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Education

Ulsan National Institute of Science and Technology (UNIST) <i>Undergraduate – Total GPA of 3.81 / 4.3 (95.1 / 100)</i> B.S. (in progress) in Industrial Engineering B.S. (in progress) in Design	Ulsan, Korea Mar 2020 – Present
<ul style="list-style-type: none">• Alternative Military Service as Industrial Technical Personnel• Cross-Registration<ul style="list-style-type: none">– Korea Advanced Institute of Science and Technology (KAIST)– Seoul National University	Sep 2023 – Aug 2025 Dec 2022 – Jan 2023 Dec 2021 – Jan 2022
Baron Academy of Manga and Webtoon Full-Time Specialized Training (Non-Degree) Mentored by Professional Webtoonists	Busan, Korea Jun 2019 – Jan 2020 (<i>Gap Year</i>)
Busan Science High School Specialized STEM high school for academically gifted students	Busan, Korea Mar 2015 – Jan 2019

Research Interests

- Comics Creation using AI-powered Creativity Support Tools (CSTs)
- Diffusion-based Image Generation

Professional Experience

LionRocket <i>MLOps Engineer – Alternative Military Service</i> AI webtoon startup specializing in generative AI technology for comic creation	Seoul, Korea Jan 2025 – Aug 2025
thingsflow <i>Machine Learning Scientist – Alternative Military Service</i> <i>Machine Learning Scientist Intern (Mentors: Dr. Joonhee Kim, Prof. Jooyeon Kim)</i>	Seoul, Korea Sep 2023 – Nov 2024 May 2023 – Aug 2023

Research Experience

UNIST Expressive Computing Lab (EXPC) <i>Undergrad Researcher (Advisor: Prof. Kyungho Lee)</i> Human-AI interaction design and emerging media arts research lab	Ulsan, Korea Dec 2021 – Mar 2024
UNIST Service Engineering and Knowledge Discovery Lab <i>Undergrad Research Collaborator (Advisor: Prof. Chiehyeon Lim)</i> Data science research for real-world service impacts in industry and society	Ulsan, Korea Nov 2020 – Dec 2021

Publications

** denotes equal contribution*

Conference

- [c.2] Taebaek Hwang, Minseo Kim, Gisang Lee, Seonuk Kim, Hyujun Eun.
KRETA: A Benchmark for Korean Reading and Reasoning in Text-Rich VQA Attuned to Diverse Visual Contexts
EMNLP 2025. 12 pages. 22.16% acceptance rate (1,811/8,174).
- [c.1] Seonuk Kim, Taeyoung Ko, Yousang Kwon, Kyungho Lee.
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] Yousang Kwon, Seonuk Kim, Taeyoung Ko, Juhyeok Yoon, Kyungho Lee.
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] Yousang Kwon, Jonghoon Byun, Seonuk Kim, Taeyoung Ko, Juhyeok Yoon, Kyungho Lee.
Representing the Timbre of Traditional Musical Instruments Based On Contemporary Instrumental Samples Using DDSP
HCIK 2024: HCI KOREA Conference.
- [d.2] Seonuk Kim, Yousang Kwon, Kyungho Lee.
#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] Seonuk Kim, Kyungho Lee.
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 (3-tier Award)

Honors and Awards

Scholarships

- 2024 – 28 **National Presidential Science Scholarship**, President of South Korea
60 scholarship recipients selected nationwide. \$5,500 per semester.
- 2020 – 23 **Academic Performance Scholarship**, UNIST
Merit-based full scholarship including monthly academic stipend.

Awards

- 2026 **First Place, The 5th KAIST-POSTECH-UNIST AI & Data Science Competition**
83 teams, 238 participants. Team Leader and Presenter. \$2,300 as award.
- 2025 **Second Place, The 4th UNIST-KAIST-POSTECH AI & Data Science Competition**
62 teams, 237 participants. Team Leader and Presenter. \$1,500 as award.
- 2024 **Talent Award of Korea**, Deputy Prime Minister and Education Minister of Korea
Most prestigious award in Korea. 50 adults selected nationwide.

