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# Ayoung Kim

## EDUCATION

**University of Michigan** *Dec. 2012*
Ph.D. in Mechanical Engineering
Dissertation: "Visual SLAM with Exploration for Autonomous Underwater Navigation"
Advised by Dr. Ryan M. Eustice

**University of Michigan** *Dec. 2011*
M.S. in Electrical Engineering (Systems)

**Seoul National University (SNU)** *Feb. 2007*
M.S. in Mechanical and Aerospace Engineering (MAE)
Dissertation: "Stiffness Analysis and Hybrid Control for Parallel Manipulator"
Advised by Dr. Frank C. Park

**Seoul National University (SNU)** *Feb. 2005*
B.S. in Mechanical and Aerospace Engineering (MAE)
Graduated *Summa cum laude*

## POSITIONS

**Associate Professor** *Sep. 2021 - present*
Dept. of Mechanical Engineering (ME)
Dept. of Future Automotive Mobility (FAM)
Interdisciplinary Program in Artificial Intelligence (IPAI)
Seoul National University (SNU)

**Visiting Scholar** *Sep. 2024 - Mar. 2025*
Oxford Robotics Institute (ORI), University of Oxford

**Visiting Fellow** *Apr. 2025 - Aug. 2025*
Boston Dynamics AI Institute (BDAI)

**Associate Professor** *Mar. 2020 - Aug. 2021*
Dept. of Civil and Environmental Engineering (CEE) & KI Robotics
Robotics Program (RP)
School of Computing (Adjunct)
Korea Advanced Institute of Science Technology (KAIST)

**Assistant Professor** *Sep. 2014 - Feb. 2020*
Dept. of Civil and Environmental Engineering & KI Robotics

Korea Advanced Institute of Science Technology (KAIST)

**Senior Researcher** *Nov. 2013 - Aug. 2014*
IT Convergence Technology Research Laboratory
Electronics and Telecommunications Research Institute (ETRI)

**Post-doctoral Research Fellow** *Oct. 2012 - Sep. 2013*
Perceptual Robotics Laboratory (PeRL)
Naval Architecture and Marine Engineering Department, University of Michigan

**Graduate Student Research Assistant** *Sep. 2007 - Aug. 2012*
Perceptual Robotics Laboratory (PeRL)
Naval Architecture and Marine Engineering Department, University of Michigan

**Graduate Student Research Assistant** *Mar. 2005 - Feb. 2007*
Robotics Lab
Mechanical and Aerospace Engineering (MAE), Seoul National University (SNU)

**Graduate Student Teaching Assistant** *Spring 2005*
Introduction to Robotics
Mechanical and Aerospace Engineering (MAE), Seoul National University (SNU)

## FIELD OF INTEREST

Visual simultaneous localization and mapping (SLAM), Navigation, 3D reconstruction, Structure from Motion, Computer vision, Autonomous vehicles, Mobile robotics, Robotic perception, Spatial AI

## TEACHING & ADVISING

**[M3228.001300] Mechanical System Design and Robot Programming** *Spring, 2023–*
Undergraduate Major

**[M3228.000800] Machine learning for ME** *Fall, 2023–*
Undergraduate Elective Major

**[M3228.000300] Sensor-based Spatial Intelligence** *Fall, 2021–*
Graduate Elective Major

**[CE352] Signal and System for Construction IT** *Spring, 2015–2021*
Undergraduate Elective Major
Provided as Education 3.0 (Flipped Learning) since 2016

**[CE481] Special topics in CEE:** *Spring/Fall 2015*
**Optimal design and machine learning for construction IT**
Graduate/Undergraduate Elective Major

**[CE481] Special topics in CEE:** *Spring 2020*
**Sensor-based spatial intelligence**
Graduate/Undergraduate Elective Major

**[CE554] Mechanical Design of Civil Robot** *Fall 2015–2020*
Graduate Elective Major
Provided as Education 4.0 (Active Learning) since 2018

### Past Ph.D. Students

- Hyunchul Roh (Ph.D. in KAIST RP, Feb 2017) — CEO of DYPHI.
- Youngsik Shin (Ph.D. in KAIST CEE/RP, Feb 2020) — KIMM
- Younggun Cho (Ph.D. in KAIST CEE/RP, Feb 2020) — Inha University
- Jinyong Jeong (Ph.D. in KAIST CEE, Aug 2020) — CEO of TIM
- Youngji Kim (Ph.D. in KAIST CEE, Aug 2021) — Naver Labs
- Joowan Kim (Ph.D. in KAIST CEE, Feb 2021) — Samsung Heavy Industry
- Yeong Sang Park (Ph.D. KAIST in CEE, Feb 2022) — KIMM
- Giseop Kim (Ph.D. in KAIST CEE, Feb 2022) — DGIST
- Sungho Yoon (Ph.D. in KAIST RP, Feb 2022) — Tesla
- MyungHwan Jeon (Ph.D in KAIST RP, Feb 2022) — Kumoh National Institute of Technology
- Hyesu Jang (Ph.D in SNU ME, Aug 2024) — Seadronix

