SANGHUN JUNG

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Last update: 09/05/2024

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

Amazon Lab126 Internship - Open-vocabulary Indoor Instance Segmentation
Applied Scientist Intern - Summer Jun. 2024 - Sep. 2024
Find 3D object instances in indoor environments using 2D and 3D associations and VLM.
Keywords: Open-vocabulary, CLIP, Vision language model (VLM), Indoor environments

DARPA Robotic Autonomy in Complex Environments with Resiliency (RACER)
UW Perception Team Lead Sep. 2022 - present
High-speed ground vehicle autonomy in complex off-road terrain. Took a lead since Jan. 2024
Keywords: Geometry estimation, uncertainty estimation, BEV segmentation

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 - Jan. 2024
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

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. *International Conference on Robotics and Automation* (**ICRA**), 2024. [paper]

[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)