

Hyungjin Chung

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Email: hyungjin.chg@gmail.com **GitHub:** github.com/hyungjin-chung **Homepage:** hyungjin-chung.github.io

Research interests	Generative models, Inverse problems, Multimodal Representation	
Work Experience	EverEx (Mandatory Korean Military Service ~ 2026.02)	Seoul, Korea
	AI Research Scientist	2024.08 – Current
	NVIDIA Research	San Jose, USA (remote)
	Research Scientist Intern, AI4Science	2023.11 – 2024.01
	Google Research	Mountain View, USA
	Student Researcher, team LUMA (perception)	2023.07 – 2023.10
	Los Alamos National Laboratory	Los Alamos, USA
	Research intern, Applied math & Plasma physics (T-5)	2022.06 – 2022.08
Education	KAIST	Daejeon, Korea
	Ph.D., Bio & Brain Engineering	2019.03 – 2025.02
	Advisor: Jong Chul Ye	
	Thesis: <i>Practical approximations of posterior sampling in diffusion model-based inverse problems</i>	
	Korea University	Seoul, Korea
	B.S., Biomedical Engineering	2015.03 – 2019.02
Awards	31st Samsung Humantech Silver Award (\$10000)	2024.2
	Google Conference Scholarship (\$3000)	2024.5
	30th Samsung Humantech Gold Award (\$20000)	2024.2
	Bronze Prize, IPIU 2024	2024.2
	29th Samsung Humantech Gold Award (\$10000)	2023.2
	2020-2024 BISPL Best Researcher Award (\$4000×5)	2020-2024.12
Conf. publications	[C12] CFG++: Manifold-constrained Classifier Free Guidance for Diffusion Models Hyungjin Chung* , Jeongsol Kim*, Geon-Yeong Park*, Hyelin Nam*, Jong Chul Ye <i>ICLR 2025</i>	
	[C11] Regularization by texts for latent diffusion inverse solvers Jeongsol Kim*, Geon-Yeong Park*, Hyungjin Chung , Jong Chul Ye <i>ICLR 2025 (spotlight)</i>	
	[C10] Deep Diffusion Image Prior for Efficient OOD Adaptation in 3D Inverse Problems Hyungjin Chung and Jong Chul Ye <i>ECCV 2024</i>	
	[C9] Prompt-tuning Latent Diffusion Models for Inverse Problems Hyungjin Chung , Jong Chul Ye, Peyman Milanfar, Mauricio Delbracio <i>ICML 2024</i>	
	[C8] Decomposed Diffusion Sampler for Accelerating Large-Scale Inverse Problems Hyungjin Chung , Suhyeon Lee, Jong Chul Ye <i>ICLR 2024</i>	
	[C7] Direct Diffusion Bridge using Data Consistency for Inverse Problems Hyungjin Chung , Jeongsol Kim, Jong Chul Ye <i>NeurIPS 2023</i>	

- [C6] Improving 3D Imaging with Pre-Trained Perpendicular 2D Diffusion Models
 Suhyeon Lee*, [Hyungjin Chung*](#), Minyoung Park, Jonghyuk Park, Wi-Sun Ryu, Jong Chul Ye
ICCV 2023
- [C5] Score-based Diffusion Models for Bayesian Image Reconstruction
 Michael T. Mccann, [Hyungjin Chung](#), Jong Chul Ye, Marc L. Klasky
ICIP 2023
- [C4] Parallel Diffusion Models of Operator and Image for Blind Inverse Problems
[Hyungjin Chung*](#), Jeongsol Kim*, Sehui Kim, Jong Chul Ye
CVPR 2023
- [C3] Diffusion Posterior Sampling for General Noisy Inverse Problems
[Hyungjin Chung*](#), Jeongsol Kim*, Michael T. Mccann, Marc L. Klasky, Jong Chul Ye
ICLR 2023 (Notable-top-25%)
- [C2] Improving Diffusion Models for Inverse Problems using Manifold Constraints
[Hyungjin Chung*](#), Byeongsu Sim*, Dohoon Ryu, Jong Chul Ye
NeurIPS 2022
- [C1] Come-Closer-Diffuse-Faster: Accelerating Conditional Diffusion Models for Inverse Problems through Stochastic Contraction
[Hyungjin Chung](#), Byeongsu Sim, and Jong Chul Ye
CVPR 2022