### Current Ph.D. Students

- Seungsang Yun (Ph.D in SNU ME) — 2022–
- DongGuw Lee (Ph.D in SNU ME) — 2022–
- Jungyun Kim (Ph.D in SNU ME) — 2022–
- Sangwoo Jung (Ph.D in SNU ME) — 2023–
- Minwoo Jung (Ph.D in SNU ME) — 2023–
- Dongjae Lee (Ph.D in SNU ME) — 2023–
- Chiyun Noh (Ph.D in SNU ME) — 2023–
- Hyeonjae Gil (Ph.D in SNU ME) — 2024–
- Wooseong Yang (Ph.D in SNU ME) — 2025–

### Past Master Students

- Giseop Kim (Master in KAIST CEE) — 2017–2019
- Younghun Cho (Master in KAIST CEE) — 2018–2020
- MyungHwan Jeon (Master in KAIST RP) — 2018–2020
- Hyesu Jang (Master in KAIST CEE) — 2018–2020
- Seungsang Yun (Master in KAIST CEE) — 2020–2022
- Jungyun Kim (Master in KAIST CEE) — 2020–2022
- Sangwoo Jung (Master in SNU ME) — 2021–2023
- Minwoo Jung (Master in SNU ME) — 2021–2023
- Hyeonjae Gil (Master in SNU ME) — 2022–2024
- Chaehyeon Song (Master in SNU ME) — 2023–2025
- Wooseong Yang (Master in SNU ME) — 2023–2025
- Jaeho Shin (Master in SNU ME) — 2023–2025

### Current Master Students

· Eunho Lee (Master in SNU IPAI) 2023–
· Hanjun Kim (Master in SNU FAM) 2024–
· Hyunsoo Jang (Master in SNU IPAI) 2024–
· Jeongho Noh (Master in SNU ME) 2024–
· SeungHoon Jeong (Master in SNU IPAI) 2024–
· Tai Hyoung Rhee (Master in SNU ME) 2025–
· Hyun-ho Song (Master in SNU FAM) 2025–

**Thesis Committee**
*Chair / Co-chair*

· Hyunchul Roh (Ph.D., KAIST RP) 2017
· Giseop Kim (Master, KAIST CEE) 2019
· Younghun Cho (Master, KAIST CEE) 2019
· MyungHwan Jeon (Master, KAIST RP) 2019
· Youngsik Shin (Ph.D., KAIST CEE/RP) 2020
· Younggun Cho (Ph.D., KAIST CEE/RP) 2020
· Jinyong Jeong (Ph.D., KAIST CEE/RP) 2020
· Hyesu Jang (Master, KAIST CEE) 2020
· Youngji Kim (Ph.D., KAIST CEE) 2021
· Joowan Kim (Ph.D., KAIST CEE) 2021
· Yeong Sang Park (Ph.D., KAIST CEE) 2022
· Giseop Kim (Ph.D., KAIST CEE) 2022
· Sungho Yoon (Ph.D., KAIST RP) 2022
· Seungsang Yun (Master, KAIST RP) 2022
· Jungyun Kim (Master, KAIST CEE) 2022
· MyungHwan Jeon (Ph.D., KAIST RP) 2023
· Hyesu Jang (Ph.D., SNU ME) 2024
· Yifu (Ethan) Tao (PhD, University of Oxford) 2025

## PUBLICATIONS

### Books / Book Chapters

1. Luca Carlone, Ayoung Kim, Timothy Barfoot, Daniel Cremers, and Frank Dellaert. *SLAM Handbook. From Localization and Mapping to Spatial Intelligence*. Cambridge University Press, In Press
2. Victor Reijgwart, Jens Behley, Teresa Vidal-Calleja, Helen Oleynikova, Lionel Ott, Cyrill Stachniss, and Ayoung Kim. "Dense Map Representation", in SLAM Handbook. from localization and mapping to spatial intelligence. In Luca Carlone, Ayoung Kim, Timothy Barfoot, Daniel Cremers, and Frank Dellaert, editors, *SLAM Handbook. From Localization and Mapping to Spatial Intelligence*. Cambridge University Press, In Press
3. Jens Behley, Maurice Fallon, Shibo Zhao, Giseop Kim, Ji Zhang, Fu Zhang, and Ayoung Kim. "LiDAR SLAM", in SLAM Handbook. from localization and mapping to spatial intelligence. In Luca Carlone, Ayoung Kim, Timothy Barfoot, Daniel Cremers, and Frank Dellaert, editors, *SLAM Handbook. From Localization and Mapping to Spatial Intelligence*. Cambridge University Press, In Press
4. Martin Magnusson, Christoffer Heckman, Henrik Andreasson, Ayoung Kim, Timothy Barfoot, Michael Kaess, and Paul Newman. "Radar SLAM", in SLAM Handbook. from localization and

mapping to spatial intelligence. In Luca Carlone, Ayoung Kim, Timothy Barfoot, Daniel Cremers, and Frank Dellaert, editors, *SLAM Handbook. From Localization and Mapping to Spatial Intelligence*. Cambridge University Press, In Press

