

INTEREST

Creating Sequential Arts like Comics with Human-Centered AI. Diffusion-based Image Generation. Improving UX of AI-assisted Support Tools. Computer Vision. Interface Design.

EDUCATION

03/2020 – Present **Ulsan National Institute of Science and Technology (UNIST)** Ulsan, Korea
B.S. in progress, *Industrial Engineering* and *Design* (double major)

- **Talent Award of Korea**, Korea Student Aid Foundation (2024)
- **Presidential Science Scholarship**, Korea Student Aid Foundation (2023 – Present)
- Merit-based Scholarship, UNIST (2020 – 2023)

PROFESSIONAL EXPERIENCE

01/2025 – Present **LionRocket** Seoul, Korea
MLOps Engineer – Alternative Military Service

- Implemented image-to-video pipeline with Wan 2.1 to generate short-form animations from webtoon images
- Implemented GAN-based Super-Resolution model to adjust comic line art thickness
- Deployed a YOLO + Diffusion pipeline for automatic speech balloon detection and removal
- Developed Automated Character Segmentation tool to extract full-body images for stream-lined illustration workflows

09/2023 – 11/2024 **thingsflow** Seoul, Korea
Machine Learning Scientist – Alternative Military Service

05/2023 – 08/2023 *Machine Learning Scientist Intern* (Mentors: Dr. Joonhee Kim, Prof. Jooyeon Kim, Jeff Oh)

- Developed and launched **Hellobot Pet AI Profile Generator**
 - Implemented pet anthropomorphic image generator using Diffusers library
 - Improved photorealistic pet images with LoRA fine-tuning method
 - Improved pet anthropomorphic image quality with depth-image-based ControlNet, pipeline that bridges two fine-tuned SDXL model
 - Contributed \$150K in revenue and 25K in sales in 4 months
- Demonstrated Project at AI Graduate School Symposium
 - Implemented cover and illustration generator of Web Novel Episode 1 Generator
 - Movie-to-Webtoon Project: Generated webtoon using ‘Barbie’ movie trailer

RESEARCH EXPERIENCE

12/2021 – 03/2024 **UNIST Expressive Computing Lab (EXPC)** Ulsan, Korea
Undergrad Researcher (Advisor: Prof. Kyungho Lee)

- xDiffusers: Explored Tangible User Interfaces (TUI) using ball-jointed dolls, investigating interactive design applications (2023 – 2024)
- Led user research-driven UX/UI improvements for a diffusion-based anime-style image generation service, optimizing usability and workflow efficiency (2023)
- Print.ly: Applied style-transfer in LG Household & Health Care’s mini tattoo printer (2022)
- bbb Korea: Processed data for multilingual voice-to-text conversion app (2021 – 2022)
- Conducted research on improving comic line art to improve pen pressure (2021 – 2022)

11/2020 – 12/2021 **UNIST Service Engineering and Knowledge Discovery Lab** Ulsan, Korea
Undergrad Research Collaborator (Advisor: Prof. Chiehyeon Lim)

- UNIST AI Graduate School Creative Independent Project: Cat Arthritis Detection (2020)
- Campus Patent Universiade: Smart Refrigerator (2020), Accident Prevention (2021)

EXTRACURRICULAR ACTIVITIES

- 09/2020 – Present **HeXA**, UNIST Development and Information Security Club
President (08/2022 – 07/2023), *Executive Board Member* (03/2021 – 06/2024)
- Hosted NEXUS 2023 (CSE Alumni Homecoming Event; 6 Lecturers and 70 Participants)
 - Selected as member of Hyundai Mobis Outstanding SW Club and received funding
- 01/2021 – Present **brAIns**, UNIST Artificial Intelligence Club
Co-president (03/2022 – 08/2023)
- Paper Review: Implemented Style-Transfer and GAN with MNIST image using PyTorch
 - Implemented prediction and visualization code with Titanic dataset using TensorFlow
- 06/2024 – Present **AttentionX**, AI Research Group
- Developed a Korean Vision-Language Model (VLM) and a VQA benchmark for evaluating Korean text, contributing to research publications
 - Implementing real-time 3D surface inference interface (Collaborator: Adam Lee) [[github](#)]
 - Created AI-based Computer Animation: LUCiD

PUBLICATIONS

** denotes equal contribution*

CONFERENCE

- [c.1] [Kim, S., Ko, T., Kwon, Y., Lee, K. \(2023\).](#)
Designing Interfaces for Text-To-Image Prompt Engineering with Stable Diffusion Models: A Human-AI Interaction
IASDR 2023. 13 pages. 56.4% acceptance rate (241/427).

