

## Research Interest

**Generative AI, 3D Vision, Representation Learning, Cryo-EM.**

## Education

- 2023–present **Ph.D. Candidate**, Computer Science, *Princeton University*.  
2020–2023 : **M.S.**, Computer Science and Engineering, *Korea University*.  
2014–2020 : **B.S.**, Applied Statistics, Computer Engineering (double major), *Konkuk University*.

## Publications

**Minkyu Jeon\***, Jeffrey Gu\*, Ambri Ma, Serena Yeung, Vincent Sitzmann, Ellen D Zhong, "Separating signal from noise: a self-distillation approach for amortized heterogeneous cryo-EM reconstruction", **NeurIPS MLSB 2025 (Oral), Submitted to ICLR 2026**.

\*: co-first

Jeffrey Gu\*, **Minkyu Jeon\***, Ambri Ma, Serena Yeung, Ellen D Zhong, "CryoHype: Transformer-based hypernetwork for heterogeneous Cryo-EM reconstruction", **NeurIPS MLSB 2025, Submitted to ICLR 2026**.

\*: co-first

**Minkyu Jeon**, Rishwanth Raghu, Miro Astore, Geoffrey Woollard, Ryan Feathers, Alkin Kaz, Sonya M Hanson, Pilar Cossio, Ellen D Zhong, "CryoBench: Diverse and challenging datasets for the heterogeneity problem in cryo-EM", **NeurIPS (Spotlight)**, 2024.

Sanghyeok Lee\*, **Minkyu Jeon\***, Injae Kim, Yunyang Xiong, Hyunwoo J Kim, "SageMix: Saliency-Guided Mixup for Point Clouds", **NeurIPS**, 2022.

\*: co-first

**Minkyu Jeon**, Hyeonjin Park, Hyunwoo J Kim, Michael Morley, Hyunghoon Cho, " $k$ -SALSA:  $k$ -anonymous synthetic averaging of retinal images via local style alignment", **ECCV**, 2022.

Journal Youngjin Oh\*, **Minkyu Jeon\***, Dohwan Ko, Hyunwoo J Kim, "Randomly Shuffled Convolution for Self-Supervised Representation Learning", **Information Science Journal**, 2023.

\*: co-first

Seungdong Yoa, **Minkyu Jeon**, Youngjin Oh, Hyunwoo J Kim, "Learning to Balance Local Losses via Meta-Learning", **IEEE ACCESS**, 2021.

Sarah Soyeon Oh, Bada Kang, Dahye Hong, Jennifer Ivy Kim, Hyewon Jeong, Jinyeop Song, **Minkyu Jeon**, "A Multivariable Prediction Model for Mild Cognitive Impairment and Dementia: Algorithm Development and Validation", **JMIR**, 2024.

Weeyoung Kwon, Jeahun Sung, **Minkyu Jeon**, Chanhoe Eom, Jihyong Oh, "R3eVision: A Survey on Robust Rendering, Restoration, and Enhancement for 3D Low-Level Vision", **(UnderReview)**, 2025.

## Research Experience

- June, 2025 – **Prescient Design**, *Research Intern*, New York, USA.  
August 2025 ○ Led a project to deepen our understanding of modern generative models (Diffusion, Flow Matching) in 3D spaces like voxels, address their limitations, and successfully apply them to protein design / generation.  
July, 2024 – **AI4ALL**, *Instructor*, Princeton, USA.  
August 2024 ○ Instructed high school students about AI and serve as a mentor to help them with their project on medical imaging analysis using deep learning.

- Jan,2023 – **Broad Institute of MIT and Harvard**, *Associate Computational Biologist*, Massachusetts, USA.
- August,2023 Advisor: Dr. Hyunghoon Cho ([Website](#))
- o Led a project to synthesize a dataset of retinal images using a diffusion-based generative model for privacy protection.
- Sep,2021 – **Broad Institute of MIT and Harvard**, *Visiting Graduate Student*, Massachusetts, USA.
- Apr,2022 Advisor: Dr. Hyunghoon Cho ([Website](#))
- o Led a project to Synthesize a dataset of retinal images using a GAN/GAN-Inversion-based generative model for privacy protection (Accepted to ECCV 2022).
- Jan,2020 – **Korea University**, *Research Intern*, Seoul, Korea.
- Aug,2020 Advisor: Dr. Hyunwoo J Kim ([Website](#))
- o Conducted research on meta-learning for better optimization for each layer and co-authored a paper submitted to IEEE ACCESS as the second author.
  - o Designed algorithm, implemented research ideas, conducted experiments, and wrote related work, methods, and experiments sections of the paper.
- Mar,2019 – **Makinarocks**, *ML Research Engineer Intern*, Seoul, Korea.
- Aug,2019 ([Website](#))
- o Conducted research in the field of anomaly detection to detect abnormal data well by controlling the latent space of Variational Autoencoder.
- July,2018 – **Korea Institute of Science and Technology (KIST)**, *ML Research Intern*, Seoul, Korea.
- Dec,2018 Advisor: Dr. Yong Moo Kwon (Regular Retirement, [Website](#))
- o Participated in a project on programming an active chatbot that can initiate a conversation and recognize situations.
  - o Executed Natural Language Processing using rule-based algorithms and deep learning

## Awards & Services

- From 2024 **Scholarship**, Asan Foundation Biomedical Science Scholarship for 3 years
- 2023 – **Reviewer**, NeurIPS Workshop (23', 24'), NeurIPS (25') ICLR (25'), Information Science Journal (24')
- 08/2024 **Invited talk**, at Flatiron Institute – Simons Foundation
- 02/2024 **Invited talk**, at CMU MetaMobility Lab
- 09/2019 **Dean's List**, Konkuk University Applied Statistics Department.
- 09/2019 **Konkuk University Scholarship**, 40% of tuition.
- 07/2016 **Certificate of Commendation**, Military Service – Recognized as an exemplary soldier for demonstrating exceptional communication skills during early warning situations.

## Skills

Python, PyTorch, Tensorflow, Keras, R, C, Git, Linux, Windows, Mac OS

## Teaching Assistantship

- Fall, 2024 CS302: Mathematics for Numerical Computing and Machine Learning, Princeton University.
- Spring, 2021 COSE361: Artificial Intelligence, Korea University.
- Fall, 2020 AAA712: AI Security, Korea University.
- Fall, 2020 Tutorial Teaching Fellow: Deep Learning, Korea University.

## Extracurricular Activities

- May, 2021 – I-Corps program.
- Aug, 2021 o Granted \$35,000 by science technology information governmental department for the identification of technology based start ups.
- Mar, 2015 – Military Service.
- Dec, 2016 o Served as a Republic of Korea Marine Corps – Island of Yeonpyeong, South Korea.