Minkyu Jeon

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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", **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", **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,** Chanho Eom, Jihyong Oh, "R3eVision: A Survey on Robust Rendering, Restoration, and Enhancement for 3D Low-Level Vision", **(UnderReview)**, 2025.

Research Experience

June,2025 – August 2025 **Prescient Design**, *Research Intern*, New York, USA.
- 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 – August 2024 **AI4ALL**, *Instructor*, Princeton, USA.
- 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 – August,2023 **Broad Institute of MIT and Harvard**, *Associate Computational Biologist*, Massachusetts, USA.
Advisor: Dr. Hyunghoon Cho (*Website*)
- Led a project to synthesize a dataset of retinal images using a diffusion-based generative model for privacy protection.

Sep,2021 – Apr,2022 **Broad Institute of MIT and Harvard**, *Visiting Graduate Student*, Massachusetts, USA.
Advisor: Dr. Hyunghoon Cho (*Website*)
- 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 – Aug,2020 **Korea University**, *Research Intern*, Seoul, Korea.
Advisor: Dr. Hyunwoo J Kim (*Website*)
- Conducted research on meta-learning for better optimization for each layer and co-authored a paper submitted to IEEE ACCESS as the second author.
- Designed algorithm, implemented research ideas, conducted experiments, and wrote related work, methods, and experiments sections of the paper.

Mar,2019 – Aug,2019 **Makinarocks**, *ML Research Engineer Intern*, Seoul, Korea.
(*Website*)
- Conducted research in the field of anomaly detection to detect abnormal data well by controlling the latent space of Variational Autoencoder.

July,2018 – Dec,2018 **Korea Institute of Science and Technology (KIST)**, *ML Research Intern*, Seoul, Korea.
Advisor: Dr. Yong Moo Kwon (Regular Retirement, *Website*)
- Participated in a project on programming an active chatbot that can initiate a conversation and recognize situations.
- 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 solider 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 - Aug, 2021 I-Corps program.
- Granted $35,000 by science technology information governmental department for the identification of technology based start ups.

Mar, 2015 - Dec, 2016 Military Service.
- Served as a Republic of Korea Marine Corps – Island of Yeonpyeong, South Korea.