

Hyungjin Chung

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Research interests	Generative models, Inverse problems, Multimodal/Motion Representation	
Work Experience	EverEx	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
Education		
	KAIST	Daejeon, Korea
	Ph.D., Bio & Brain Engineering	2019.03 – 2025.02
	Advisor: Jong Chul Ye	
	Korea University	Seoul, Korea
Awards		
	Google Conference Scholarship (\$3000)	2024.5
	30th Samsung Humantech Gold Award (\$20000)	2024.2
	- 1st prize in Signal Processing	
	Bronze Prize, IPIU 2024	2024.2
	29th Samsung Humantech Gold Award (\$10000)	2023.2
	- 1st prize in Signal Processing	
Professional Service	2020-2023 BISPL Best Researcher Award (\$4000×4)	2020-2023.12
	Advisory board member	Seoul, Korea
	SNUHRad-AICON: SNUH-Radiology AI Collaboration Network	2021.05 – Present
Conf. publications	[C10] Deep Diffusion Image Prior for Efficient OOD Adaptation in 3D Inverse Problems	
	Hyungjin Chung and Jong Chul Ye	
	ECCV 2024	
	[C9] Prompt-tuning Latent Diffusion Models for Inverse Problems	
	Hyungjin Chung, Jong Chul Ye, Peyman Milanfar, Mauricio Delbracio	
	ICML 2024	
	[C8] Decomposed Diffusion Sampler for Accelerating Large-Scale Inverse Problems	
	Hyungjin Chung, Suhyeon Lee, Jong Chul Ye	
	ICLR 2024	
	[C7] Direct Diffusion Bridge using Data Consistency for Inverse Problems	
	Hyungjin Chung, Jeongsol Kim, Jong Chul Ye	
	NeurIPS 2023	
	[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

- [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

	<p>[J3] Deep learning STEM-EDX tomography of nanocrystals Yoseob Han*, Jaeduck Jang*, Eunju Cha*, Junho Lee*, Hyungjin Chung* et al. <i>Nature Machine Intelligence</i>, 2021 (March Issue cover)</p> <p>[J2] Unpaired training of deep learning tMRA for flexible spatio-temporal resolution Eunju Cha, Hyungjin Chung, Eung Yeop Kim, Jong Chul Ye <i>IEEE Transactions on Medical Imaging</i>, 2020</p> <p>[J1] Unpaired deep learning for accelerated MRI using optimal transport driven cycleGAN Gyutaek Oh, Byeongsu Sim, Hyungjin Chung, Leonard Sunwoo, Jong Chul Ye <i>IEEE Transactions on Computational Imaging</i>, 2020</p>
Books	<p>[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</p>
Reviewer (Conference)	<p>ICLR 2024-2025 NeurIPS 2022-2024 NeurIPS Datasets&Benchmarks 2023-2024 CVPR 2023-2024 ECCV 2022, 2024 ICCV 2023 MICCAI 2022-2023</p>
Reviewer (Journal)	<p>NEJM AI Nature Communications Medical Image Analysis IEEE TMI (<i>Gold Distinguished reviewer 2024, Bronze Distinguished reviewer 2023</i>) IEEE TPAMI, TCI, TSP, TIP, SPS See full list</p>
Invited talks & Lectures	<p>Texts in inverse problem solving using diffusion models</p> <ul style="list-style-type: none"> - <i>University of Michigan</i> 2024.10 <p>Tutorial on Denoising Diffusion Model: Fundamentals & Applications</p> <ul style="list-style-type: none"> - <i>IEIE: Winter School on Biomedical Signal Processing</i> 2024.02 <p>Adapting diffusion models for inverse problems</p> <ul style="list-style-type: none"> - <i>UCLA, Caltech: Grundfest Memorial Lecture Series in Graphics and Imaging</i> 2024.02 - <i>2023 NeurIPS Workshop on diffusion models</i> 2023.12 - <i>Google Research</i> 2023.10 <p>Advances in diffusion models and their applications to inverse problems</p> <ul style="list-style-type: none"> - <i>Guest Lecture, Korea University</i> 2023.11 <p>Generative (diffusion) models for medical imaging</p> <ul style="list-style-type: none"> - <i>International Congress on Magnetic Resonance Imaging (ICMRI) 2023</i> 2023.11 - <i>Michigan State University</i> 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 <p>Diffusion models: foundations and applications in biomedical imaging</p> <ul style="list-style-type: none"> - <i>IEEE International Symposium on Biomedical Imaging (ISBI) 2023</i> 2023.05 <p>Diffusion models for inverse problems</p> <ul style="list-style-type: none"> - <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

[P6] A survey on diffusion models for inverse problems Giannis Daras, Hyungjin Chung , Chieh-Hsin Lai, Yuki Mitsufuji, Jong Chul Ye, Peyman Milanfar, Alexandros G Dimakis, Mauricio Delbracio	
[P5] Amortized Posterior Sampling with Diffusion Prior Distillation Abbas Mammadov*, Hyungjin Chung* , Jong Chul Ye	
[P4] CFG++: Manifold-constrained Classifier Free Guidance for Diffusion Models Hyungjin Chung* , Jeongsol Kim*, Geon-Yeong Park*, Hyelin Nam*, Jong Chul Ye	
[P3] Regularization by texts for latent diffusion inverse solvers Jeongsol Kim*, Geon-Yeong Park*, Hyungjin Chung , Jong Chul Ye	
[P2] Steerable Conditional Diffusion for Out-of-Distribution Adaptation in Imaging Inverse Problems Riccardo Barbano*, Alexander Denker*, Hyungjin Chung* , Tae Hoon Roh, Simon Arrdige, Peter Maass, Bangti Jin, Jong Chul Ye	
[P1] Generative AI for Medical Imaging: extending the MONAI Framework Pinaya <i>et al.</i> (Hyungjin Chung : Contributing author)	

Patent

US patent application Score-based Diffusion Model for Accelerated MRI and Apparatus thereof	2023
Korea patent publication 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 Ph.D. advisor (KAIST)	2019.03 - current jong.ye@kaist.ac.kr
Michael T. McCann Host (LANL)	2022.06 - 2022.08 mccann@lanl.gov
Mauricio Delbracio	2023.07 - 2023.11

Host (Google)

mdelbra@google.com