

EDUCATION

Korea Advanced Institute of Science and Technology (KAIST)
Bachelor in Computer Science and Electrical Engineering

Feb 2021 – Aug 2024
 Daejeon, South Korea

RESEARCH EXPERIENCES

Visual AI Lab, KAIST

Student Researcher supervised by prof. [Minhyuk Sung](#)

Jul 2022 – Present
 Daejeon, South Korea

- Worked on utilizing CLIP as a multi-view regularizer for Neural Radiance Field (NeRF).
- Published a paper in ICCV 2023 on Latent Diffusion for shape generation and manipulation: Worked on network architecture design, and implemented text-based editing.
- Submitted a paper on Cylinder Extrusion CAD model from Multi-view Images: Led the initial implementation of the main method. Implemented surface extraction from the neural field.
- Worked human motion diffusion interpolation via hyperpherical splines.

Data Science Group, KAIST/IBS

Student Researcher supervised by prof. [Meeyoung Cha](#)

Dec 2021 – May 2022
 Daejeon, South Korea

- Used Contrastive Learning method, the study found an embedding that, in addition to PACMAP, enabling visualization of fashion trends through 20 years of sneaker design.
- Wrote GLSL shader code for displaying large sneaker datasets.

NMAIL Lab, KAIST

Honor Research Program Student hosted by prof. [Sungho Jo](#)

Feb 2020 – Dec 2020
 Daejeon, South Korea

- Studied various GANs models and papers including WGAN, styleGAN, styleGAN2, Rewriting Generative Model, First Order Motion.
- Implemented WGAN, styleGAN.

Ahn Microbial Engineering Lab

Student Researcher supervised by prof. [Jungcheon Ahn](#)

Jan 2019 – Feb 2021
 Busan, South Korea

- Conducted analysis on Protein Docking Simulation using Maestro.
- Developed and published an efficient algorithm for Protein Mutation based on Linear Charge Density. This software is the basis for 3 publications to Biomedicine (2021), IJMS (2022), and Microbial Cell Factories (2024).
- Implemented Linear Charge Density Visualizer on WebSuperProb website.

INDUSTRY EXPERIENCES

StoneLab

Machine Learning Research Intern

March 2024 – Jun 2024
 Seoul, South Korea

- Conduct research on 3D Adaptive Shell for accelerated segmentation and classification on CT-Scans.
- Conduct research on Inverse Diffusion Model on Medical Imaging.

Steinfeld Co.

Software Engineer Intern

Jun 2022 – Aug 2022
 Seoul, South Korea

- Implemented Bézier curve editing algorithm and tools on surface meshes of dental crowns.
- Built web user interface and API.

PUBLICATION

[1] MV2CAD: Reverse Engineer CAD from Multi-view Images

Eunji Hong, **Nguyen Minh Hieu**, Mikaela Uy, Minhyuk Sung
under review, 2024
[arxiv](#)

[2] SALAD: Part-level latent diffusion for 3D shape generation and manipulation

Juil *, Seungwoo Yoo*, **Nguyen Minh Hieu***, and Minhyuk Sung
ICCV, 2023 (denotes equal contribution)*
[arxiv](#) · [project page](#) · [code](#) · [hugging face demo](#)

- [3] **PySupercharge: a python algorithm for enabling ABC transporter bacterial secretion of all proteins through amino acid mutation**
Yerin Kim, Danny Kim, Nguyen Minh Hieu, Hyunjong Byun, Jung Hoon Ahn
Microbial Cell Factories, 2024
- [4] **Generalized Approach towards Secretion-Based Protein Production via Neutralization of Secretion-Preventing Cationic Substrate Residues**
Byun, Hyunjong and Park, Jiyeon and Fabia, Benedict U and Bingwa, Joshua and **Nguyen Minh Hieu** and Lee, Haeshin and Ahn, Jung Hoon
International Journal of Molecular Sciences, 2022
- [5] **Utilizing the ABC transporter for growth factor Production by fleQ Deletion Mutant of Pseudomonas fluorescens**
Fabia, Benedict-Uy and Bingwa, Joshua and Park, Jiyeon and **Nguyen Minh Hieu** and Ahn, Jung-Hoon
Biomedicines, 2021

PROJECTS

Wave Equation Solver with Walk-on-Boundary

- [\[code\]](#) Designed and implemented an algorithm for solving the Helmholtz equation using Walk-on-Boundary method.

Implemented Geometry Processing Papers

- [\[code · paper\]](#) The Heat Method for Distance Computation. (SIGGRAPH15)
- [\[code · paper\]](#) Parametric Gauss Reconstruction for Normal Estimation (SIGGRAPH22).
- [\[code · paper\]](#) Monte-Carlo Geometry Processing. (SIGGRAPH21)

Implemented Diffusion Papers

- [\[code · paper\]](#) Score-Based Generative Modeling through SDEs. (ICLR2021)
- [\[code · paper\]](#) Flow Matching for Generative Modeling (ICLR2023)
- [\[code · paper\]](#) I²SB: Image-to-Image Schrödinger Bridge (ICLR2023)

Rendering Projects

- [\[code\]](#) Implemented Rasterizer with shading
- [\[code\]](#) Implemented Tiny SDF renderer with csg-tree support

Implemented LZ77 Compression

- Implemented the LZ77 encoding and decoding algorithm with Python

Taken Courses

- **Highlighted Computer Science Courses:** Introduction to Algorithms, Machine Learning, Data Science Methodology (*graduate*), Social Computing, Computer Organization, Programming Languages, Mobile Computing, Operating Systems, Introduction to Computer Vision, Introduction to Computer Graphics, Machine Learning for Computer Vision,
- **Highlighted Electrical Engineering Courses:** Basics of Quantum Information and Quantum Computing, Introduction to Information Theory and Coding, Probability and Random Processes, Electronics Design Lab, Controls Lab, Digital Signal Processing, Parallel Computer Architecture (*graduate*), Introduction to Reinforcement Learning

SKILLS

Languages: C++, Python, C, CUDA

Frameworks: PyTorch, OpenGL, libigl