Yurim Jeon

Ph.D. in Electrical and Computer Engineering

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Research Interests

Autonomous driving, Robotics, Learning-based perception, Sensor fusion, Deep learning

Education

M.S. / Ph.D. in Electrical and Computer Engineering *Mar 2017 - Feb 2023*
Seoul National University
Vehicle Intelligence Laboratory, Supervisor: Prof. Seung-Woo Seo

B.S. in Electrical and Computer Engineering *Mar 2012 - Feb 2017*
Seoul National University

Publication

EFGHNet: A Versatile Image-to-Point Cloud Registration Network for Extreme Outdoor Environment
Jeon, Yurim and Seung-Woo Seo, Supplementary video
IEEE Robotics and Automation Letters vol. 7.3 (2022) pp. 7511–7517. IEEE, 2022
Presented in IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Oct. 2022

ABCD: Attentive Bilateral Convolutional Network for Robust Depth Completion
Jeon, Yurim, Hwichang Kim, and Seung-Woo Seo, Supplementary video
IEEE Robotics and Automation Letters 7.1 (2021) pp. 81–87. IEEE, 2021

A BRIEF-Gist based Efficient Place Recognition for Indoor Home Service Robots
Jeon, Yurim, Taejae Lee, Chulhong Kim, Donghoon Yi, and Dong-Il Dan Cho
2016 16th International Conference on Control, Automation and Systems (ICCAS), 2016

Follow the Footprints: Self-supervised Traversability Estimation for Off-road Vehicle Navigation based on Geometric and Visual Cues (Submitted)
Jeon, Yurim, E In Son, and Seung-Woo Seo

Cross-view Image-retrieval and Pose-estimation Transformer (In preparation)
Jeon, Yurim and Seung-Woo Seo

Work Experience

Postdoctoral Researcher *Mar 2023 - Present*
Seoul National University

- Develop a perception system for autonomous driving in off-road environments.
- Lead a project to develop an perception module that estimates traversable areas in off-road environments.

Deep Learning Engineer *Mar 2022 - Nov 2022*
Thordrive

- Developed deep-learning based multi-sensor object detection modules for autonomous vehicles.
- Collaborated with the MLOps team to automatically maintain, manage, and operate the ML system for autonomous driving perception.

Project

Development of perception system for unmanned vehicles in off-road scenarios
Government Project, Seoul National University *Jan 2022 - Feb 2023*

- **Team leader**

- Designed hardware and configured sensors for unmanned ground vehicles.
- Developed a comprehensive perception system for off-road missions of unmanned robots.
- Implemented a perception system optimized to operate on a low-end onboard computer of the robot.

Development of automatic labeling tool for autonomous driving dataset generation
Thordrive *Feb 2022 - Nov 2022*

- Designed an automated labeling tool capable of generating extensive datasets for autonomous driving.
- Built a deep learning engine for multi-sensor object detection integrated into the automatic labeling tool.
- Streamlined the labeling process, resulting in up to a 30% reduction in human labor requirements.

Research on human-level driving intelligence for autonomous driving of unmanned vehicles
Government Project, Seoul National University *Mar 2020 - Feb 2021*

- Designed a selective perception system for autonomous driving, inspired by the human recognition system.
- Developed a neural layer for selective perception using an attention mechanism, as a component of the selective perception system.
- Built a neural network that enhances low-cost laser sensor data to generate high-resolution laser data.

Development of real-time object detection module using LiDAR sensor
Industry-Academia Cooperation Project, Seoul National University *Jan 2020 - Jun 2020*

- **Project leader**
- Developed a deep learning-based object detection module using LiDAR sensor for autonomous vehicles driving in urban environments.
- Achieved strict criteria for accuracy goals in urban driving scenarios and computation requirements for machine execution.
- Led the entire project, from designing deep learning models to implementing ROS packages for autonomous vehicle operation.

Technical Skills and Interests

Language
English (Professional proficiency), **Korean** (Native proficiency)

Developer Tools
Python (PyTorch, Tensorflow, etc.), C/C++ (ROS), Linux (Ubuntu), Git