**International Journal**

1. Hanjun Kim, Minwoo Jung, Wooseong Yang, and Ayoung Kim. Sherloc: Synchronized heterogeneous radar place recognition for cross-modal localization. *IEEE Robotics and Automation Letters (RA-L)*, 10(12):13264–13271, 2025
2. Seungsang Yun, Jaeho Shin, Jaekwang Cha, and Ayoung Kim. The more the better? confidence-driven residual weighting and depth fusion for multi-rgb-d inertial odometry. *IEEE Robotics and Automation Letters (RA-L)*, 10(10):10402–10409, 2025
3. Hyesu Jang, Wooseong Yang, Hanguen Kim, Dongje Lee, Yongjin Kim, Jinbum Park, Minsoo Jeon, Jaeseong Koh, Yejin Kang, Minwoo Jung, Sangwoo Jung, and Ayoung Kim. MOANA multi-radar dataset for maritime odometry and autonomous navigation application. *International Journal of Robotics Research*, 2025. Accepted. To appear
4. Kyle Harlow, Hyesu Jang, Timothy D. Barfoot, Ayoung Kim, and Christoffer Heckman. A new wave in robotics: Survey on recent mmwave radar applications in robotics. *IEEE Transactions on Robotics (T-RO)*, 40:4544–4560, 2024
5. Dong-Guw Lee, Jeongyun Kim, Younggun Cho, and Ayoung Kim. Thermal chameleon: Task-adaptive tone-mapping for radiometric thermal-infrared images. *IEEE Robotics and Automation Letters (RA-L)*, 9(12):10827–10834, 2024
6. Hyeonjae Gil, Myung-Hwan Jeon, and Ayoung Kim. Fieldscale: Locality-aware field-based adaptive rescaling for thermal infrared image. *IEEE Robotics and Automation Letters (RA-L)*, 9(7):6424–6431, 2024
7. Minwoo Jung, Wooseong Yang, Dongjae Lee, Hyeonjae Gil, Giseop Kim, and Ayoung Kim. Helipr: Heterogeneous lidar dataset for inter-lidar place recognition under spatiotemporal variations. *International Journal of Robotics Research*, 43(12):1867–1883, 2024. Accepted. To appear
8. Dongjae Lee, Minwoo Jung, Wooseong Yang, and Ayoung Kim. Lidar odometry survey: Recent advancements and remaining challenges. *Intelligent Service Robotics*, 17:95—-118, 2024
9. Sangwoo Jung, Hyesu Jang, Minwoo Jung, Ayoung Kim, and Myung-Hwan Jeon. Imaging radar and lidar image translation for 3-dof extrinsic calibration. *Intelligent Service Robotics*, 17:167—-179, 2024
10. Hyesu Jang, Minwoo Jung, Myung-Hwan Jeon, and Ayoung Kim. Lodestar: Maritime radar descriptor for semi-direct radar odometry. *IEEE Robotics and Automation Letters (RA-L)*, 8(7):4211–4218, 2024
11. Jeongyun Kim, Myung-Hwan Jeon, Sangwoo Jung, Wooseong Yang, Minwoo Jung, Jaeho Shin, and Ayoung Kim. Transpose: Large-scale multispectral dataset for transparent object. *International Journal of Robotics Research*, 43(6):731–738, 2024. Accepted. To appear
12. Minwoo Jung, Sangwoo Jung, and Ayoung Kim. Asynchronous multiple lidar-inertial odometry using point-wise inter-lidar uncertainty propagation. *IEEE Robotics and Automation Letters (RA-L)*, 8(7):4211–4218, 2023
13. Myung-Hwan Jeon, Jeongyun Kim, Jee-Hwan Ryu, and Ayoung Kim. Ambiguity-aware multi-object pose optimization for visually-assisted robot manipulation. *IEEE Robotics and Automation Letters (RA-L)*, 8(1):137–144, 2022
14. Lu Gan, Youngji Kim, J.W Grizzle, Jeffrey Walls, Ayoung Kim, Ryan Eustice, and Maani Ghaffari. Multi-task learning for scalable and dense multi-layer bayesian map inference. *IEEE Transactions on Robotics*, 39(1):699–717, 2022