WORKSHOP AND POSTERS

- [w.1] [Kwon, Y., Kim, S., Ko, T., Yoon, J., Lee, K. \(2023\).](#)
Representing the Timbre of Traditional Musical Instruments Based On Contemporary Instrumental Samples Using DDSP
UIST 2023 Adjunct Poster.

DOMESTIC CONFERENCE AND JOURNAL (IN KOREAN)

- [d.3] [Kwon, Y., Byun, J., Kim, S., Ko, T., Yoon, J., Lee, K. \(2024\).](#)
Representing the Timbre of Traditional Musical Instruments Based On Contemporary Instrumental Samples Using DDSP
HCIK 2024: HCI KOREA Conference.
- [d.2] [Kim, S., Kwon, Y., Lee, K. \(2023\).](#)
#taggenerator: How an Online Community Designs an Interface for Text Prompt Inputs Using a NovelAI's Diffusion Model
HCIK 2023: HCI KOREA Conference.
- [d.1] [Kim, S., Lee, K. \(2022\).](#)
A Study on the Use of AI as Creative Support Tool for Line Drawing in Manga Production
KSDS 2022: 2022 Korea Society of Design Science Spring Conference.
Best Student Paper Honorable Mention

UNPUBLISHED MANUSCRIPTS

- [u.1] [Hwang, T., Kim, M., Lee, G., Kim, S., Eun, H. \(2025\).](#)
KRETA: A Benchmark for Korean Reading and Reasoning in Text-Rich VQA Attuned to Diverse Visual Contexts
Under Review

AWARDS

- 2025 *Second Place*, The 4th UNIST-KAIST-POSTECH AI & Data Science Competition
2024 **Winner, Talent Award of Korea**, Deputy Prime Minister and Education Minister of Korea
Third Place, The 3rd POSTECH-UNIST-KAIST Data Science Competition
2023 **Winner, Presidential Science Scholarship**, President and Science and ICT Minister of Korea
Second Place, The 2nd KAIST-POSTECH-UNIST Data Science Competition
2022 *Best Student Paper Honorable Mention*, The Korea Society of Design Science
Excellence Prize, The 9th IEEE Quiz Contest for undergraduates
Fourth Place, The 1st UNIST-POSTECH-KAIST Data Science Competition
2021 *Second Place*, Lee Soo-hyun 20th Memorial Book Review Essay Contest
2020 *Samsung Electronics Vice-chairman Prize*, Campus Patent Universiade

TEACHING

- 01/2024 – 06/2024 *Tutor*, Motgol Library Mentoring with Self-directed Learning to middle school students
03/2023 – 06/2023 *Teaching Assistant*, ITP107 Intro. to AI Programming I, UNIST (Instructor: Michael Burrell)
12/2022 – 02/2023 *Tutor*, NAVER 1784 School Revolution, Taught SW·AI to elementary school students
05/2022 – 12/2022 *Head Tutor*, Ulju The Dream Campus, Taught Python to middle school students
09/2021 – 12/2021 *Head Tutor*, Ulju The Dream Campus, Taught 3D printing and robot to middle school students

ADDITIONAL INFORMATION

- 02/2024 – Present *Podcast Collaborator*, SideB Comics Social Club, Seoul Webtoon Academy Seoul, Korea
08/2022 – 02/2023 *Ambassador and Exchange Student*, Consulate-General of Japan in Busan Japan
12/2021 – 01/2022 *Cross-registration*, Korea Advanced Institute of Science and Technology Daejeon, Korea
12/2020 – 01/2021 *Cross-registration*, Seoul National University Seoul, Korea
06/2019 – 01/2020 *Comic Artist Class*, Baron Academy of Manga and Webtoon Busan, Korea
2018 *Finalist*, Talent Award of Korea, Deputy Prime Minister and Education Minister of Korea

REFERENCES

Kyungho Lee, Associate Professor at Department of Design, UNIST

Advisor during undergraduate research assistant
kyungho@unist.ac.kr | +82 52-217-3034

Chiehyeon Lim, Associate Professor at Department of Industrial Engineering, UNIST

Advisor during projects
chlim@unist.ac.kr | +82 52-217-3112

Jooyeon Kim, Assistant Professor at Graduate School of Artificial Intelligence, UNIST

Advisor during academic and industrial experience
jooyeon.kim@unist.ac.kr | +82 52-217-3459