Third Place, The 3rd POSTECH-UNIST-KAIST Data Science Competition
46 teams, 172 participants. Team Leader and Presenter. \$1,500 as award.
- 2023 **Second Place, The 2nd KAIST-POSTECH-UNIST Data Science Competition**
43 teams, 177 participants. Team Leader and Presenter.
\$1,500 + MakinaRocks internship opportunity as award.

Ambassador Certificate, Consulate-General of Japan in Busan

JENESYS 2022 Certificate, Ministry of Foreign Affairs of Japan
Official invitation by Japan's Ministry of Foreign Affairs (Tokyo, Miyagi, Iwate).
- 2022 **Best Student Paper Honorable Mention**, The Korea Society of Design Science
Top 39% among 54 submissions. Research on AI-assisted comic creation.

Excellence Prize, The 9th IEEE Quiz Contest for undergraduates
Literature search and analysis-based competition organized by IEEE and KITIS.

Fourth Place, The 1st UNIST-POSTECH-KAIST Data Science Competition
38 teams, 144 participants. Team Leader and Q&A Responder. \$800 as award.
- 2021 **Second Place, Lee Soo-hyun 20th Memorial Book Review Essay Contest**
32 undergraduate participants. JENESYS selection and Japan invitation.
- 2020 **Samsung Electronics Vice-chairman Prize, Campus Patent Universiade**
Team Leader and Presenter. Digital healthcare refrigerator project. \$2,300 as award.

Challenges

- 2021 Advanced to Presentation Round, Campus Patent Universiade
- 2018 *Finalist*, Talent Award of Korea, Deputy Prime Minister and Education Minister of Korea

Projects

- [p.25] **Tire Defect Prediction for Pilot Decisions** Nov 2025 – Jan 2026
Developed a defect rate prediction framework for tire pilot production using Transformer and LSTM models.
- [p.24] **Anime Image-to-Animation Pipeline** May 2025 – Jul 2025
Developed comprehensive pipeline for converting static anime images into dynamic animations using VLM API for automatic prompt generation and Wan 2.1 model.

- [p.23] **SMPL Blender Add-on Integration** Mar 2025 – Apr 2025
Real-time SMPL model integration with Blender for pose manipulation. TokenHMR parameter conversion and Blender Add-on development for 3D human pose editing workflow.
- [p.22] **ARIA: AI-Powered Interactive Avatar Assistant** [github] Feb 2025
Retrieval-Augmented Generation (RAG) based virtual assistant with VRoid Studio avatar integration. Google API connectivity for Drive, Calendar, and Gmail automation with FastAPI backend and React frontend.
- [p.21] **GAN-based Comic Line Art Super-Resolution** Jan 2025 – May 2025
Generative Adversarial Network for comic line art thickness adjustment. Perceptual loss functions and style transfer techniques.
- [p.20] **Automatic Speech Balloon Processing System** Jan 2025
YOLO object detection with diffusion-based inpainting for speech balloon removal. Pre-processing pipeline for clean background generation.
- [p.19] **Financial RAG System Development** [news] Oct 2024 – Jan 2025
Developed hybrid search system with Voyage-3, cross-encoder reranking, LLMLingua-2 compression, and LLM ensemble.
- [p.18] **KRETA: Korean Text-Rich VQA Benchmark** Jul 2024 – Nov 2025
Korean text-rich Visual Question Answering benchmark for Vision-Language Models. Multi-modal data processing and evaluation metrics.
- [p.17] **LUCiD: AI-based Animation** Jun 2024 – Jul 2024
AI animation creation using Luma AI Dream Machine and video generation models. Multi-modal content creation including image, video, audio, and text synthesis.
- [p.16] **Byte: AI Animate Digital Comic** Mar 2024
AI-generated digital comic exploring memory and AI consciousness. Created using Stable Diffusion XL for images and I2VGen-XL for animation within six hours. Memorial tribute examining humanity’s future amidst AI transformation.
- [p.15] **StorySnap: Interactive Novel Branching Generator** May 2024 – Sep 2024
Interactive novel branching generator with character rendering, background image generation, and audio effects using Stable Diffusion and Claude 3.5 Sonnet.
- [p.14] **Hellobot Pet AI Profile Generator** Oct 2023 – Apr 2024
Commercial pet anthropomorphic image generator using Stable Diffusion XL, LoRA fine-tuning, and ControlNet enhancement.
- [p.13] **LG Electronics Parts Demand Forecasting** Oct 2023 – Jan 2024
Ensemble models including LightGBM, XGBoost, CatBoost, Random Forest, Extra Tree, and K-Nearest Neighbor with Soft Voting, Weighted Voting, and Stacking approaches. Auto ARIMA for time-series forecasting and inventory optimization.

