

Sihyeon Kim [김시현 · 金時玄]



Summary

Final-year Ph.D. candidate in Computer Science at Korea University, advised by Prof. Hyunwoo J. Kim. My research focuses on generative models, 3D computer vision and geometric representation learning, with a current focus on neural solvers for generative ODEs and, most recently, alignment for generative models.

Research interests: Generative models • Neural Solvers • 3D computer vision

Education

Ph.D. in Computer Science, Korea University Sep. 2019 – Present

Advisor: Prof. Hyunwoo J. Kim (expected graduation: Feb. 2027)

Entered through Korea University's combined M.S./Ph.D. track; doctoral phase since Sep. 2021.

Visiting Scholar, University of Wisconsin–Madison Jun. 2025 – Nov. 2025

Host: Prof. Vikas Singh

B.S. in Biomedical Engineering, Korea University Mar. 2015 – Aug. 2019

Advisor: Prof. Joon-Kyung Seong

Publications

Underlined = author * equal contribution Conference names abbreviated.

Learning to Solve Generative ODEs Beyond the Linear Span

Sihyeon Kim, Seunghun Lee, Vikas Singh[§], and Hyunwoo J. Kim[§]

arXiv preprint, 2026 [Paper]

ST-VLM: Kinematic Instruction Tuning for Spatio-Temporal Reasoning in Vision-Language Models

Dohwan Ko*, Sihyeon Kim*, Yumin Suh, Vijay Kumar B.G, Minseo Yoon, Manmohan Chandraker, and Hyunwoo J. Kim

arXiv preprint, 2025 [Paper] [Project]

Constant Acceleration Flow

Dogyun Park, Sojin Lee, Sihyeon Kim, TaeHoon Lee, Youngjoon Hong, and Hyunwoo J. Kim

Advances in Neural Information Processing Systems (NeurIPS), 2024 [Paper] [Code]

Domain-agnostic Latent Diffusion Models for Synthesizing High-Quality Implicit Neural Representations

Dogyun Park, Sihyeon Kim, Sojin Lee, and Hyunwoo J. Kim

International Conference on Learning Representations (ICLR), 2024 [Paper] [Code]

Advancing Bayesian Optimization via Learning Correlated Latent Space

Seunghun Lee*, Jaewon Chu*, Sihyeon Kim*, Juyeon Ko, and Hyunwoo J. Kim

Advances in Neural Information Processing Systems (NeurIPS), 2023 [Paper]

Semantic-Aware Implicit Template Learning via Part Deformation Consistency

Sihyeon Kim, Minseok Joo, Jaewon Lee, Juyeon Ko, Juhan Cha, and Hyunwoo J. Kim

International Conference on Computer Vision (ICCV), 2023 [Paper] [Code]

Self-positioning Point-based Transformer for Point Cloud Understanding

Jinyoung Park*, Sanghyeok Lee*, Sihyeon Kim, Yongyang Xiong, and Hyunwoo J. Kim

Conference on Computer Vision and Pattern Recognition (CVPR), 2023 [Paper] [Code]

Metropolis-Hastings Data Augmentation for Graph Neural Networks

Hyeonjin Park*, Seunghun Lee*, Sihyeon Kim, Jinyoung Park, Jisu Jeong, Kyung-Min Kim, Jung-Woo Ha, and Hyunwoo J. Kim

Advances in Neural Information Processing Systems (NeurIPS), 2021 [Paper] [Code]

PointWOLF: Point Cloud Augmentation with Weighted Local Transformations

Sihyeon Kim*, Sanghyeok Lee*, Dasol Hwang, Jaewon Lee, Seong Jae Hwang, and Hyunwoo J. Kim

International Conference on Computer Vision (ICCV), 2021 [Paper] [Code]

Patents

- **Generative model with arbitrary resolution and scale using a diffusion model and implicit neural network.** H. J. Kim, D. Park, **S. Kim**, S. Lee. *Korea patent application*, 2024.
- **3D data augmentation method using weighted local transformation and apparatus.** H. J. Kim, **S. Kim**, S. Lee, J. Park. *Korea patent application*, 2024.
- **Cortical neurodegeneration prediction in Alzheimer's disease using CT images.** S. W. Seo, J.-K. Seong, J. Kim, **S. Kim**. *Korea patent application*, 2021.

Research Experience

Graduate Student Researcher@Korea University (Advisor: Prof. Hyunwoo J. Kim) Sep. 2019 – Present

1. 3D High-level Scene Understanding and Situation Prediction for Urban Drones Mar. 2023 – Present

- **Project lead** · 4-year grant from the National Research Foundation of Korea on 3D computer vision for urban drones.
- Keywords: aerial perception, 3D reconstruction, synthetic-to-real adaptation, 3D scene understanding, object detection.

2. Development of 3D Orthodontic Software for Automatic Dental Set-Up Feb. 2020 – Nov. 2021

- **Project lead** · industry collaboration with MyLign, supported by the Ministry of SMEs and Startups.
- Keywords: 3D registration, 3D classification, 3D object detection, medical imaging.

Undergraduate Researcher@Korea University (Advisor: Prof. Joon-Kyung Seong) Mar. 2018 – Feb. 2019

- Brain CT segmentation and cortical neurodegeneration prediction for Alzheimer's disease diagnosis; joint work with Samsung Medical Center.
- Keywords: 3D segmentation, computed tomography (CT), machine learning, medical imaging.

Professional Service

Conference reviewer: NeurIPS (2025-), ICLR (2026-), CVPR (2024-), ICCV (2025-), AAAI (2024-), MICCAI Workshop on Foundation Models for General Medical AI (2024).

Journal reviewer: IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI) (2023, 2024).

Talks

- **Evaluating Geometric Consistency for Video Generation Models** — Short talk @ NAVER AI Lab Mar. 2024
- **Introduction to 3D Computer Vision** — Guest lecture, Advanced Machine Learning @ Korea University May 2023

Teaching Experience

- Teaching Assistant, **Computer Vision** (AAA534), Korea University Spring 2020
- Teaching Assistant, **Machine Learning** (COSE362), Korea University Fall 2019
- Teaching Assistant, **Deep Learning**, NVIDIA AI Conference Fall 2018

Honors & Awards

- Google Student Travel Grant@ICCV 2023
- Teaching Assistantship, Korea University 2019, 2020
- Excellence Scholarship for Undergraduate Research Students, Korea University 2018

Languages

Korean (native) • English (fluent)