# Do Gyoon Lee

Machine Learning Engineer, Computer Vision Expert
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## RESEARCH INTERESTS

**Computer Vision & Graphics**

Neural Rendering and its Applications in Real-world Scenarios, 3D from Images
3D Generative Model using Neural Rendering, 3D Reconstruction
Visual Scene Understanding on Image/Video/3D (Point Cloud, Mesh) data

**Machine Learning & Deep Learning**

Data Augmentation & Regularization
Self-supervised Learning, Unsupervised Learning

## EDUCATION

**Yonsei University | College of Engineering** — ***Seoul, Korea***
Ph.D Candidate in Electrical Electronics Engineering — **Mar. 2019-Present**
Advisor: Prof. *Sangyoun Lee*
Anticipated Graduation Date: Aug.2024

**Yonsei University | College of Engineering** — **Seoul, Korea**
BE in Electrical Electronics Engineering — **Mar.2012-Feb.2019 (Including military service: May.2014 – Feb.2016)**

## RESEARCH EXPERIENCE

**Yonsei University** — **Mar.*2019 – Present***
Image and Video Pattern Recognition Lab
Graduate Student Research Assistance

## PUBLICATIONS

2024

**Probabilistic Cost Volume Refinement for Self-supervised Multi-Frame Monocular Depth**
Sungmin Woo*, Wonjoon Lee*, WooJin Kim, **Dogyoon Lee**, Sangyoun Lee
*European Conference on Computer Vision* ***(ECCV), 2024***

**Dual Prototype Attention for Unsupervised Video Object Segmentation**
Suwhan Cho, Minhyeok Lee, Seunghoon Lee, **Dogyoon Lee**, Sangyoun Lee
*IEEE/CVF Computer Vision and Pattern Recognition* ***(CVPR), 2024***

**Guided Slot Attention for Unsupervised Video Object Segmentation**
Minhyeok Lee, Suwhan Cho, **Dogyoon Lee**, Chaewon Park, Jungho Lee, Sangyoun Lee
*IEEE/CVF Computer Vision and Pattern Recognition* ***(CVPR), 2024***

2023

**DP-NeRF: Deblurred Neural Radiance Field with Physical Scene Priors**
**Dogyoon Lee**, Minhyeok Lee, Chajin Shin, Sangyoun Lee
*IEEE/CVF Computer Vision and Pattern Recognition* ***(CVPR), 2023***

**Hierarchically Decomposed Graph Convolutional Networks for Skeleton-Based Action Recognition**
Jungho Lee, Minhyeok Lee, **Dogyoon Lee**, Sangyoun Lee
*IEEE/CVF International Conference on Computer Vision* ***(ICCV), 2023***

**TSANet: Temporal and Scale Alignment for Unsupervised Video Object Segmentation**
Seunghoon Lee, Suwhan Cho, **Dogyoon Lee**, Minhyeok Lee, Sangyoun Lee
*IEEE International Conference on Image Processing* ***(ICIP), 2023***

**Multidimensional Feature Representation for Point Cloud Analysis**
Sungmin Woo, **Dogyoon Lee**, Sangwon Hwang, Sangyoun Lee
***Pattern Recognition, 2023***

2022

**Expanded Adaptive Scaling Normalization for End-to-End Image Compression**
Chajin Shin, Hyeongmin Lee, Hanbin Son, Sangjin Lee, **Dogyoon Lee**, Sangyoun Lee
*European Conference on Computer Vision* ***(ECCV), 2022***

**Robust Lane Detection via Expanded Self attention**
Minhyeok Lee, Junhyeop Lee, **Dogyoon Lee**, Woojin Kim, Sangwon Hwang, Sangyoun Lee
*IEEE/CVF Winter Conference on Applications of Computer Vision* ***(WACV), 2022***

2021

**Regularization Strategy for Point Cloud via Rigidly Mixed Sample**
**Dogyoon Lee**, Jaeha Lee, Junhyeop Lee, Hyeongmin Lee, Minhyeok Lee, Sungmin Woo, Sangyoun Lee
*IEEE/CVF Computer Vision and Pattern Recognition* ***(CVPR), 2021***

