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

ProDepth: Boosting Self-Supervised Multi-Frame Monocular Depth with Probabilistic Fusion
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

Robust Large-Scale 3D Scene Reconstruction based on Neural Rendering with Noisy Data **May.2024-Present**
Yonsei University | National Research Foundation of Korea (NRF) Korea
Project Manager / Researcher

Real-Time Novel View Synthesis for Dynamic Scene from Sparse View via Active Learning **Apr.2024-Present**
Yonsei University | Electronics and Telecommunications Research Institute (ETRI) Korea
Project Manager / Researcher

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
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