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, Robot learning, Traversability, and Autonomous driving

SELECTED PROJECTS

DARPA Robotic Autonomy in Complex Environments with Resiliency (RACER)
Perception Lead   Sep. 2022 - present
High-speed ground vehicle autonomy in complex off-road terrain. Took a lead since June, 2023
Keywords: Precise estimation of ground, uncertainty estimation, traversability prediction

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

[9] **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*

[8] 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.**[paper] [code]

[7] **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]

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

[5] 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]

[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]

Patents

[2] **Sanghun Jung**, Henry A. Leinhos, Fangwei Li, Ina Liu. Method, System, and Non-Transitory Computer-Readable Recording Medium for Controlling a Robot. *US Patent in Progress*

[1] Bryant L. Pong, Henry A. Leinhos, **Sanghun Jung**. Method, System, and Non-Transitory Computer-Readable Recording Medium for Controlling Movement of a Robot. *US Patent in Progress*

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

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)