- [p.12] **Web Novel Episode 1 Generator** May 2023 – Aug 2023
Cover and illustration generator for web novel episodes using Stable Diffusion and LoRA fine-tuning with character consistency.
- [p.11] **Movie Trailer to Webtoon Conversion** May 2023 – Aug 2023
Movie trailer to webtoon conversion using LoRA and ControlNet. Created webtoon adaptation of Barbie movie trailer and demonstrated at AI Graduate School Symposium.
- [p.10] **NEXUS: CSE Alumni Homecoming Event** Mar 2023
Event planning and management for Computer Science and Engineering Major Alumni Homecoming. Coordinated 6 lecturers and 70 participants.
- [p.9] **xDiffusers: Ball-Jointed Doll Tangible User Interface** Mar 2023 – Nov 2023
Tangible User Interface with ControlNet-based Stable Diffusion. Real-time webcam capture and pose estimation pipeline. Secured UNIST AI Challenge Program grant funding of \$ 3,000.
- [p.8] **Hana Bank Customer Targeting Strategy** [news] Oct 2022 – Jan 2023
CNN ensemble models for customer business probability prediction and advertising strategy optimization. Simulated Annealing for decision-making and bounce rate analysis for customer engagement.
- [p.7] **Diffusion Model Interface Design Research** Oct 2022 – Oct 2023
User research-driven UX/UI improvements for diffusion-based image generation including NovelAI interface analysis and prompt engineering workflows.
- [p.6] **Print.ly: Style Transfer Integration** [news] Jan 2022 – May 2022
Style transfer pipeline development for LG Household & Health Care's mini tattoo printer using SOTA models.
- [p.5] **AI-Assisted Comic Line Art Enhancement Research** Dec 2021 – May 2022
Research on comic line art quality improvement using deep learning models. Analog sketch to digital art conversion pipeline.
- [p.4] **KNOC Shale Gas Production Optimization** [news] Oct 2021 – Jan 2022
AutoML PyCaret for prediction and binary integer programming for optimization.
- [p.3] **Industrial Safety AI System Patent Commercialization** Apr 2021 – Oct 2021
ETRI patent commercialization for motion-based accident prevention using CCTV and patrol robots. Market research and business strategy development using PESTEL, SWOT analysis.
- [p.2] **Cat Movement Analysis with IMU Sensors** Nov 2020 – Nov 2021
Cat movement measurement device using 9-axis IMU sensor for arthritis prediction. Time-series data collection and behavioral analysis. Secured AI Graduate School Creative Independent Project grant funding of \$ 3,800.

- [p.1] **Smart Healthcare Refrigerator Development** [news] Apr 2020 – Nov 2020
Smart refrigerator platform for health management and trainer communication.

Artworks

Literature

- [l.1] **Swings and Blossoms** [book]
In *The Moment when the Star is Born*. egowriting. 2021. pp.133-166.
Short stories written by different people including the disabled.

