

Gwangtak Bae

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EDUCATION

Seoul National University (SNU)

Sep. 2022 – Present

Ph.D. in Electrical and Computer Engineering

- Supervised by Prof. Young Min Kim (3D Vision Laboratory)
- Research focus: Robust 3D reconstruction and localization

Korea Advanced Institute of Science and Technology (KAIST)

Mar. 2015 – Feb. 2019

B.S. in Electrical Engineering

PUBLICATIONS

RoEL : Robust Event-based 3D Line Reconstruction

IEEE T-RO 2026

- Gwangtak Bae, Jaeho Shin, Seunggu Kang, Junho Kim, Ayoung Kim, Young Min Kim
- We introduce a correspondence-based 3D line reconstruction pipeline for event cameras, from reliable correspondence search to Grassmannian optimization in 3D space.

Learning 3D Scene Analogies with Neural Contextual Scene Maps

ICCV 2025

- Junho Kim, Gwangtak Bae, Eunsun Lee, Young Min Kim
- We propose a new task of finding 3D scene analogies, which are dense maps connecting regions sharing similar scene contexts.

I^2 -SLAM : Inverting Imaging Process for Robust Photorealistic Dense SLAM

ECCV 2024

- Gwangtak Bae*, Changwoon Choi*, Hyeongjun Heo, Sang Min Kim, Young Min Kim (*equal contribution)
- We invert imaging process to improve robustness and accuracy of dense SLAM in real-world data which frequently contains motion blur and varying appearances.

SLiDE : Self-supervised LiDAR De-snowing through Reconstruction Difficulty

ECCV 2022

- Gwangtak Bae, Byungjun Kim, Seongyong Ahn, Jihong Min, Inwook Shim
- We propose a self-supervised LiDAR de-noising method that removes noise points in snowy weather, which is one of the biggest challenges for 3D perception in autonomous driving.

EXPERIENCE

Agency for Defense Development

Jun. 2019 – May. 2022

Research Officer

- Developed LiDAR de-noising methods to enhance robust 3D perception for autonomous driving in adverse weather conditions

Unmanned Systems Research Group, KAIST

Dec. 2018 – Feb. 2019

Research Intern

- Developed a LiDAR-based lane detection algorithm and a LiDAR upsampling method

Mappers

Sep. 2017 – Feb. 2018

Software Engineering Intern

- Developed a deep learning-based traffic sign detection algorithm

PATENTS

KR10-2405818: Method of Removing Noise, Apparatus for Removing Noise, and Computer Program for the method.

KR10-2420585: Method and Apparatus for Simulating Point Cloud Data of 3D Lidar Sensor in Adverse Weather.

ACADEMIC SERVICE

Reviewer: ACM TOG, IEEE RA-L, IEEE/CVF ICCV, Pacific Graphics