15. Alex Junho Lee, Younggun Cho, Young sik Shin, Ayoung Kim, and Hyun Myung. Vivid++ : Vision for visibility dataset. *IEEE Robotics and Automation Letters (RA-L)*, 7(3):6282–6289, 2022
16. Giseop Kim, Sunwook Choi, and Ayoung Kim. Scan context++: Structural place recognition robust to rotation and lateral variations in urban environments. *IEEE Transactions on Robotics*, 38(3):1856–1874, 2022
17. Sungho Yoon and Ayoung Kim. Line as a visual sentence: Context-aware line descriptor for visual localization. *IEEE Robotics and Automation Letters (RA-L)*, 6(4):8726–8733, 2021
18. Yeong Sang Park, Young-Sik Shin, Joowan Kim, and Ayoung Kim. 3d ego-motion estimation using low-cost mmwave radars via radar velocity factor for pose-graph slam. *IEEE Robotics and Automation Letters (RA-L)*, 6(4):7691–7698, 2021
19. Youngji Kim, Sungho Yoon, Sujung Kim, and Ayoung Kim. Unsupervised balanced covariance learning for visual-inertial sensor fusion. *IEEE Robotics and Automation Letters (RA-L)*, 6(2):819–826, 2021
20. Joowan Kim, Myung-Hwan Jeon, Younggun Cho, and Ayoung Kim. Dark synthetic vision: Lightweight active vision to navigate in the dark. *IEEE Robotics and Automation Letters (RA-L)*, 6(1):143–150, 2020
21. Jinyong Jeong, Younggun Cho, and Ayoung Kim. Hdmi-loc: Exploiting high definition map image for precise localization via bitwise particle filter. *IEEE Robotics and Automation Letters (RA-L) (with IROS)*, 5(4):6310–6317, 2020
22. MyungHwan Jeon and Ayoung Kim. Prima6d: Rotational primitive reconstruction for enhanced and robust 6d pose estimation. *IEEE Robotics and Automation Letters (RA-L) (with IROS)*, 5(3):4955–4962, 2020
23. Kanghee Choi, Giyoung Byun, Ayoung Kim, and Youngchul Kim. Drivers' visual perception quantification using 3d mobile sensor data for road safety. *MDPI Sensors, Special Issue on Robotic Sensing for Smart Cities*, 20(10):2763, 2020
24. Joowan Kim, Younggun Cho, and Ayoung Kim. Proactive camera attribute control using bayesian optimization for illumination-resilient visual navigation. *IEEE Transactions on Robotics*, 36(4):1256–1271, 2020
25. Younggun Cho, Hyesu Jang, Ramavtar Malav, Gaurav Pandey, and Ayoung Kim. Underwater image dehazing via unpaired image-to-image translation. *International Journal of Control, Automation and Systems*, 18:605–614, 2020
26. Young-Sik Shin, Yeong Sang Park, and Ayoung Kim. DVL-SLAM: Sparse depth enhanced direct Visual-LiDAR SLAM. *Autonomous Robots*, 44(2):115–130, 2020
27. Jinyong Jeong, Younghun Cho, and Ayoung Kim. The road is enough! extrinsic calibration of non-overlapping stereo camera and LiDAR using road information. *IEEE Robotics and Automation Letters (RA-L) (with IROS)*, 4(3):2831 – 2838, 2019
28. Young-Sik Shin and Ayoung Kim. Sparse depth enhanced direct thermal-infrared SLAM beyond the visible spectrum. *IEEE Robotics and Automation Letters (RA-L) (with IROS)*, 4(3):2918–2925, 2019
29. Jinyong Jeong, Younggun Cho, Young-Sik Shin, Hyunchul Roh, and Ayoung Kim. Complex urban dataset with multi-level sensors from highly diverse urban environments. *International Journal of Robotics Research*, 38(6):642–657, 2019
30. Giseop Kim, Byungjae Park, and Ayoung Kim. 1-day learning, 1-year localization: Long-term LiDAR localization using scan context image. *IEEE Robotics and Automation Letters (RA-L) (with ICRA)*, 4(2):1948–1955, 2019

