JAEWOO LEE

Ph.D student @ KAIST

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RESEARCH INTERESTS

My research interest lies in aligning generative models with human intention through the principles of reinforcement learning and probabilistic inference. I enjoy applying aligning techniques to real-world application such as visual generation [1,4,5], robotics control [1,8], and biological sequence design [4,7,9]. Recently, I have been focusing on aligning a few-step generative model for physical agents and scientific discovery.

EDUCATION

3/2025 - Current **Ph.D Student in Industrial and Systems Engineering** ***KAIST***

Supervised by Jinkyoo Park.

3/2023 - 2/2025 **M.S in Graduate School of Artificial Intelligence** ***KAIST***

Supervised by Jinkyoo Park.
Thesis: Generative Data Augmentation Method for Suboptimal Control Data

3/2016 - 2/2022 **B.S in Mechanical Engineering** ***Sungkyunkwan University***

Including 2 years of military service

PUBLICATIONS

*: Equal Contribution

[1] Aligning Few-Step Generative Models by Amortizing Sample-based Variational Inference *SPIGM@ICML 26*

Jaewoo Lee*, Hyeongyu Kang*, Dohyun Kim, Kyuil Sim, Woocheol Shin, Minsu Kim, Taeyoung Yun, Jeongjae Lee, Sanghyeok Choi, Tabitha Edith Lee, Jongchul Ye, Jinkyoo Park

`Link to paper/code`

[2] Automated Kernel Discovery Towards Understanding High-dimensional Bayesian Optimization *DEMO@ICML 26*

Taeyoung Yun, Woocheol Shin, Inhyuck Song, Jaewoo Lee, Jinkyoo Park

`Link to paper`

[3] Robust Exploration through Generative Replay *RLxF@ICML 26*

Inhyuck Song, Inhyuck Song, Taeyoung Yun, Jaewoo Lee, Jinkyoo Park

[4] Diffusion Alignment as Variational Expectation-Maximization *ICLR 26*

Jaewoo Lee, Minsu Kim, Sanghyeok Choi, Inhyuck Song, Sujin Yun, Hyeongyu Kang, Woocheol Shin, Taeyoung Yun, Kiyoung Om, Jinkyoo Park

`Link to paper/code`

[5] Diffusion Fine-Tuning via Reparameterized Policy Gradient of the Soft Q-Function *ICLR 26*

Jaewoo Lee*, Hyeongyu Kang*, Woocheol Shin*, Kiyoung Om, Jinkyoo Park

`Link to paper/code`

[6] Adaptive Replay Buffer for Offline-to-Online Reinforcement Learning *AISTATS 26*

Chihyeon Song, Jaewoo Lee, Jinkyoo Park

`Link to paper`

[7] Posterior Inference with Diffusion Models for High-dimensional Black-box Optimization *ICML 25* *FPI@ICLR 25*

Taeyoung Yun*, Kiyoung Om*, Sujin Yun, Jaewoo Lee, Jinkyoo Park

Link to paper/code

[8] GTA: Generative Trajectory Augmentation with Guidance for Offline Reinforcement Learning *NeurIPS 24* *Gen4DM@ICLR 24*

Jaewoo Lee*, Sujin Yun*, Taeyoung Yun, Jinkyoo Park

Link to paper/code

[9] Guided Trajectory Generation with Diffusion Models for Offline Model-based Optimization *NeurIPS 24*

Taeyoung Yun, Sujin Yun, Jaewoo Lee, Jinkyoo Park

Link to paper/code

WORKING EXPERIENCES

3/2023 - Current **Cofounder & Research Engineer** ***MongooseAI***

Designing an LLM agent for analyzing manufacturing big data
Developing a prognostic health management system for rotating machinery
Project management of building MLOps system for semiconductor tools

2/2022 - 2/2023 **Software Engineer** ***Samsung Electronics, AI Center***

Administering database system for semiconductor manufacturing

7/2021 - 8/2021 **Intern Data Scientist** ***Samsung Electronics, AI Center***

Analyzing manufacturing log data for process lead time optimization

HONORS & AWARDS

9/2021 **Dean's list** ***Sungkyunkwan University***

Honor for academic excellence

9/2021 **Engineering Innovation Award** ***Sungkyunkwan University***

AI-driven remote control system for surgical robot

2/2021 **3rd place** ***Korea Shipbuilding and Offshore Engineering***

Competition on manufacturing process optimization with AI

9/2020 **Dean's list** ***Sungkyunkwan University***

Honor for academic excellence

OTHER EXPERIENCE

3/2021 – 2/2022 **Team Leader** ***Student Club of AI, Sungkyunkwan University***

12/2020 – 2/2021 **Intern Researcher** ***Biomedical Modeling & Control Lab, Seoul National University***

7/2017 – 3/2019 **Military Service** ***Republic of Korea Army***