Sanghun Jung

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Education

University of Washington (UW) 2022 - present
Ph.D. in Computer Science and Engineering
Advisor: Prof. Byron Boots

Korea Advanced Institute of Science and Technology (KAIST) 2020 - 2022
M.S. in Artificial Intelligence
Advisor: Prof. Jaegul Choo
GPA: 4.06 / 4.30

Korea University 2013 - 2019
B.S. in Computer Science and Engineering
GPA: 3.70 / 4.50; Major GPA: 4.11 / 4.50
Military service during 2015 - 2016

Research Interest

Robot perception, Mobile manipulation, Learning from demonstration, and Autonomous driving

Selected Projects

DARPA Robotic Autonomy in Complex Environments with Resiliency (RACER)
Perception Team Member Sep. 2022 - present
High-speed ground vehicle autonomy in complex off-road terrain.
Keywords: Precise estimation of ground, uncertainty estimation, traversability prediction

Visual Navigation for Mobile Robots in Indoor Environments
Project member Nov. 2023 - present
Learning to plan from visual information in indoor environments.
Keywords: Mobile manipulation, multi-modal learning, sim-to-real transfer

Image-based Traversability Prediction using Self-supervision
Project Lead Mar. 2023 - present
Visual traversability learning from self-supervision signals.
Keywords: Contrastive learning, vehicle trajectories, segment-anything

Effective Adaptation of LiDAR Segmentation to Distributional Shifts
Project Member Oct. 2022 - Mar. 2023
Self-training with ensembling; simulation of beam pattern difference, temporal consistency
Keywords: Self-training, structural point cloud subsampling, learned aggregation

Class-aware Test-time Adaptation for Image Classification
Project Lead May 2022 - Mar. 2023
Class-aware feature alignment for test-time adaptation using pre-calculated source statistics.
Keywords: Feature alignment, utilization of source distribution

Publications

* denotes equal contributions

[7] **Sanghun Jung**, JoonHo Lee, Xiangyun Meng, Byron Boots, and Alexander Lambert. V-STRONG: Visual Self-Supervised Traversability Learning for Off-road Navigation. Submitted to *International Conference on Robotics and Automation* (**ICRA**), 2024. *Under review*

[6] Amirreza Shaban*, Brian JoonHo Lee*, **Sanghun Jung***, Xiangyun Meng, and Byron Boots. LiDAR-UDA: Self-ensembling Through Time for Unsupervised LiDAR Domain Adaptation. *International Conference on Computer Vision* (**ICCV**), 2023. **Oral Presentation** (1.8% acceptance rate) [paper] [code]

[5] **Sanghun Jung**, Jungsoo Lee, Nanhee Kim, Amirreza Shaban, Byron Boots, and Jaegul Choo. CAFA: Class-Aware Feature Alignment for Test-Time Adaptation. *International Conference on Computer Vision* (**ICCV**), 2023. [paper]

[4] Kyungmin Jo*, Gyumin Shim*, **Sanghun Jung**, Soyoung Yang, and Jaegul Choo. CG-NeRF: Conditional Generative Neural Radiance Fields. *Winter Conference on Applications of Computer Vision* (**WACV**), 2023. [paper]

[3] **Sanghun Jung***, Jungsoo Lee*, Daehoon Gwak, Sungha Choi, and Jaegul Choo. Standardized Max Logits: A Simple yet Effective Approach for Identifying Unexpected Road Obstacles in Urban-Scene Segmentation. *International Conference on Computer Vision* (**ICCV**), 2021. **Oral Presentation** (3.0% acceptance rate) [paper] [code]

[2] Sungha Choi*, **Sanghun Jung***, Huiwon Yun, Joanne T. Kim, Seungryong Kim, and Jaegul Choo. RobustNet: Improving Domain Generalization in Urban-Scene Segmentation via Instance Selective Whitening. *Computer Vision and Pattern Recognition* (**CVPR**), 2021. **Oral Presentation** (4.1% acceptance rate) [paper] [code]

[1] Jinho Choi, **Sanghun Jung**, Deokgun Park, Jaegul Choo, and Niklas Elmqvist. Visualizing for the Non-Visual: Enabling the Visually Impaired to Use Visualization. *Computer Graphics Forum* (**EuroVIS**), 2019. [paper]

Preprints

[2] Jungsoo Lee, Juyoung Lee, **Sanghun Jung**, and Jaegul Choo. Improving Evaluation of Debiasing in Image Classification. *arXiv preprint: 2206.03680*, 2023. [paper]

[1] Minsoo Lee, Chaeyeon Chung, Hojun Cho, Minjung Kim, **Sanghun Jung**, Minhyuk Sung, and Jaegul Choo. 3D-GIF: 3D-Controllable Object Generation via Implicit Factorized Representations with Unposed 2D Images. *arXiv preprint: 2203.06457*, 2022. [paper]

Work Experience

Bear Robotics Korea — Seoul, South Korea
Robotics Engineer — 2019 - 2020
Conducted projects such as safe velocity controller and odometry and localization testing

Bear Robotics — Redwood City, CA, US
Robotics Engineering Intern — 2018 - 2019
Developed robot algorithms such as depth camera extrinsic calibration

Scholarship

KAIST Support Scholarship, KAIST — 2020, 2021
Veritas Program Scholarship, Korea University — 2018
Academic Excellence Scholarship for Freshmen, Korea University — 2013

Awards

Best Poster Award - Standardized Max Logits, KAIST AI Workshop — 2022

Invited Talks

Pre-Training for Robot Learning Workshop @ CoRL 2023 (Spotlight Talk) — Nov., 2023
Visual Self-Supervised Traversability Learning for Off-road Navigation

KAIST AI Workshop — Jan., 2022
Standardized Max Logits: A Simple yet Effective Approach for Identifying Unexpected Road Obstacles

Hyundai Motor Group AI Research Seminar — Jul., 2021
Domain Generalization in Urban-Scene Segmentation

Naver AI LAB — Jul., 2021
RobustNet: Improving Domain Generalization in Segmentation

Programming Skills

Languages: Python, C++, Bash
Technologies: Pytorch, Docker, Linux, Robot Operating System (ROS1)