

Minhyeok Lee

Computer Vision Engineer, ML/DL Researcher

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RESEARCH INTERESTS

Generative Model

- Video Diffusion Inpainting

3D Novel View Synthesis

- Neural Radiance Field
- 3D Gaussian Splatting

Scene Understanding

- Salient Object Detection
- Video Object Segmentation
- Video Anomaly Detection
- Skeleton based Action Recognition

Multimodal Vision

- Referring Image Segmentation
- Open-Vocabulary Semantic Segmentation

Autonomous Driving

- Lane Detection
- Monocular Depth Estimation
- LiDAR Point Cloud

EDUCATION

Yonsei University | College of Engineering
Integrated M.S./Ph.D. in Electrical and Electronic Engineering
Image and Video Pattern Recognition Lab. (M.S/Ph.D 8th)

Seoul, Korea
Mar. 2021-Present

Yonsei University | College of Engineering
B.S. in Electrical and Electronic Engineering

Seoul, Korea
Mar. 2017-Feb. 2021

Hansung Science High School

Seoul, Korea
Mar. 2014-Feb. 2017

PUBLICATIONS

[Conference Proceedings]

Effective SAM Combination for Open-Vocabulary Semantic Segmentation, *CVPR'25 – Oral (3.3% of the accepted papers)*

- Minhyeok Lee, Suhwan Cho, Jungho Lee, Sunghun Yang, Heeseung Choi, Ig-Jae Kim, Sangyoun Lee

CoCoGaussian: Leveraging Circle of Confusion for Gaussian Splatting from Defocused Images, *CVPR'25*

- Jungho Lee, Suhwan Cho, Taehy Kim, Ho-Deok Jang, Minhyeok Lee, Geonho Cha, Dongyoon Wee, Dogyoon Lee, Sangyoun Lee

SMURF: Continuous Dynamics for Motion-Deblurring Radiance Fields, *CVPRW'25*

- Jungho Lee, Dogyoon Lee, Minhyeok Lee, Donghyung Kim, Sangyoun Lee

Video diffusion models are strong video inpainter, *AAAI'25*

- Minhyeok Lee, Suhwan Cho, Chajin Shin, and Jungho Lee, Sunghun Yang, Sangyoun Lee

Guided Slot Attention for Unsupervised Video Object Segmentation, *CVPR'24*

- Minhyeok Lee, Suhwan Cho, Dogyoon Lee, Chaewon Park, Jungho Lee, Sangyoun Lee

Dual Prototype Attention for Unsupervised Video Object Segmentation, *CVPR'24*

- Suhwan Cho*, Minhyeok Lee*, Seunghoon Lee, Sangyoun Lee

Boundary-aware Camouflaged Object Detection via Deformable Point Sampling, *ICEIC'24*

- Minhyeok Lee, Suhwan Cho, Chaewon Park, Dogyoon Lee, Jungho Lee, Sangyoun Lee

Hierarchically decomposed graph convolutional networks for skeleton-based action recognition, *ICCV'23*

- Jungho Lee, Minhyeok Lee, Dogyoon Lee, Sangyoun Lee

Leveraging spatio-temporal dependency for skeleton-based action recognition, *ICCV'23*

- Jungho Lee, Minhyeok Lee, Suhwan Cho, Sungmin Woo, Sungjun Jang, Sangyoun Lee

DP-NeRF: Deblurred Neural Radiance Field with Physical Scene Priors, *CVPR'23*

- Dogyoon Lee, Minhyeok Lee, Chajin Shin, Sangyoun Lee

Unsupervised Video Object Segmentation via Prototype Memory Network. *WACV'23*

- Minhyeok Lee, Suhwan Cho, Seunghoon Lee, Chaewon Park, Sangyoun Lee

Treating Motion as Option to Reduce Motion Dependency in Unsupervised Video Object Segmentation *WACV'23*

- Suhwan Cho, Minhyeok Lee, Seunghoon Lee, Chaewon Park, Donghyeong Kim, Sangyoun Lee

Adaptive Graph Convolution Module for Salient Object Detection *ICIP'23*

- Yongwoo Lee, Minhyeok Lee, Suhwan Cho, Sangyoun Lee

TSANET: Temporal and Scale Alignment for Unsupervised Video Object Segmentation *ICIP'23*

- Seunghoon Lee, Suhwan Cho, Dogyoon Lee, Minhyeok Lee, Sangyoun Lee

Two-stream Decoder Feature Normality Estimating Network for Industrial Anomaly Detection *ICASSP'23*

- Chaewon Park, Minhyeok Lee, Suhwan Cho, Donghyeong Kim, Sangyoun Lee

SPSN: Superpixel Prototype Sampling Network for RGB-D Salient Object Detection, *ECCV'22*

- Minhyeok Lee*, Chaewon Park*, Suhwan Cho, Sangyoun Lee

Tackling Background Distraction in Video Object Segmentation, *ECCV'22*

- Suhwan Cho, Heansung Lee, Minhyeok Lee, Chaewon Park, Sungjun Jang, Minjung Kim, Sangyoun Lee

Saliency Detection via Global Context Enhanced Feature Fusion and Edge Weighted Loss, *ICIP'22*

