developing an uncertainty-aware active learning system for real-world data query using Bayesian neural networks.
  - Developing model architectures to solve a real-world PCB-routing problem with RL.

| 3/2021 – 12/2021 | **Undergraduate Researcher** | *Vision & Learning Lab, Seoul National University* |

- Supervised by Gunhee Kim
- Research Area: Natural Language Processing
  - Developing a fact-check model by fine-tuning pre-trained BERT and Electra models.

TEACHING EXPERIENCE

| 3/2024 – 6/2024 | **Teaching Assistant** | *KAIST* |

IE531: Linear programming

OTHER EXPERIENCE

| 3/2019 – 1/2021 | **Military Service** | *R.O.K Airforce* |

| 7/2017 – 12/2017 | **Steering Committee** | *College of Business Administration, Seoul National University* |

| 3/2017 – 8/2023 | **Player** | *SNU Volleyball Team, Seoul National University* |

HONORS & AWARDS

| 7/2020 | **1st place** | *DACON & LG Science Park* |

Competition on Manufacturing Process Optimization with AI

| 5/2020 | **1st place** | *DACON & KIMM* |

Competition on Nowcast Prediction

| 10/2017 | **Bang Il-Young Scholarship** | *The Bang Il-Young Foundation* |

Full-tuition and living stipend for 3 years