Comics and Webtoons

- [t.2] Academic Leave Letter from Science High School [instagram]
Instagram webtoon series. since 2025.
Personal narrative about health struggles and academic decisions during high school.
The series is now published in the Best Challenge section on Naver Webtoon
- [t.1] Barbie Webtoon [post]
AI-generated webtoon adaptation of Barbie movie trailer. 2023.
Created using Stable Diffusion, LoRA, and ControlNet for character consistency.

Animation and Digital Art

- [a.2] LUCiD: AI Animation Trailer [YouTube]
AI-generated animation trailer using Luma AI Dream Machine. 2024.
Images created with Stable Diffusion XL, videos with Luma AI, music with Suno AI.
Synopsis about two children's quest to find the legendary World Tree.
- [a.1] Byte: AI Animate Digital Comic [YouTube]
AI-generated digital comic about memory and AI consciousness. 2024.
Created using Stable Diffusion XL and I2VGen-XL within six hours.
Commemorative piece exploring humanity's future amidst AI transformation.

Essays

- [e.2] Snow Flowers, Poetry of Life and Connection [essay]
JENESYS outstanding essay. 2023.
Reflected on disaster preparedness tourism through Northeast Japan earthquake sites and shared insights on Korea-Japan friendship inspired by Lee Soo-hyun bridge-building spirit.
- [e.1] Expansion
Second Place, Lee Soo-hyun 20th Memorial Book Review Essay Contest. 2021.
Wrote about Korea-Japan cultural and scientific exchange beyond political controversies, drawing on Lee Soo-hyun spirit as a model for cross-cultural understanding.

Teaching Experience

Teaching Assistant

Spring 2023 **ITP107: Introduction to AI Programming I** (Instructor: Prof. Michael Burrell), UNIST

Primary School Student Mentoring

Career Mentor, Motgol Hanok Children's Library, Seoul Jan – Jun 2024
Tutor, AI & SW, 1784 School Revolution Program, NAVER CONNECT Fdn. Feb 2023
Head Tutor, Python, Ulju The Dream Campus Program, UNIST May – Dec 2022
Head Tutor, 3D Printing & Arduino, Ulju The Dream Campus Program, UNIST Sep – Dec 2021

Extracurricular Activities

AttentionX [site] Jun 2024 – Nov 2025
VLM Researcher

- AI research group and startup accelerator
- Published a paper on a benchmark for Korean text-rich VQA and reasoning at EMNLP 2025

HeXA (Hacker's eXciting Academy), UNIST [site] Sep 2020 – Present
President Aug 2022 – Jul 2023

brAIns (brew AI neo scientist), UNIST AI Graduate School Jan 2021 – Aug 2023
Co-President Mar 2022 – Aug 2023

Full Member, **GRAPHOS** (visual arts club), UNIST Sep 2020 – Present

Young Intellectual Property Leaders, Korea Invention Promotion Association
Full Member Nov 2020 – Present

Young Engineers Honor Society, National Academy of Engineering of Korea
Full Member & 2025-2026 Representative of UNIST Jul 2024 – Present

Consulate-General of Japan in Busan [site] Aug 2022 – Feb 2023
Ambassador Aug 2022 – Feb 2023
Japan East-Asia Exchange for Students and Youths (JENESYS) Participant Jan 2023

UNIST Undergraduate Student Council [site]
Policy Team Member, Undergraduate Student Council Emergency Committee Mar – Jun 2023
Chair, Club Union Election Commission Feb – Mar 2023
Legal Support TF Member, 11th Undergraduate Student Council WE:TH U Sep – Dec 2021

Korean Youth Society of Neuroscience Aug 2017 – Feb 2020
Co-Founder & Vice President Mar 2018 – Feb 2019
• Student-led academic society for Korean high school students interested in neuroscience

Neuro (Neuroscience Club), Busan Science High School Mar 2016 – Jan 2019
Co-Founder & President Mar 2016 – Feb 2017

Additional Information

Podcast Collaborator, SideB, Seoul Webtoon Academy [list]

Feb 2024 – Aug 2025

References

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