Sangeek Hyun

hse1032@gmail.com | Google Scholar | LinkedIn | github.com/hse1032 | hse1032.github.io

RESEARCH SUMMARY

I am a Ph.D. candidate in Artificial Intelligence at Sungkyunkwan University, working at the intersection of generative modeling, computer vision, and visual representation learning. My research aims to build scalable generative systems that can model, synthesize, and manipulate visual worlds across images, videos, and 3D scenes. Recently, I am particularly interested in developing visual world models that learn from real-world scenes and simulate spatially and temporally coherent visual environments based on my background knowledge in scalable generative modeling and video and 3D generation.

RESEARCH INTERESTS

- Generative Models, Visual World Model, Video and 3D Generation, 3D Scene Representation, Efficient and Scalable Generation.

EDUCATION

Sungkyunkwan University (SKKU) Suwon, South Korea
Ph.D. Candidate, Artificial Intelligence (Visual Computing Lab) *Sep. 2021 – Present*
- Advisor: Prof. Jae-Pil Heo

Sungkyunkwan University (SKKU) Suwon, South Korea
M.S. in Artificial Intelligence (Visual Computing Lab) *Feb. 2020 – Aug. 2021*
- Advisor: Prof. Jae-Pil Heo

Sungkyunkwan University (SKKU) Suwon, South Korea
B.S. in Computer Science and Engineering *Mar. 2016 – Feb. 2020*

HONORS AND AWARDS

- **Winner**, Qualcomm Innovation Fellowship Korea (QIFK) 2024

PUBLICATIONS

Summary: 7 first-/co-first-author papers and **11** co-authored papers at top-tier conferences and journals including CVPR, NeurIPS, ICLR, ICML, ICCV and ECCV. My work has received **933** citations (May 30, 2026, Google Scholar).

Cross-scale Aligned Supervision for Training GANs
Sangeek Hyun, MinKyu Lee, Jae-Pil Heo
arXiv preprint 2026

Disambiguating 2D-3D Correspondences in Gaussian Splatting-based Feature Fields for Visual Localization
Miso Lee, Sangeek Hyun, Yerim Jeon, Jae-Pil Heo
arXiv preprint 2026

Scalable GANs with Transformers
Sangeek Hyun, MinKyu Lee, Jae-Pil Heo
International Conference on Machine Learning (ICML) 2026

SeaCache: Spectral-Evolution-Aware Cache for Accelerating Diffusion Models
Jiwoo Chung, Sangeek Hyun, MinKyu Lee, Byeongju Han, Geonho Cha, Dongyoon Wee, Youngjun Hong, Jae-Pil Heo
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) **[Oral]** 2026

Looking Beyond the Window: Global-Local Aligned CLIP for Training-free Open-Vocabulary Semantic Segmentation
ByeongCheol Lee, Hyun Seok Seong, Sangeek Hyun, Gilhan Park, WonJun Moon, and Jae-Pil Heo
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2026

Rethinking LayerNorm in Image Restoration Transformers
MinKyu Lee, Sangeek Hyun, Woojin Jun, Hyunjun Kim, Jiwoo Chung, Jae-Pil Heo
International Conference on Learning Representations (ICLR) 2026

Correlation-guided calibration of query dependency for video temporal grounding
WonJun Moon, Sangeek Hyun, SuBeen Lee, Jae-Pil Heo
Pattern Recognition (PR) 2025

Diffusion Feature Field for Text-based 3D Editing with Gaussian Splatting
Eunseo Koh, Sangeek Hyun, MinKyu Lee, Jiwoo Chung, Kangmin Seo, Jae-Pil Heo
Advances in Neural Information Processing Systems (NeurIPS) 2025

Fine-Tuning Visual Autoregressive Models for Subject-Driven Generation
Jiwoo Chung, Sangeek Hyun, Hyunjun Kim, Eunseo Koh, MinKyu Lee, Jae-Pil Heo
International Conference on Computer Vision (ICCV) 2025

AESOP: Auto-Encoded Supervision for Perceptual Image Super-Resolution
MinKyu Lee, Sangeek Hyun, Woojin Jun, Jae-Pil Heo
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2025

GSGAN: Adversarial Learning for Hierarchical Generation of 3D Gaussian Splats
Sangeek Hyun, Jae-Pil Heo
Advances in Neural Information Processing Systems (NeurIPS) 2024

Style Injection in Diffusion: A Training-free Approach for Adapting Large-scale Diffusion Models for Style Transfer
Jiwoo Chung*, Sangeek Hyun*, Jae-Pil Heo **(*Equal contribution)**
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) **[Highlight]** 2024

Diversity-aware Channel Pruning for StyleGAN Compression
Jiwoo Chung, Sangeek Hyun, Sang-Heon Shim, Jae-Pil Heo
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2024

Task-disruptive Background Suppression for Few-Shot Segmentation
Suho Park, SuBeen Lee, Sangeek Hyun, Hyun Seok Seong, Jae-Pil Heo
AAAI Conference on Artificial Intelligence (AAAI) 2024

Frequency-based Motion Representation for Video Generative Adversarial Networks
Sangeek Hyun, Jaihyun Lew, Jiwoo Chung, Euiyeon Kim, Jae-Pil Heo
IEEE Transactions on Image Processing (TIP) 2023

Disentangled Representation Learning for Unsupervised Neural Quantization
Haechan Noh, Sangeek Hyun, Woojin Jeong, Hanshin Lim, Jae-Pil Heo
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2023

Query-dependent Video Representation for Moment Retrieval and Highlight Detection
WonJun Moon*, Sangeek Hyun*, SangUk Park, Dongchan Park, Jae-Pil Heo **(*Equal contribution)**
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2023

Local Attention Pyramid for Scene Image Generation
Sang-Heon Shim, Sangeek Hyun, DaeHyun Bae, Jae-Pil Heo
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2022

Self-Supervised Video GANs: Learning for Appearance Consistency and Motion Coherency
Sangeek Hyun, Jihwan Kim, Jae-Pil Heo
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2021

VarSR: Variational Super-Resolution Network for Very Low Resolution Images
Sangeek Hyun, Jae-Pil Heo
European Conference on Computer Vision (ECCV) 2020

ACADEMIC SERVICES

Conference Reviewer: CVPR (2022–2026), ICCV (2025), ECCV (2024, 2026), NeurIPS (2024–2026), ICLR (2025–2026), ICML (2025–2026), AAAI (2026)

Journal Reviewer: IJCV (2025–2026)

PROJECTS

Named Entity Recognition for Video Understanding *Apr. 2025 – Mar. 2026*
- Developed video NER models for entity extraction and video understanding using multimodal large language models, and built evaluation pipelines for systematic benchmarking.

Detection of AI-Generated Visual Content *Jul. 2021 – Feb. 2025*
- Co-led a project on AI-generated visual content detection, including dataset construction and the development of deepfake and synthetic media detection models. * *Recognized by the Minister of Science and ICT for outstanding achievement in social problem-solving R&D.*

Fashion Image Retrieval and Generation *Sep. 2020 – Dec. 2021*
- Developed models for fashion image retrieval and generation, focusing on image synthesis and visual feature learning for fashion applications.

Handwritten Mathematical Expression Recognition *Mar. 2020 – Dec. 2020*
- Developed handwritten mathematical expression recognition models and built paired datasets of handwritten formula images and LaTeX annotations.

Semiconductor Defect Detection and Classification *Sep. 2019 – Feb. 2020*
- Developed computer vision models for semiconductor defect detection and classification with an emphasis on robust visual inspection in few-shot industrial data.