31. Giseop Kim, Ayoung Kim, and Youngchul Kim. A new 3D space syntax metric based on 3D isovist capture in urban space using remote sensing technology. *Computers, Environment and Urban Systems*, 74:74–87, 2019
32. Seonghun Hong, Dongha Chung, Jinwhan Kim, Youngji Kim, Ayoung Kim, and Hyeon Kyu Yoon. In-water visual ship hull inspection using a hover-capable underwater vehicle with stereo vision. *Journal of Field Robotics*, 36(3):531–546, 2019
33. Younggun Cho and Ayoung Kim. Channel invariant online visibility enhancement for visual SLAM in a turbid environment. *Journal of Field Robotics*, 35(7):1080–1100, 2018
34. Younggun Cho, Jinyong Jeong, and Ayoung Kim. Model assisted multi-band fusion for single image enhancement and applications to robot vision. *IEEE Robotics and Automation Letters (RA-L) (with IROS)*, 3(4):2822–2829, 2018
35. Hyunchul Roh, Jinyong Jeong, and Ayoung Kim. Aerial image based heading correction for large scale SLAM in an urban canyon. *IEEE Robotics and Automation Letters (RA-L) (with IROS)*, 2(4):2232–2239, 2017
36. Hyunchul Roh, Jinyong Jeong, Younggun Cho, and Ayoung Kim. Accurate mobile urban mapping via digital map-based SLAM. *MDPI Sensors*, 16(8):1315, Aug. 2016
37. Stephen M. Chaves, Ayoung Kim, Enric Galceran, and Ryan M. Eustice. Opportunistic sampling-based active visual SLAM for underwater inspection. *Autonomous Robots*, 40(7):1245—-1265, Jul. 2016
38. Paul Ozog, Nicholas Carlevaris-Bianco, Ayoung Kim, and Ryan M. Eustice. Long-term mapping techniques for ship hull inspection and surveillance using an autonomous underwater vehicle. *Journal of Field Robotics, Special Issue on Safety, Security and Rescue Robotics*, 33(3):265–289, May. 2016
39. Ayoung Kim and Ryan M. Eustice. Active visual SLAM for robotic area coverage: Theory and experiment. *International Journal of Robotics Research, Special Issue on Robot Vision*, 34(4-5):457–475, Apr. 2015
40. Ayoung Kim and Ryan M. Eustice. Real-time visual SLAM for autonomous underwater hull inspection using visual saliency. *IEEE Transactions on Robotics*, 29(3):719–733, Jun. 2013
41. Franz S. Hover, Ryan M. Eustice, Ayoung Kim, Brendan Englot, Hordur Johannsson, Michael Kaess, and John J. Leonard. Advanced perception, navigation and planning for autonomous in-water ship hull inspection. *International Journal of Robotics Research, Special Issue on 3D Exploration, Mapping, and Surveillance*, 31(12):1445–1464, Oct. 2012
42. Hunter C. Brown, Ayoung Kim, and Ryan M. Eustice. An overview of autonomous underwater vehicle research and testbed at PeRL. *Marine Technology Society Journal*, 43(2):33–47, 2009

**International Conference Proceedings**

1. Jaeho Shin, Hyeonjae Gil, Junwoo Jang, Maani Ghaffari, and Ayoung Kim. Registration beyond points: General affine subspace alignment via geodesic distance on grassmann manifold. In *IEEE/CVF International Conference on Computer Vision (ICCV)*, Honolulu, Oct. 2025
2. Jeongyun Kim, Seunghoon Jeong, Giseop Kim, Myung-Hwan Jeon, Eunji Jun, and Ayoung Kim. 2d gaussian splatting-based sparse-view transparent object depth reconstruction via physics simulation for scene update. In *IEEE/CVF International Conference on Computer Vision (ICCV)*, Honolulu, Oct. 2025
3. Minwoo Jung, Lanke Frank Tarimo Fu, Maurice Fallon, and Ayoung Kim. Imlpr: Image-based lidar place recognition using vision foundation models. In *Conference on Robot Learning (CoRL)*, Seoul, Sep. 2025

