DONGWON SHIN

Computer Vision & Deep Learning Engineer | Autonomous Driving | Mobile Robotics

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Summary

Accomplished **computer vision and deep learning engineer** with over five years of experience specializing in autonomous driving and mobile robotics systems. Developed a production-level **VSLAM system from scratch**, significantly improving localization accuracy and real-time performance by integrating deep learning modules; achieved **3-4x more successful pose estimates** and **up to 25% reduction in backend runtime** on edge hardware. In addition to product development, I lead a technical community of **over 2,000 members**, fostering knowledge exchange in Physical AI and SLAM. Collaborated closely with industry leaders **Aptiv, ZF, and AMD** to deliver robust perception solutions and support mass-production development in compliance-driven environments (ASPICE, ISO 26262).

Research Interests & Technical Skills

Research Interests:

Computer Vision · Deep Learning · Autonomous Driving · Mobile Robotics · Image Processing · Machine Learning ·
Simultaneous Localization and Mapping · Visual Localization · Multi View Geometry · Transformers · Neural Rendering · Gaussian Splatting

Technical Skills: C/C++ · Python · CUDA · ROS · OpenCV · PCL · Open3D · NumPy · SciPy · PyTorch · ONNX · GitHub · Docker

Experience

STRADVISION	Seoul, South Korea
VSLAM Algorithm Engineer in Visual Positioning Team	03/2022 - Present

Contributed to the development of a production-level VSLAM system for Surround View–based autonomous driving applications.

- Designed and improved visual localization and mapping algorithms, focusing on robustness in real-world driving environments.
- Developed and integrated deep learning–based feature networks to enhance localization accuracy and stability.
- Optimized VSLAM pipelines for real-time performance on edge hardware, considering latency and resource constraints.
- Collaborated closely with perception, system, and deployment teams to ensure end-to-end integration and product readiness.

SOSLAB	Gwangju, South Korea
Research Engineer in LiDAR Application Team	08/2019 - 02/2022

Contributed to the development of LiDAR-based SLAM and perception algorithms for robotics and mobility applications.

- Conducted research on multi-sensor fusion SLAM, improving robustness in unstructured and outdoor scenarios.
- Designed and implemented LiDAR-based object perception algorithms.
- Built and curated 3D LiDAR datasets for perception and mapping tasks, including data collection, preprocessing, and learning-based model training.

Education

GIST (Gwangju Institute of Science and Technology)	Gwangju, South Korea
Ph.D. in Electronic Engineering and Computer Science	03/2015 - 08/2019

GIST (Gwangju Institute of Science and Technology)	Gwangju, South Korea
M.S. in Information and Communications	03/2013 - 02/2015

KIT (Kumoh National Institute of Technology)	Kumi, South Korea
B.S. in Computer Engineering	03/2006 - 02/2013

Projects

Neural Network Optimization and Porting for VSLAM on AMD Versal AI Edge	StradVision
	09/2025 - Present

Optimized StradVision's VSLAM for AMD Versal™ AI Edge Gen 2 VEK385. Adapted deep learning for AMD AIE-ML v2. Applied quantization for real-time automotive use.

- Successfully demonstrated the system at CES 2026 with positive industry feedback.
- Contributed neural network model conversion and adaptation for AMD Versal AI Edge Gen 2 (VEK385) SoC.
- Applied quantization for AIE-ML v2 engines achieving accuracy with reduced power.

Projects

Deep learning-based visual localization for automotive embedded platform
StradVision

02/2024 - Present

Developed a deep learning–based visual localization system for autonomous parking, enabling environment map learning and precise vehicle pose estimation under automotive constraints.

- Implemented deep neural network–based modules within a VSLAM pipeline.
- Achieved real-time operation on embedded automotive SoCs.
- Improved visual localization robustness, achieving ~3–4× more successful pose estimates compared to a non–deep learning baseline.

Semantic aware parking slot map generation
StradVision

01/2023 - 12/2023

Developed a system to create global parking lot maps by fusing vehicle location information from Visual SLAM with semantic parking slot detection.

- Designed the overall algorithm for semantic parking slot mapping.
- Implemented custom factor formulations for backend nonlinear optimization.
- Developed a loop closure detection algorithm leveraging semantic parking slot features.
- Defined a quantitative map quality metric to evaluate and validate optimized maps.

Ultra-lightweight Visual SLAM framework for Auto Valet Parking
StradVision

02/2022 - Present

Created a lightweight visual SLAM for autonomous parking, enabling real-time positioning and mapping on limited-resource automotive platforms.

- Implemented lightweight nonlinear optimization in the backend, reducing runtime by up to 25% and enabling real-time performance.
- Developed a LiDAR-based ground truth (GT) data generation algorithm for precise VSLAM evaluation.
- Built an automated pipeline for VSLAM algorithm evaluation and created analytical tools for result mapping.

