Geon Yeong Park

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Research interests

I am especially interested in (**a**) improving the learning of representations, and (**b**) leveraging these intermediate representations for controlling AI systems. My recent research focuses on controlling the diffusion generative process by exploiting latent representations or denoised estimates, with the goal of improving the conditional generative process and multi-modal representation alignment. Additionally, I am interested in developing robust representations to handle various distribution shifts.

• Generative models: Diffusion models and their applications (Editing, Conditional generation, Distillation, Inverse imaging, etc).
• Multi-modal learning: Text, Image, Video, 3D, etc.
• Robust representation learning: Adversarial training, Debiasing, etc.

Education

KAIST Daejeon, Korea
Ph.D., Bio & Brain Engineering 2022.03 - 2026.02 (Expected)
Advisor: Jong Chul Ye, Sang Wan Lee

KAIST Daejeon, Korea
MS, Bio & Brain Engineering 2019.03 - 2021.02
Advisor: Sang Wan Lee

KAIST Daejeon, Korea
BA in Bio & Brain Engineering, minor in Computer Science 2014.03 - 2019.02
GPA: 3.8 / 4.3 (Cum Laude)

Publications

[**C7**] **VMC: Video Motion Customization using Temporal Attention Adaption for Text-to-Video Diffusion Models**
Hyeonho Jeong*, Geon Yeong Park*, Jong Chul Ye
CVPR 2024

[**C6**] **Contrastive Denoising Score for Text-guided Latent Diffusion Image Editing**
Hyelin Nam, Gihyun Kwon, Geon Yeong Park, Jong Chul Ye
CVPR 2024

[**C5**] **Self-supervised debiasing using low rank regularization**
Geon Yeong Park, Chanyong Jung, Sangmin Lee, Jong Chul Ye, Sang Wan Lee
CVPR 2024

[**C4**] **Energy-Based Cross Attention for Bayesian Context Update in Text-to-Image Diffusion Models**
Geon Yeong Park*, Jeongsol Kim*, Beomsu Kim, Sang Wan Lee, Jong Chul Ye
NeurIPS 2023

[**C3**] **Training Debiased Subnetworks with Contrastive Weight Pruning**
Geon Yeong Park, Sangmin Lee, Sang Wan Lee, Jong Chul Ye
CVPR 2023

[**C2**] **Reliably fast adversarial training via latent adversarial perturbation**
Geon Yeong Park, Sang Wan Lee
ICCV 2021 (Oral)

[**C1**] **Information-theoretic regularization for Multi-source Domain Adaptation**
Geon Yeong Park, Sang Wan Lee
ICCV 2021

[**J1**] **Task complexity interacts with state-space uncertainty in the arbitration between model-based and model-free learning**
Dongjae Kim, Geon Yeong Park, John P. O'Doherty, Sang Wan Lee
Nature Communications, 2019

Preprints

[**P6**] **CFG++: Manifold-constrained Classifier Free Guidance For Diffusion Models**
Hyungjin Chung*, Jeongsol Kim*, Geon Yeong Park*, Hyelin Nam*, Jong Chul Ye
arxiv:2406.08070v1, 2024.

[**P5**] **Spectral Motion Alignment for Video Motion Transfer using Diffusion Models**
Geon Yeong Park*, Hyeonho Jeong*, Sang Wan Lee, Jong Chul Ye.
arxiv:2403.15249, 2024.

[**P4**] **DreamMakeup: Face Makeup Customization using Latent Diffusion Models**
Geon Yeong Park*, Inhwa Han*, Serin Yang*, Seongmin Jeong, Heechan Jeon, Myeongjin Goh, Sung Won Yi, Jin Nam, Jong Chul Ye
To appear, 2024.

[**P3**] **DreamSampler: Unifying Diffusion Sampling and Score Distillation for Image Manipulation**

Jeongsol Kim*, Geon Yeong Park*, Jong Chul Ye.
arxiv:2403.11415, 2024.

[**P2**] **DreamMotion: Space-Time Self-Similarity Score Distillation for Zero-Shot Video Editing**
Hyeonho Jeong, Jinho Chang, Geon Yeong Park, Jong Chul Ye.
arxiv:2403.12002, 2024.

[**P1**] **Regularization by Texts for Latent Diffusion Inverse Solvers**
Jeongsol Kim*, Geon Yeong Park*, Hyungjin Chung, Jong Chul Ye.
arxiv:2311.15658, 2024.

Experience

Promedius, Research Scientist Intern — Seoul, Korea
Developing generative models for CT normalization. — Spring 2021

Looxid labs, Research Scientist Intern — Seoul, Korea
Developing ECG signal toolkit embedded in VR machine. — Winter 2019

NAVER Clova, Intern — Seongnam, Korea
Service planning on AI-empowered speaker. — Summer 2018

Honors

3rd, Samsung Humantech Paper Award (**$5,000**) — 2024
Diamond rank, KAIST leadership mileage — 2019
National Science & Engineering Scholarship — 2017-2019

Teaching experience

Head TA, KAIST AI Research Internship (KAIRI)
Tutorials on diffusion model and its applications — Spring 2024, Fall 2023

TA, Bio Data Structures — Fall 2020

TA, Bioengineering Laboratory — Spring 2020, 2022, 2023

Patents

Multi-source Domain Adaptive Training Based on Single Neural Network Without Overfitting
Sang Wan Lee, Geon Yeong Park — Dec 2021
US. Patent Application, Filed, No. 17547166
CN. Patent Application, Filed, No. 202111587772.6

Accelerated Adversarial Training Based On Latent Adversarial Perturbation
Sang Wan Lee, Geon Yeong Park — Jun 2021
Korean Patent, Filed, No. 10-2021-0081347

Image Learning Device and Method Using Generative Adversarial Networks

Geon Yeong Park (Work done during an internship at Promedius) Dec 2022

Korean Patent, Filed, No. 10-2477632

Service

Reviewer, CVPR 2024

Reviewer, ECCV 2024

Reviewer, IEEE Transactions on Image Processing (TIP)

Lab manager, BISPL, Sep 2024 - Dec 2024