GWANGTAK **BAE**

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Education

Sep 2022 - Present
Ph.D. in Electrical and Computer Engineering
Seoul National University (SNU)
- Supervised by Prof. Young Min Kim (3D Vision Laboratory)
- Developing robust 3D reconstruction and SLAM methods

Mar 2015 - Feb 2019
B.S. in Electrical Engineering
Korea Advanced Institute of Science and Technology (KAIST)
- Signal processing and computer vision

Publications

T-RO 2026
RoEL : Robust Event-based 3D Line Reconstruction
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.

ICCV 2025
Learning 3D Scene Analogies with Neural Contextual Scene Maps
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.

ECCV 2024
I^2-SLAM : Inverting Imaging Process for Robust Photorealistic Dense SLAM
Gwangbin 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.

ECCV 2022
SLiDE : Self-supervised LiDAR De-snowing through Reconstruction Difficulty
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.

Experiences

Jun 2019 - May 2022
Research Officer for National Defense
Ground Autonomy Lab, Agency for Defense Development
- Developed LiDAR de-noising methods to enhance robust 3D perception for autonomous driving in adverse weather conditions

Dec 2018 - Feb 2019
Research Intern
Unmanned Systems Research Group, KAIST
- Developed a LiDAR-based lane detection algorithm and a LiDAR upsampling method

Sep 2017 - Feb 2018
Software Engineering Intern
Mappers
- 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.

Honors and Awards

2015 - present	Young Engineers Honor Society, National Academy of Engineering of Korea through the recommendation of the President and Dean of engineering college
2019 - 2022	Research Officer for National Defense 25 selected nation-wide