Technical Writing

[E-Book] Understanding and Implementing SLAM with NVIDIA Jetson Nano
2023

Dongwon Shin, Hyunggi Chang

An educational e-book that provides a comprehensive introduction to SLAM (Simultaneous Localization and Mapping) technology using NVIDIA Jetson Nano. The book covers fundamental concepts, practical implementation techniques, and hands-on examples for embedded robotics applications.

Community & Leadership

Physical AI KR (formerly SLAM KR)
Community Leader

2019 - Present

Physical AI KR is a technical community bringing together practitioners and researchers to share knowledge on Physical AI, engage in constructive discussions, and grow through real-world problem solving.

- Led and grew a KakaoTalk-based technical community with over 2,000 active members.
- Organized and hosted large-scale offline technical meetups with up to 140 attendees.
- Facilitated in-depth discussions on SLAM, robotics, and physical AI systems.

Publications (Selected)

Ph.D. Dissertation
08/2019

Local and Global Correspondence Establishing Techniques for Simultaneous Localization and Mapping

Dongwon Shin

Advised by Prof. Moongu Jeon, Gwangju Institute of Science and Technology, August 2019.

Master Thesis
02/2015

3D Object Reconstruction Using Multiple Kinect Cameras

Dongwon Shin

Advised by Prof. Yo-Sung Ho, Gwangju Institute of Science and Technology, February 2015.

Publications (Selected)

Loop Closure Detection in Simultaneous Localization and Mapping Using Descriptor from Generative Adversarial Network
Journal of Electronic Imaging, vol. 28, Jan. 2019.
Dong-Won Shin, Yo-Sung Ho, and Eun-Soo Kim

3D Scene Reconstruction Using Colorimetric and Geometric Constraints on Iterative Closest Point Method
Multimedia Tools and Applications, vol. 77, issue 11, Aug. 2017.
Dong-Won Shin and Yo-Sung Ho

Exploring Variants of Fully Convolutional Networks with Local and Global Contexts in Semantic Segmentation Problem
Electronic Imaging (EI), IRIACV-457, pp. 457.1-457.8, 2019, San Francisco, USA.
Dong-Won Shin, Jun-Yeong Park, Chan-Yeong Son, and Yo-Sung Ho

Loop Closure Detection in Simultaneous Localization and Mapping Using Learning Based Local Patch Descriptor
Electronic Imaging (EI), AVM-284, pp. 1-4, 2018, San Francisco, USA.
Dong-Won Shin and Yo-Sung Ho

Local Patch Descriptor Using Deep Convolutional Generative Adversarial Network for Loop Closure Detection in SLAM
Asia-Pacific Signal and Information Processing Association (APSIPA), pp. 1-4, 2017, Kuala Lumpur, Malaysia.
Dong-Won Shin and Yo-Sung Ho

Multiple View Depth Generation Based on 3D Scene Reconstruction Using Heterogeneous Cameras
Electronic Imaging (EI), COIMG-444, pp. 179-184, 2017, San Francisco, USA.
Dong-Won Shin and Yo-Sung Ho

Color Correction Using 3D Multiview Geometry,
Electronic Imaging (EI), pp. 939524 (1-8), 2015. San Francisco, USA.
Dong-Won Shin and Yo-Sung Ho

Elimination of Background Flickering in Depth Video
International Workshop on Advanced Image Technology (IWAIT), pp. 73(1-4), 2015, Tainan, Taiwan. (Best Paper Award)
Dongwon Shin and Yo-Sung Ho

Implementation of 3D Object Reconstruction Using a Pair of Kinect Cameras
Asia-Pacific Signal and Information Processing Association (APSIPA), pp. FA1-5.5(1-4), 2014, Siem Reap, Cambodia.
Dong-Won Shin and Yo-Sung Ho

Joint Bilateral Filter for Warped Depth Data in Real-time,
US-Korea Conference (UKC), EEC16, pp. 1-2, 2014, San Francisco, USA.
Dong-Won Shin, Yun-Seok Song, and Yo-Sung Ho

Patents

Method of Depth Image Generation
Dong-Won Shin and Yo-Sung Ho   11/2016
https://doi.org/10.8080/1020150120746

A Method of Processing Lidar Data
Yong-I Lee, Junho Choi, Dongwon Shin, Duck-yun Jang   02/2023
https://doi.org/10.8080/1020210155397

A Method of generating an intensity information with extended expression range by reflecting a geometric characteristic of object and a LiDAR device
Yong-I Lee, Junho Choi, Dongwon Shin, Duck-yun Jang   06/2021
https://doi.org/10.8080/1020210083129