- Chaewon Park*, Minhyeok Lee*, MyeongAh Cho, Sangyoun Lee

Robust Lane Detection via Expanded Self Attention, *WACV'22*

- Minhyeok Lee, Junhyeop Lee, Dogyoon Lee, Woojin Kim, Sangwon Hwang, Sangyoun Lee

EdgeConv with Attention Module for Monocular Depth Estimation, *WACV'22*

- Minhyeok Lee, Sangwon Hwang, Chaewon Park, Sangyoun Lee

FastAno: Fast Anomaly Detection via Spatio-temporal Patch Transformation, *WACV'22*

- Chaewon Park, MyeongAh Cho, Minhyeok Lee, Sangyoun Lee

Multi-level Feature maps Attention for Monocular Depth Estimation, *ICCE-Asia'21*

- Seunghoon Lee, Minhyeok Lee, Sangyoun Lee

Regularization Strategy for Point Cloud via Rigidly Mixed Sample, *CVPR'21*

- Dogyoon Lee, Jaeha Lee, Junhyeop Lee, Hyeongmin Lee, Minhyeok Lee, Sungmin Woo, Sangyoun Lee

[Journals]

Sparse-DeRF: Deblurred Neural Radiance Fields from Sparse View, *TPAMI'25*

- Dogyoon Lee, Donghyeong Kim, Jungho Lee, Minhyeok Lee, Seunghoon Lee, Sangyoun Lee

Treating Motion as Option with Output Selection for Unsupervised Video Object Segmentation, *TCSVT'25*

- Suhwan Cho, Minhyeok Lee, Jungho Lee, MyeongAh Cho, Seungwook Park, Jaeyeob Kim, Hyunsung Jang, Sangyoun Lee

[Preprinted Papers]

Find First, Track Next: Decoupling Identification and Propagation in Referring Video Object Segmentation, *arXiv'25*

- Suhwan Cho*, Seunghoon Lee*, Minhyeok Lee, Jungho Lee, Sangyoun Lee

STATIC: Surface Temporal Affine for Time Consistency in Video Monocular Depth Estimation, *arXiv'25*

- Sunghun Yang, Minhyeok Lee, Suhwan Cho, Jungho Lee, Sangyoun Lee

CoMoGaussian: Continuous Motion-Aware Gaussian Splatting from Motion-Blurred Images, *arXiv'24*

- Jungho Lee, Donghyeong Kim, Dogyoon Lee, and Suhwan Cho, Minhyeok Lee, Sangyoun Lee

Synchronizing Vision and Language: Bidirectional Token-Masking AutoEncoder for Referring Image Segmentation, *arXiv '23*

- Minhyeok Lee, Dogyoon Lee, Jungho Lee, Suhwan Cho, Heeseung Choi, Ig-Jae Kim, Sangyoun Lee

Pixel-Level Equalized Matching for Video Object Segmentation, *arXiv '22*

- Suhwan Cho, Woo Jin Kim, MyeongAh Cho, Seunghoon Lee, Minhyeok Lee, Chaewon Park, Sangyoun Lee

RandomSEMO: Normality Learning of Moving Objects for Video Anomaly Detection, *arXiv '22*

- Chaewon Park, Minhyeok Lee, MyeongAh Cho, Sangyoun Lee

PROJECTS

Development of degradation removal and video enhancement using artificial intelligence

Yonsei University

Nov.2022-Mar.2024

- Funded by Tech Incubator Program for startup Korea (TIPS)
- Deep learning researcher
- Video Enhancement, Video Super Resolution
- Development of an efficient intelligent image processing algorithm that is robust on complex degradation

Development of learning technology to improve classification performance based on LiDAR point cloud

Yonsei University

Apr.2021-Mar.2022

- Funded by Hyundai Motor Company
- Deep learning researcher
- Development of unsupervised and semi-supervised learning algorithms
- Development of lightweight models for point cloud classification

Road conditions and autonomous bus AI data

Yonsei University

Sep.2020-Jun.2021

- Funded by National Information society Agency (NIA)
- Deep learning researcher
- Crack and Obstacle Segmentation
- Development of Road anomaly detection algorithms and models

PROFESSIONAL SERVICES

Conference Reviewer

- The Thirty-Ninth Annual Conference on Neural Information Processing Systems (*NeurIPS 2025*)
- International Conference on Computer Vision (*ICCV 2025*)
- IEEE/CVF Computer Vision and Pattern Recognition (*CVPR 2025*) - *Outstanding Reviewer (top 5%)*
- IEEE/CVF Winter Conference on Applications of Computer Vision (*WACV 2025*)
- IEEE/CVF Computer Vision and Pattern Recognition (*CVPR 2024*)
- European Conference on Computer Vision (*ECCV 2024*)
- IEEE/CVF Winter Conference on Applications of Computer Vision (*WACV 2024*)
- IEEE/CVF Winter Conference on Applications of Computer Vision (*WACV 2023*)

Journal Reviewer

- IEEE Transactions on Pattern Analysis and Machine Intelligence (*TPAMI*)
- IEEE Transactions on Circuits and Systems for Video Technology (*TCSVT*)