4. Hyeonjae Gil, Dongjae Lee, Giseop Kim, and Ayoung Kim. Ephemerality meets lidar-based lifelong mapping. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Atlanta, May. 2025
5. Chiyun Noh, Wooseong Yang, Minwoo Jung, Sangwoo Jung, and Ayoung Kim. Garlio: Gravity enhanced radar-lidar-inertial odometry. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Atlanta, May. 2025
6. Wooseong Yang, Hyesu Jang, and Ayoung Kim. Ground-optimized 4d radar-inertial odometry via continuous velocity integration using gaussian process. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Atlanta, May. 2025
7. Hanjun Kim, Minwoo Jung, Chiyun Noh, Sangwoo Jung, Hyunho Song, Wooseong Yang, Hyesu Jang, and Ayoung Kim. Hercules: Heterogeneous radar dataset in complex urban environment for multi-session radar slam. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Atlanta, May. 2025
8. Jeongyun Kim, Jeongho Noh, DongGuw Lee, and Ayoung Kim. Transplat: Surface embedding-guided 3d gaussian splatting for transparent object manipulation. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Atlanta, May. 2025
9. Minwoo Jung, Sangwoo Jung, Hyeonjae Gil, and Ayoung Kim. Helios: Heterogeneous lidar place recognition via overlap-based learning and local spherical transformer. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Atlanta, May. 2025
10. Sangwoo Jung, Wooseong Yang, and Ayoung Kim. Co-ral: Complementary radar-leg odometry with 4-dof optimization and rolling contact. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Abu Dhabi, Oct. 2024
11. Chaehyeon Song, Yoon Sungho, Minhyeok Heo, Ayoung Kim, and Sujung Kim. Camera agnostic two-head network for ego-lane inference. In *IEEE Intelligent Vehicles Symposium (IV)*, pages 2628–2633, Jeju, June. 2024
12. Chaehyeon Song, Jaeho Shin, Myung-Hwan Jeon, Jongwoo Lim, and Ayoung Kim. Unbiased estimator for distorted conic in camera calibration. In *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) highlight*, Seattle, June. 2024. Accepted. To appear
13. Jaeho Shin, Seungsang Yun, and Ayoung Kim. Pelical : Targetless extrinsic calibration via penetrating lines for rgb-d cameras with limited co-visibility. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Yokohama, May. 2024. Accepted. To appear
14. Hyesu Jang, Minwoo Jung, and Ayoung Kim. Raplace: Place recognition for imaging radar using radon transform and mutable threshold. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 11194–11201, Detroit, Oct. 2023
15. Dong-Guw Lee, Myung-Hwan Jeon, Younggun Cho, and Ayoung Kim. Edge-guided multi-domain rgb-to-tir image translation for training vision tasks with challenging labels. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, London, May. 2023
16. Dong-Guw Lee, Kyu-Seob Song, Young-Hoon Nho, Ayoung Kim, and Dong-Soo Kwon. Sequential thermal image-based adult and baby detection robust to thermal residual heat marks. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 13120–13127, Kyoto, Oct. 2022
17. Seungsang Yun, Minwoo Jung, Jeongyun Kim, Sangwoo Jung, Younghun Cho, Myung-Hwan Jeon, Giseop Kim, and Ayoung Kim. STheReO: stereo thermal dataset for research in odometry and mapping. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 3857–3864, Kyoto, Oct. 2022
18. Giseop Kim and Ayoung Kim. Lt-mapper: A modular framework for lidar-based lifelong mapping. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pages 7995–8002, Philadelphia, May. 2022

19. 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)*, pages 2247–2252, Prague, Sep. 2021
20. Youngji Kim and Ayoung Kim. Robust sensor fusion with pairwise dynamic covariance scaling for localization in urban areas. In *Proceedings of the IEEE International Conference on Ubiquitous Robots (UR)*, pages 547–552, Jeju, July 2021
21. Hyesu Jang, SungHo Yoon, and Ayoung Kim. Multi-session underwater pose-graph slam using inter-session opti-acoustic two-view factor. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pages 11668–11674, Xian, May 2021
22. Giseop Kim and Ayoung Kim. Remove, then revert: Static point cloud map construction using multiresolution range images. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 10758–10765, Las Vegas, Oct. 2020
23. Sungho Yoon and Ayoung Kim. Balanced depth completion between dense deep inference and sparse range measurements using kiss-gp. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 10468–10475, Las Vegas, Oct. 2020
24. Yeong Sang Park, Hyesu Jang, and Ayoung Kim. I-loam: Intensity enhanced lidar odometry and mapping. In *Proceedings of the IEEE International Conference on Ubiquitous Robots (UR)*, pages 455–458, Kyoto, Jun. 2020
25. Giseop Kim, Yeong Sang Park, Younghun Cho, Jinyong Jeong, and Ayoung Kim. Mulran: Multimodal range dataset for urban place recognition. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pages 6246–6253, Paris, May 2020
26. Younggun Cho, Giseop Kim, and Ayoung Kim. Unsupervised geometry-aware deep lidar odometry. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pages 2145–2152, Paris, May 2020
27. Yeong Sang Park, Young-Sik Shin, and Ayoung Kim. Pharao: Direct radar odometry using phase correlation. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pages 2617–2623, Paris, May 2020
28. Yeong Sang Park, Joowan Kim, and Ayoung Kim. Radar localization and mapping for indoor disaster environments via multi-modal registration to prior lidar map. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 1307–1314, Macau, Nov. 2019
29. Younggun Cho, Ramavtar Malav, Gaurav Pandey, and Ayoung Kim. DehazeGAN: Underwater haze image restoration using unpaired image-to-image translation. In *IFAC Conference on Control Applications in Marine Systems, Robotics, and Vehicles (CAMS)*, volume 52, Daejeon, Sep. 2019
30. MyungHwan Jeon, Yeongjun Lee, Young-Sik Shin, Hyesu Jang, and Ayoung Kim. Underwater object detection and pose estimation using deep learning. In *IFAC Conference on Control Applications in Marine Systems, Robotics, and Vehicles (CAMS)*, volume 52, Daejeon, Sep. 2019
31. Sejin Lee, Byungjae Park, and Ayoung Kim. Deep learning based object detection via style-transferred underwater sonar images. In *IFAC Conference on Control Applications in Marine Systems, Robotics, and Vehicles (CAMS)*, volume 52, Daejeon, Sep. 2019
32. Sejin Lee, Byungjae Park, and Ayoung Kim. A deep learning based submerged body classification using underwater imaging sonar. In *Proceedings of the IEEE International Conference on Ubiquitous Robots (UR)*, pages 106–112, Jeju, Jun. 2019
33. Jongwon Lee and Ayoung Kim. Neural network-based long-term place recognition from omni-images. In *Proceedings of the IEEE International Conference on Ubiquitous Robots (UR)*, pages 189–193, Jun. 2019
34. Alex Junho Lee, Younggun Cho, Sungho Yoon, Youngsik Shin, and Ayoung Kim. ViViD : Vision for Visibility Dataset. In *ICRA Workshop on Dataset Generation and Benchmarking of SLAM*

