

Curriculum Vitae/Resume

Donghoon Ahn

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Research Interests

Deep Generative Models, Diffusion Models, Image/Video/3D/4D Generation, Personalization

Focused on integrating fundamental principles of the world into generative models as inductive biases to enhance image, video, and 3D model generation, with the aim of better understanding the real world.

EDUCATION

Korea University

B.S. in Computer Science and Engineering

Two-year break for military service (Fall 2020 — Spring 2022)

2019 — present

GPA: 4.37/4.5 (overall) **4.46/4.5 (major)**

WORK EXPERIENCES

Research Intern, Korea Advanced Institute of Science and Technology (KAIST)

2024 — present

Advised by Prof. Seungryong Kim

Currently researching diffusion models for video generation/personalization and analyzing and developing diffusion guidance methods.

Research Intern, Korea University

2022 — 2024

Advised by Prof. Seungryong Kim

Gained experience conducting independent research as an undergraduate intern over two years. Published papers at NeurIPS 2023 and ECCV 2024. Developed skills in defining research topics, designing experiments, coding, writing papers, and collaborating with peers.

Air Force Information System Management Unit

2020 — 2022

Refactored and developed several intranet systems as a team using the Spring framework during military service.

PUBLICATIONS

Self-Rectifying Diffusion Sampling with Perturbed-Attention Guidance

Donghoon Ahn*, Hyoungwon Cho*, Jaewon Min, Wooseok Jang, Jungwoo Kim, SeonHwa Kim, Hyun Hee Park, Kyong Hwan Jin and Seungryong Kim

European Conference on Computer Vision (ECCV) 2024

Debiasing Scores and Prompts of 2D Diffusion for View-Consistent Text-to-3D Generation

Susung Hong*, **Donghoon Ahn*** (equal contribution), and Seungryong Kim

Advances in Neural Information Processing Systems (NeurIPS) 2023

PREPRINTS

A Noise is Worth Diffusion Guidance

Donghoon Ahn*, Jiwon Kang*, Jaewon Min, Sanghyeon Lee, Wooseok Jang, Minjae Kim, Hyoungwon Cho, Sayak Paul, SeonHwa Kim, Eunju Cha, Kyong Hwan Jin, Seungryong Kim

Arxiv preprint, CVPR 2025 Under Review

Video Camera Trajectory Editing with Generative Rendering from Estimated Geometry

Junyoung Seo*, Jisang Han*, Jaewoo Jung*, Siyoon Jin, JoungBin Lee, Takuya Narihira, Kazumi Fukuda, Takashi Shibuya, **Donghoon Ahn**, Shoukang Hu, Seungryong Kim, Yuki Mitsufuji

CVPR 2025 Under Review

Identity-preserving Distillation Sampling by Fixed-Point Iterator

SeonHwa Kim, Jiwon Kim, Soobin Park, **Donghoon Ahn**, Jiwon Kang, Seungryong Kim, Kyong Hwan Jin, Eunju Cha

CVPR 2025 Under Review

Geometry-Aware Score Distillation via 3D Consistent Noising and Gradient Consistency Modeling

Min-Seop Kwak, **Donghoon Ahn**, Ines Hyeonsu Kim, Jin-Hwa Kim and Seungryong Kim

Arxiv preprint, ICLR 2025

SCHOLARSHIP AND AWARDS

Best Award, Independent Research Competition , Korea University <i>1st place for research on “Self-Rectifying Diffusion Sampling with Perturbed-Attention Guidance”</i>	Spring 2024
Veritas Program Scholarship , Korea University	Spring 2024
Sung Ryun Scholarship Foundation Scholarship (<i>Full Tuition</i>)	Spring 2023, Spring 2024
Chang Gang Foundation Scholarship (<i>Full Tuition</i>)	Fall 2023
Semester High Honors , Korea University	Spring 2019, Spring 2020, Fall 2022, Spring 2023, Fall 2023
Dean’s List , Korea University (<i>GPA: 4.5/4.5</i>)	Fall 2023
Korea University Alumni Association Scholarship (<i>Full Tuition</i>)	Spring 2022

PROJECTS

Improving Diffusion-Based Image Restoration Models with Guidance <i>Collaborative research with Samsung Electronics to enhance camera technologies</i> Conducted research to improve the performance of diffusion model-based inverse problem solvers by applying Self-Attention Guidance (SAG). Resolved challenges in applying SAG, including artifact issues in unguided regions, by introducing innovative solutions such as refined mask edges and an inverted mask. Explored various guidance methods.	2023 — 2024
Improving Disentanglement of Diffusion Models via Gaussian Mixture Attention Guidance <i>Course Project: ‘Introduction to Computer Vision and Its Application’</i> Led a team to address object mixing issues in Stable Diffusion 1.x by following the latest research and defining key problems. Proposed a novel solution using Gaussian Mixture Models (GMM) for unsupervised learning applied to attention maps. Provided tutorials on diffusion models and contributed to coding and report writing.	2023

SERVICE

Open Source Contribution, huggingface/diffusers Collaborated with HuggingFace engineers to integrate Perturbed-Attention Guidance (PAG) into diffusers, significantly enhancing image/video generation quality.	2024
AIKU: Deep Learning Society , Korea University Led a study group on generative models, focusing on diffusion models. Gave an introduction to image generation models and text-to-3D tasks.	2022 — 2023

SKILLS

- **Programming:** Python, PyTorch, C++, JAVA, Kotlin, Scala, SQL
- **Soft Skills:** Experienced in team collaboration and leadership through military service and research projects. Skilled in sharing and developing ideas with colleagues, and capable of leading research projects through task delegation and role distribution.