Journal publications

- [J13] Steerable Conditional Diffusion for Out-of-Distribution Adaptation in Medical Image Reconstruction
 Alexander Denker*, Riccardo Barbano*, [Hyungjin Chung*](#), Tae Hoon Roh, Simon Arridge, Peter Maass, Bangti Jin, Jong Chul Ye
IEEE TMI, 2025
- [J12] Fundus image enhancement through direct diffusion bridges
 Sehui Kim*, [Hyungjin Chung*](#), Se Hie Park, Eui-Sang Chung, Kayoung Yi, Jong Chul Ye
IEEE JBHI, 2024
- [J11] MR Image Denoising and Super-Resolution Using Regularized Reverse Diffusion
[Hyungjin Chung](#), Eun Sun Lee, Jong Chul Ye
IEEE TMI, 2022
- [J10] Low-dose sparse-view HAADF-STEM-EDX tomography of nanocrystals using unsupervised deep learning
 Eunju Cha*, [Hyungjin Chung*](#), Jaeduck Jang, Junho Lee, Eunha Lee, Jong Chul Ye
ACS Nano, 2022
- [J9] Score-based diffusion models for accelerated MRI
[Hyungjin Chung](#) and Jong Chul Ye
Medical Image Analysis, 2021
- [J8] Unsupervised Deep Learning Methods for Biological Image Reconstruction and Enhancement
 Mehmet Akçakaya, Burhaneddin Yaman, [Hyungjin Chung](#), Jong Chul Ye
IEEE SPM, 2021
- [J7] A Deep Learning Model for Diagnosing Gastric Mucosal Lesions Using Endoscopic Images: Development, Validation, and Method Comparison
 Joon Yeul Nam*, [Hyungjin Chung*](#), Kyu Sung Choi*, Hyuk Lee* et al.
Gastrointestinal Endoscopy, 2021
- [J6] Feature Disentanglement in generating three-dimensional structure from two-dimensional slice with sliceGAN
[Hyungjin Chung](#), Jong Chul Ye
Nature Machine Intelligence, 2021

[J5] Missing Cone Artifacts Removal in ODT using Unsupervised Deep Learning in Projection Domain

Hyungjin Chung*, Jaeyoung Huh*, Geon Kim, Yong Keun Park, Jong Chul Ye
IEEE Transactions on Computational Imaging, 2021

[J4] Two-Stage Deep Learning for Accelerated 3D Time-of-Flight MRA without Matched Training Data

Hyungjin Chung, Eunju Cha, Leonard Sunwoo, Jong Chul Ye
Medical Image Analysis, 2021

[J3] Deep learning STEM-EDX tomography of nanocrystals

Yoseob Han*, Jaeduck Jang*, Eunju Cha*, Junho Lee*, Hyungjin Chung* et al.
Nature Machine Intelligence, 2021 (March Issue cover)

[J2] Unpaired training of deep learning tMRA for flexible spatio-temporal resolution

Eunju Cha, Hyungjin Chung, Eung Yeop Kim, Jong Chul Ye
IEEE Transactions on Medical Imaging, 2020

[J1] Unpaired deep learning for accelerated MRI using optimal transport driven cycleGAN

Gyutaek Oh, Byeongsu Sim, Hyungjin Chung, Leonard Sunwoo, Jong Chul Ye
IEEE Transactions on Computational Imaging, 2020