*Algorithms for Robotics and VR/AR*, Montreal, May. 2019. (**Best paper award**)

35. Sejin Lee, Byungjae Park, and Ayoung Kim. Deep learning from shallow dives: Sonar image generation and training for underwater object detection. In *ICRA Workshop on Underwater Robotics Perception*, Montreal, May. 2019. (**Best paper award**)
36. Ramavtar Malav, Ayoung Kim, Soumya Ranjan Sahoo, and Gaurav Pandey. DHSGAN: An end to end dehazing network for fog and smoke. In *Asian Conference of Computer Vision (ACCV)*, Perth, Dec. 2018
37. Giseop Kim and Ayoung Kim. Scan context: Egocentric spatial descriptor for place recognition within 3D point cloud map. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 4802–4809, Madrid, Oct. 2018
38. Youngji Kim, Jinyong Jeong, and Ayoung Kim. Stereo camera localization in 3D LiDAR maps. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 1–9, Madrid, Oct. 2018
39. Giseop Kim, Byungjae Park, and Ayoung Kim. Learning scan context toward long-term lidar localization. In *ICRA Workshop on Long-term Autonomy and Deployment of Intelligent Robots in the Real-world*, Brisbane, May. 2018. (**Best paper award**)
40. Jinyong Jeong, Younggun Cho, Young-Sik Shin, Hyunchul Roh, and Ayoung Kim. Complex urban lidar data set. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pages 6344–6351, Brisbane, May. 2018
41. Joowan Kim, Younggun Cho, and Ayoung Kim. Exposure control using bayesian optimization based on entropy weighted image gradient. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pages 857–864, Brisbane, May. 2018
42. Young-Sik Shin, Yeong Sang Park, and Ayoung Kim. Direct visual slam using sparse depth for camera-lidar system. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pages 1–8, Brisbane, May. 2018
43. Alex J. Lee and Ayoung Kim. Event-based real-time optical flow estimation. In *Proceedings of the International Conference on Control, Automation and Systems*, Jeju, S. Korea, Oct. 2017
44. Youngji Kim and Ayoung Kim. On the uncertainty propagation: Why uncertainty on lie groups preserves monotonicity? In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Vancouver, Canada, Sep. 2017. In print
45. Joowan Kim, Jinyong Jeong, Young-Sik Shin, Younggun Cho, Hyunchul Roh, and Ayoung Kim. LiDAR configuration comparison for urban mapping system. In *Proceedings of the IEEE Ubiquitous Robots and Ambient Intelligence (URAI)*, pages 854–857, Jeju, S. Korea, Aug. 2017
46. Yeong Sang Park, Ayoung Kim, and Young Sam Lee. Path planning using flexible region sampling for arbitrarily-shaped obstacles. In *Proceedings of the IEEE Ubiquitous Robots and Ambient Intelligence (URAI)*, pages 210–215, Jeju, S. Korea, Aug. 2017
47. Dae-Hyeon Gwon, Joowan Kim, Moon Hwan Kim, Ho Gyu Park, and Ayoung Kim Tae Yeong Kim. Development of a side scan sonar module for the underwater simulator. In *Proceedings of the IEEE Ubiquitous Robots and Ambient Intelligence (URAI)*, pages 662–665, Jeju, S. Korea, Aug. 2017
48. Joowan Kim and Ayoung Kim. Light condition invariant visual SLAM via entropy based image fusion. In *Proceedings of the IEEE Ubiquitous Robots and Ambient Intelligence (URAI)*, pages 529–533, Jeju, S. Korea, Aug. 2017
49. Jinyong Jeong, Younggun Cho, and Ayoung Kim. Road-SLAM : Road marking based SLAM with lane-level accuracy. In *Proceedings of the IEEE Intelligent Vehicle Symposium*, pages 1736–1473, Redondo Beach, CA, Jun. 2017
50. Younggun Cho and Ayoung Kim. Visibility enhancement for underwater visual SLAM based on underwater light scattering model. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pages 710–717, Singapore, May. 2017