**3D Mesh Transformation Preprocessing System in the Real Space for Augmented Reality Services**
Young-Suk Yoon, Sangwon Hwang, **Dogyoon Lee**, Sangyoun Lee, Jae-Won Suh, Sung-Uk Jung
***ICT Express, 2021***

2020

**False Positive Removal For 3D Vehicle Detection with Penetrated Point Classifier**
Sungmin Woo, Sangwon Hwang, Woojin Kim, Junhyeop Lee, **Dogyoon Lee**, Sangyoun Lee
*IEEE International Conference on Image Processing* ***(ICIP), 2020***

## PENDING

**Synchronizing Vision and Language: Bidirectional Token-Masking AutoEncoder for Referring Image Segmentation**
Minhyeok Lee, **Dogyoon Lee**, Jungho Lee, Suhwan Cho, Heeseung Choi, Ig-jae Kim, Sangyoun Lee
***Arxiv*** *Preprint****, Under Review 2024***

**SMURF: Continuous Dynamics for Motion-Deblurring Radiance Fields**
Jungho Lee, **Dogyoon Lee**, Minhyeok Lee, Donghyeong Kim, Sangyoun Lee
***Arxiv*** *Preprint****, Under Review 2024***

**CRiM-GS: Continuous Rigid Motion-Aware Gaussian Splatting from Motion Blur Images**
Jungho Lee, Donghyeong Kim, **Dogyoon Lee**, Suhwan Cho, Sangyoun Lee
***Under Review 2024***

**Sparse-DeRF: Deblurred Neural Radiance Fields from Sparse View**
**Dogyoon Lee**, Donghyeong Kim, Jungho Lee, Minhyeok Lee, Seunghoon Lee, Sangyoun Lee
***Under Review, 2024***

## PROJECT EXPERIENCE

**Auto Labeling Unlabeled Real Point Cloud Data via Semi-supervised Point Cloud Classification** **Apr.2021-Apr.2022**
Yonsei University | Hyundai Motors Korea
*Project Manager / Researcher*

**3D Recognition System for Autonomous Driving with Single- and Sparse Multi-LiDAR.** **Mar.2020-Dec.2021**
Yonsei University | Mando Halla Company Korea
*Project Manager / Researcher*

**Surface Reconstruction of Actual 3D Space from RGB Images for Augmented Reality** **July.2019-Nov.2020**
Yonsei University | Electronics and Telecommunications Research Institute (ETRI) Korea
*Researcher*

**Natural Dense 3D Map Generation from Multi Sensors for Smart Vehicle System.** **July.2019-Dec.2021**
Yonsei University | Institute of Information & Communications Technology Planning & Evaluation (IITP) Korea
*Research Assistant*

## PROFESSIONAL SERVICES

**Journal / Conference Reviewer**

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|---|---|
| IEEE/CVF Conference on Computer Vision and Pattern Recognition **(CVPR)** | 2022, 2023, 2024 |
| IEEE/CVF International Conference on Computer Vision **(ICCV)** | 2023 |
| European Conference on Computer Vision **(ECCV)** | 2022, 2024 |
| IEEE/CVF Winter Conference on Applications of Computer Vision (**WACV**) | 2023, 2024 |
| International Conference on 3D Vision (**3DV**) | 2022 |
| IEEE Transactions on Circuits and Systems for Video Technology (**TCSVT**) | 2023 |

## PATENTS

Apparatus for Data Augmentation and Training Strategy on Point Cloud Feb, 2024

10-2637318 Patent Registration, Korea

Apparatus and Method for Depth Inpainting method on LiDAR Point Cloud Aug, 2022
10-2433632. Patent Registration, Korea

Apparatus and Method for Moving Object Detection using Background Modeling based on Inpainting Nov, 2021
10-2021-0165052 Patent Application, Korea

Apparatus and Method for Correcting Errors of Detected Objects based on Point Cloud. Oct, 2021
10-2310790. Patent Registration, Korea

## LANGUAGE

Korean(Native), English(Proficient)

## SKILLS

**Programming Language / Deep Learning Framework**

Python, C, C++, MATLAB / PyTorch, TensorFlow, Jax