Books

[B1] Deep Learning for Biomedical Image Reconstruction

Chapter 12: Image Synthesis in Multi-Contrast MRI with Generative Adversarial Networks
Tolga Çukur, Mahmut Yurt, Salman Ul Hassan Dar, Hyungjin Chung, Jong Chul Ye

Reviewer (Conference)

ICLR 2024-2025
NeurIPS 2022-2024
NeurIPS Datasets&Benchmarks 2023-2024
CVPR 2023-2025
ECCV 2022, 2024
ICCV 2023
MICCAI 2022-2023

Reviewer (Journal)

NEJM AI
Nature Communications
Medical Image Analysis
IEEE TMI (*Gold Distinguished reviewer 2024, Bronze Distinguished reviewer 2023*)
IEEE TPAMI, TCI, TSP, TIP, SPS, SPL
[See full list](#)

Invited talks & Lectures

Texts in inverse problem solving using diffusion models

- *University of Michigan* 2024.10

Tutorial on Denoising Diffusion Model: Fundamentals & Applications

- *IEIE: Winter School on Biomedical Signal Processing* 2024.02

Adapting diffusion models for inverse problems

- *UCLA, Caltech: Grundfest Memorial Lecture Series in Graphics and Imaging* 2024.02

- *2023 NeurIPS Workshop on diffusion models* 2023.12

- *Google Research* 2023.10

Advances in diffusion models and their applications to inverse problems

- *Guest Lecture, Korea University* 2023.11

Generative (diffusion) models for medical imaging

- *International Congress on Magnetic Resonance Imaging (ICMRI) 2023* 2023.11

- *Michigan State University* 2023.09

- <i>Stanford MedAI</i>	2023.08
- <i>MGH, School of Medicine, Harvard University</i>	2023.08
- <i>BRIC academic webinar</i>	2023.03
- <i>45th meeting, The Korean Society of Abdominal Radiology, 2022</i>	2022.06
Diffusion models: foundations and applications in biomedical imaging	
- <i>IEEE International Symposium on Biomedical Imaging (ISBI) 2023</i>	2023.05
Diffusion models for inverse problems	
- <i>LANL</i>	2024.11
- <i>IPA seminar, Korea University</i>	2024.09
- <i>Krafton AI</i>	2024.09
- <i>DRGem</i>	2024.08
- <i>LG AI Research</i>	2024.08
- <i>Twelve Labs</i>	2024.06
- <i>AI SEOUL 2024</i>	2024.02
- <i>Inference & control group seminar, Donders Institute, Radboud Univ.</i>	2023.01
- <i>LANL T-CNLS seminar, 2022</i>	2022.08

