

이 준 호 Alex Junho Lee

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Education **Korea Advanced Institute of Science and Technology (KAIST)**
Ph.D., Civil and Environmental Engineering, 2023
- Robotics Program, Smart City Program
Bachelor of Engineering, Mechanical Engineering, Feb 2017 GPA: 3.58 / 4.3
- Double Major in Business and Technology Management (BTM)

Field of Interests Visual Localization, Multimodal sensor fusion, SLAM, Place Recognition, Spatial AI

Publications Alex Junho Lee, Ayoung Kim, “Event-based Real-time Optical Flow Estimation”. In Proceedings of the *IEEE International Conference on Control, Automation and Systems (ICCAS)*, 2017.

Alex Junho Lee, Younggun Cho, Sungho Yoon, Joowan Kim, Ayoung Kim, “ViViD: Vision for Visibility Dataset”. In Proceedings of the *IEEE International Conference on Robotics and Automation (ICRA) Workshop: Dataset Generation and Benchmarking of SLAM Algorithms for Robotics and VR/AR, Best Paper*, 2019.

Alex Junho Lee, Ayoung Kim, “EventVLAD: Visual Place Recognition with Reconstructed Edges from Event Cameras”. In Proceedings of the *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2021.

Alex Junho Lee, Hyun Myung, “Natural Language Representation as Features for Place Recognition”. In Proceedings of the *IEEE International Conference on Ubiquitous Robots (UR)*, 2022.

Alex Junho Lee, Younggun Cho, Young-sik Shin, Ayoung Kim, Hyun Myung, “ViViD++ : Vision For Visibility Dataset”. *IEEE Robotics and Automation Letter (RA-L)*, 7(3):6282-6289, 2022.

Alex Junho Lee, Younggun Cho, Hyun Myung, “Low-cost Thermal Mapping for Concrete Heat Monitoring”. In Proceedings of the *IEEE International Conference on Robotics and Automation (ICRA) Workshop: Future of Construction: Build Faster, Better, Safer - Together with Robots*, 2022.

Alex Junho Lee, Hyungtae Lim, Minho Oh, Wonho Song, Hyun Myung, “Volumetric Vegetation Monitoring from LiDAR Scans with Ground Estimation.”. In Proceedings of the *IEEE International Conference on Control, Automation and Systems (ICCAS)*, 2022

Alex Junho Lee, Wonho Song, Byeongho Yu, Duckyu Choi, Christian Tirtawardhana, Hyun Myung, “Survey of Robotics Technologies for Civil Infrastructure Inspection” In *Journal of Infrastructure Intelligence and Resilience (JIIR)*, 2022.

Alex Junho Lee, Seungwon Song, Hyungtae Lim, Woojoo Lee, Hyun Myung, “(LC)²: LiDAR-Camera Loop Constraints For Cross-Modal Place Recognition”. *IEEE Robotics and Automation Letter (RA-L)*, 2023.

건축물 진단을 위한 안전 로봇 기술 동향 (ICROS, Sep. 2022)

Achievements	<p>Best Paper, <i>IEEE Int. Conf. Robotics and Automation (ICRA) Workshop: Dataset Generation and Benchmarking of SLAM Algorithms for Robotics and VR/AR</i>, 2019.</p> <p>Co-Chair, Localization II, <i>IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)</i>, 2021.</p> <p>2nd Cash Award, <i>HILTI SLAM CHALLENGE</i>, 2022.</p>
Experiences	<p>Robust visual place recognition for location authentication (Project, 2022)</p> <ul style="list-style-type: none"> - Deep learning-based VPR, participated as project leader. <p>Last-mile delivery robot in urban crowded areas (Project, 2021-2022)</p> <ul style="list-style-type: none"> - LiDAR-based SLAM for UGV, participated as SLAM engineer. <p>Visual SLAM on racing drones (Final Stage, 2021)</p> <ul style="list-style-type: none"> - Korean DARPA Challenge, participated as SLAM part engineer. - Stereo VIO and LiDAR map building on embedded device (Jetson TX2) <p>Future directions of robotics research (Project, 2021)</p> <ul style="list-style-type: none"> - Investigation project for robotics research plans, participated as team member. <p>Outdoor SLAM in unstructured environment (Project, 2019-2021)</p> <ul style="list-style-type: none"> - Autonomous map building in construction sites, participated as project leader. - Active SLAM, Long-term mapping, Sensor Integration <p>Indoor SLAM with dynamic obstacles (Project, 2019)</p> <ul style="list-style-type: none"> - Indoor service robot for general uses, participated as SLAM part engineer - SLAM in dynamic environment and obstacles, Obstacle avoidance. <p>Encoder frame device and vehicle odometry measurement system (Patent, 2019)</p> <ul style="list-style-type: none"> - High-resolution encoder frame for vehicle odometry, suggested and built hardware. <p>Indoor SLAM under complex disaster (Project, 2018)</p> <ul style="list-style-type: none"> - SLAM under environmental disturbances (Dust, Heat), participated as team member. <p>4th Industrial revolution and autonomous driving (Project, 2017)</p> <ul style="list-style-type: none"> - Investigation project for autonomous driving, participated as team member. <p>Intern in safety design department (Doosan Heavy Industries, 2016)</p> <p>International student exchange program (National University of Singapore, 2016)</p> <p>Teacher (KAIST Global Center for Gifted Children, 2015-2018)</p> <p>Education volunteering (Daejeon Yuseong-gu, 2013-2015)</p>
Invited Talks	<p>ICROS 우수신진연구자 (Planned, Jul. 2024)</p> <p>Dept. Robotics and Mechatronics Engineering, DGIST (Jan. 2024)</p> <p>Dept. Electrical Engineering, Pusan Univ. (Dec. 2023)</p> <p>SLAM KR (Nov. 2023)</p> <p>Dept. Electrical Engineering, Inha Univ. (Nov. 2023)</p> <p>Korea Electronics Technology Institute (KETI) (Oct. 2023)</p>

Language	Korean (Native), English (Fluent)
	Python, C++, MATLAB