

TAEYOUNG YUN

Ph.D student @ KAIST

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🔄 dbxsodud-11

in Taeyoung Yun

🌐 dbxsodud-11.github.io

RESEARCH INTEREST

My research interest lies in solving complex and high-dimensional black-box optimization problems through the lens of conditional generative modeling. I'm interested in Diffusion Models, Generative Flow Networks (GFlowNets), and their applications to real-world tasks, e.g, biological sequence design, material discovery, and mechanical design. I'm also interested in various decision making problems such as bandits, Reinforcement Learning and Multi-Agent RL.

Recently, I found out that many crucial problems in ML can be reduced as a posterior inference problem. To this end, I'm currently interested in developing algorithms for amortizing intractable multi-modal posterior inference that can impact real-world applications.

EDUCATION

- | | | |
|-------------------|--|--------------|
| 03/2024 - Current | Ph.D Student in Industrial and Systems Engineering | KAIST |
| | Supervised by Jinkyoo Park | |
| 08/2022 - 02/2024 | M.S in Graduate School of AI | KAIST |
| | Supervised by Jinkyoo Park
MS Thesis: Offline Meta Black-box Optimization Framework for Intelligent Traffic Light Management System | |
| 03/2018 - 08/2022 | B.S in Industrial and Systems Engineering & Computer Science | KAIST |

INTERSHIPS

- | | | |
|-------------------|--|---------------------|
| 09/2024 - Current | Visiting Intern in HKUST | Remote |
| | Hosted by Ling Pan
Fine-tuning LLM with GFlowNets to generate diverse and effective prompts for text-to-image diffusion models. | |
| 03/2021 - 08/2021 | Research Intern in Kakao Recommendation Team | Seoul, Korea |
| | Develop contextual bandit algorithms for a personal recommendation.
Analyze the gap between simulation and real-world deployment. | |

INDUSTRIAL PROJECTS

- | | | |
|-------------------|---|-----------------------|
| 09/2024 - Current | Traffic Network Layout Optimization | Daejeon, Korea |
| | Collaborate with GS
Develop a Generative model-based design algorithm for optimizing traffic network layout on a given traffic pattern. | |
| 03/2023 - 03/2024 | Incentive Design for Managing Taxi Fleet | Daejeon, Korea |
| | Collaborate with ETRI
Develop an RL-based incentive design algorithm for rebalancing taxi fleets to resolve the taxi imbalance problem. | |
| 03/2022 - 03/2023 | Traffic Light Optimization | Seoul, Korea |
| | Collaborate with KT
Develop a Bayesian optimization algorithm for managing multiple traffic lights in the real world to reduce congestion. | |

PUBLICATIONS

*: Equal Contribution

2025

- Arxiv, 2025 **Posterior Inference with Diffusion Models for High-dimensional Black-box Optimization**
Taeyoung Yun*, Kiyoung Om*, Jaewoo Lee, Sujin Yun, and Jinkyoo Park
Paper / Code
- Arxiv, 2025 **Improved Off-Policy Reinforcement Learning in Biological Sequence Design**
Hyeonah Kim, Minsu Kim, Taeyoung Yun, Sanghyeok Choi, Emmanuel Bengio, Alex Hernández Garcia, and Jinkyoo Park
Paper / Code
- CVPR, 2025 **Learning to Sample Effective and Diverse Prompts for Text-to-Image Generation**
Taeyoung Yun, Dinghuai Zhang, Jinkyoo Park, and Ling Pan
Paper / Code
- ICLR, 2025 **Adaptive Teachers for Amortized Samplers**
Minsu Kim*, Sanghyeok Choi*, Taeyoung Yun, Emmanuel Bengio, Leo Feng, Jarrid Rector-Brooks, Sungsoo Ahn, Jinkyoo Park, Nikolay Malkin, and Yoshua Bengio
Paper / Code

2024

- NeurIPS, 2024 **Guided Trajectory Generation with Diffusion Models for Offline Model-based Optimization**
Taeyoung Yun, Sujin Yun, Jaewoo Lee, and Jinkyoo Park
Paper / Code
- NeurIPS, 2024
(based on ICLRW) **GTA: Generative Trajectory Augmentation with Guidance for Offline Reinforcement Learning**
Jaewoo Lee*, Sujin Yun*, Taeyoung Yun, and Jinkyoo Park
Paper / Code
- KDD, 2024 **An Offline Meta Black-box Optimization Framework for Adaptive Design of Urban Traffic Light Management Systems**
Taeyoung Yun*, Kanghoon Lee*, Sujin Yun, Ilmyung Kim, Won-Woo Jung, Min-Cheol Kwon, Kyujin Choi, Yoohyeon Lee, and Jinkyoo Park
Paper / Code
- ICML, 2024
(based on NIPSW) **Learning to Scale Logits for Temperature-conditional GFlowNets**
Minsu Kim*, Juhwan Ko*, Taeyoung Yun*, Dinghuai Zhang, Ling Pan, Woorchang Kim, Jinkyoo Park, and Yoshua Bengio
Paper / Code
- ICLR, 2024
(Spotlight) **Local Search GFlowNets**
Minsu Kim, Taeyoung Yun, Emmanuel Bengio, Dinghuai Zhang, Yoshua Bengio, Sungsoo Ahn, and Jinkyoo Park
Paper / Code

TEACHING EXPERIENCES

- | | | |
|-----------|---|--------------|
| 2024 | Teaching Assistant | KAIST |
| | IE481: Manufacturing & Artificial Intelligence | |
| 2023,2024 | Teaching Assistant | KAIST |
| | IE437: Data-Driven Decision Making and Control | |
| 2022 | Teaching Assistant | KAIST |
| | MAS480: Introduction to Scientific Machine Learning | |

ACADEMIC SERVICES

2025 **Reviewer**
ICLR, AAMAS, AISTATS, ICML, KDD, TMLR

HONORS & AWARDS

2021 **Dean's List** ***KAIST***
Honor for Top 2% Students

2021 **Excellence Award (2nd Place)** ***Seoul, Korea***
Big Data Competition Hosted by NH