Preprints

- [P14]** A Foundational Brain Dynamics Model via Stochastic Optimal Control
 Joonhyeong Park*, Byoungwoo Park*, Chang-Bae Bang, Jungwon Choi, [Hyungjin Chung](#),
 Byung-Hoon Kim[†], Juho Lee[†]
- [P13]** Advancing Ultra Low-Field MRI with Synthetic Data and Deep Learning-Based
 Image Enhancement for Brain Volume Analysis
 Peter Hsu, Elisa Marchetto, [Hyungjin Chung](#), Dohun Lee, Jong Chul Ye, Daniel Sodickson, Jelle
 Veraart, Patricia Johnson
- [P12]** Advancing Ultra Low-Field MRI with Synthetic Data and Deep Learning-Based
 Image Enhancement for Brain Volume Analysis
 Peter Hsu, Elisa Marchetto, [Hyungjin Chung](#), Dohun Lee, Jong Chul Ye, Daniel Sodickson, Jelle
 Veraart, Patricia Johnson
- [P11]** Lesion-Aware Post-Training of Latent Diffusion Models for Synthesizing Diffu-
 sion MRI from CT Perfusion
 Junhyeok Lee, Hyungwoong Kim, [Hyungjin Chung](#), Heeseong Eom, Jang Joon, Chul-Ho Sohn,
 Kyu Sung Choi
- [P10]** ContextMRI: Enhancing Compressed Sensing MRI through Metadata Condi-
 tioning
[Hyungjin Chung](#)*, Dohun Lee*, Zihui Wu, Byung-Hoon Kim, Katie Bouman, Jong Chul Ye
- [P9]** Contrastive CFG: Improving CFG in Diffusion Models by Contrasting Positive
 and Negative Concepts
 Jinho Chang, [Hyungjin Chung](#), Jong Chul Ye
- [P8]** Derivative-Free Diffusion Manifold-Constrained Gradient for Unified XAI
 Won Jun Kim*, [Hyungjin Chung](#)*, Jemin Kim*, Byeongsu Sim, Sangmin Lee, Jong Chul Ye
- [P7]** CapeLLM: Support-Free Category-Agnostic Pose Estimation with Multimodal
 Large Language Models
 Junho Kim, [Hyungjin Chung](#), Byung-Hoon Kim
- [P6]** ACDC: Autoregressive coherent multimodal generation using diffusion correc-
 tion
[Hyungjin Chung](#)*, Dohun Lee*, Jong Chul Ye
- [P5]** A survey on diffusion models for inverse problems
 Giannis Daras, [Hyungjin Chung](#), Chieh-Hsin Lai, Yuki Mitsufuji, Jong Chul Ye, Peyman Milan-
 far, Alexandros G Dimakis, Mauricio Delbracio
- [P4]** Amortized Posterior Sampling with Diffusion Prior Distillation

Abbas Mammadov*, [Hyungjin Chung*](#), Jong Chul Ye

[P3] Deep Learning for Deep Learning Performance: How Much Data Is Needed in Biomedical Imaging?

Kyu Sung Choi, Junhyeok Lee, [Hyungjin Chung](#), Jeong-Hoon Lee

[P2] Objective and Interpretable Breast Cosmesis Evaluation with Attention Guided Denoising Diffusion Anomaly Detection Model

Sangjoon Park, Yong Bae Kim, Jee Suk Chang, Seo Hee Choi, [Hyungjin Chung](#), Ik Jae Lee, Hwa Kyung Byun

[P1] Generative AI for Medical Imaging: extending the MONAI Framework

Pinaya *et al.* ([Hyungjin Chung](#): Contributing author)

Patent

US patent application

- Score-based Diffusion Model for Accelerated MRI and Apparatus thereof 2023

Korea patent publication

- Crowd Deep Learning Method of Medical Artificial Intelligence and Apparatus thereof 2025

- Score-based Diffusion Model for Accelerated MRI and Apparatus thereof 2024

- Task-agnostic image processing method and apparatus using transformer and federated split learning 2024

- Tomography image processing method using neural network based on unsupervised learning to remove missing cone artifacts and apparatus therefor 2023

- Two-Stage unsupervised learning method for 3D Time-of-flight MRA reconstruction and the apparatus thereof 2023

Korea patent application

- Accelerating method of conditional diffusion models for inverse problems using stochastic contraction and the apparatus thereof 2021

- Extreme condition reconstruction method HAADF-STEM-EDX tomography using unsupervised deep learning and the apparatus thereof 2021

Teaching experience

Head TA, KAIST

AI 618: Generative models and unsupervised learning 2024-1

BiS 800: Machine Learning for Medical Image Analysis 2021-2

TA, KAIST

AI 618: Generative models and unsupervised learning 2022-2

MAS 480: Advanced Intelligence 2021-1

BiS 452: Biomedical Imaging 2020-2

BiS 301: Bioengineering Laboratory I 2019, 2020-1

References

Jong Chul Ye 2019.03 - 2025.02

Ph.D. advisor (KAIST) jong.ye@kaist.ac.kr

Michael T. McCann 2022.06 - 2022.08

Host (LANL) mccann@lanl.gov

Mauricio Delbracio 2023.07 - 2023.11

Host (Google) mdelbra@google.com