51. Youngji Kim and Ayoung Kim. Comparison of point feature matching and graph matching for underwater scene matching. In *Proceedings of the International Conference on Control, Automation and Systems*, Gyeongju, S. Korea, Oct. 2016
52. Youngji Kim, Hwasup Lim, Sang Chul Ahn, and Ayoung Kim. Simultaneous segmentation, estimation and analysis of articulated motion from dense point cloud sequence. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 1085–1092, Daejeon, S. Korea, Sep. 2016
53. Dae-Hyeon Gwon, Young-Sik Shin, Youngji Kim, Yeongjun Lee, Hyun-Taek Choi, and Ayoung Kim. Nontemporal relative pose estimation for opti-acoustic bundle adjustment. In *Proceedings of the IEEE/MTS OCEANS Conference and Exhibition*, pages 1–5, Monterey, CA, Sep. 2016
54. Younggun Cho, Young-Sik Shin, and Ayoung Kim. Online depth estimation and application to underwater image dehazing. In *Proceedings of the IEEE/MTS OCEANS Conference and Exhibition*, pages 1–7, Monterey, CA, Sep. 2016
55. Young-Sik Shin, Younggun Cho, Gaurav Pandey, and Ayoung Kim. Estimation of ambient light and transmission map with common convolutional architecture. In *Proceedings of the IEEE/MTS OCEANS Conference and Exhibition*, pages 1–7, Monterey, CA, Sep. 2016
56. Jinyong Jeong and Ayoung Kim. Adaptive inverse perspective mapping for lane map generation with SLAM. In *Proceedings of the IEEE Ubiquitous Robots and Ambient Intelligence (URAI)*, pages 38–41, Xian, China, Aug. 2016
57. Young-Sik Shin, Yeongjun Lee, Hyun-Taek Choi, and Ayoung Kim. Bundle adjustment from sonar images and SLAM application for seafloor mapping. In *Proceedings of the IEEE/MTS OCEANS Conference and Exhibition*, pages 1–6, Washington, DC, Oct. 2015
58. Stephen M. Chaves, Ayoung Kim, and Ryan M. Eustice. Opportunistic sampling-based planning for active visual SLAM. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 3073–3080, Chicago, IL, USA, Sep. 2014
59. Ayoung Kim and Ryan M. Eustice. Perception-driven navigation: Active visual SLAM for robotic area coverage. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pages 3181–3188, Karlsruhe, Germany, May. 2013
60. Ayoung Kim and Ryan M. Eustice. Next-best-view visual SLAM for bounded-error area coverage. In *IROS Workshop on Active Semantic Perception*, Vilamoura, Portugal, Oct. 2012
61. Ayoung Kim and Ryan M. Eustice. Combined visually and geometrically informative link hypothesis for pose-graph visual SLAM using bag-of-words. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 1647–1654, San Francisco, CA, USA, Sep. 2011
62. Ayoung Kim and Ryan M. Eustice. Toward AUV survey design for optimal coverage and localization using the cramer rao lower bound. In *Proceedings of the IEEE/MTS OCEANS Conference and Exhibition*, pages 1–7, Biloxi, MS, USA, Oct. 2009
63. Ayoung Kim and Ryan M. Eustice. Pose-graph visual SLAM with geometric model selection for autonomous underwater ship hull inspection. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 1559–1565, St. Louis, MO, USA, Oct. 2009
64. Hunter Brown, Ayoung Kim, and Ryan Eustice. Development of a multi-AUV SLAM testbed at the University of Michigan. In *Proceedings of the IEEE/MTS OCEANS Conference and Exhibition*, pages 1–6, Quebec City, Quebec, Canada, Sep. 2008
65. Ryan M. Eustice, Hunter C. Brown, and Ayoung Kim. An overview of AUV algorithms research and testbed at the University of Michigan. In *Proceedings of the IEEE/OES Autonomous Underwater Vehicles Conference*, pages 1–9, Woods Hole, MA, USA, Oct. 2008

66. A-Young Kim, Sitae Kim, Jay-Il Jeong, Jongwon Kim, and F.C. Park. Exploiting redundant actuation to enhance the static stiffness of parallel mechanisms. In *The 13th International Conference on Advanced Robotics*, Jeju, Korea, Aug. 2007

**Dissertations**

1. Ayoung Kim. *Active visual SLAM with exploration for autonomous underwater navigation.* PhD thesis, University of Michigan, Ann Arbor, MI, Aug. 2012
2. Ayoung Kim. Stiffness analysis and hybrid control for parallel manipulator. Master's thesis, Seoul National University, Seoul, Korea, Dec. 2007

## PRESENTATIONS

1. AOPE seminar series, Woods Hole Oceanographic Institution (WHOI), Jul., 2025.
2. University of Girona, Jul., 2025.
3. Autonomous Robotics and Control Lab, California Institute of Technology, Jun., 2025.
4. Amazon Robotics, Jun., 2025.
5. Keynote speech, workshop on Robot safety under uncertainty from "intangible" specifications, ICRA, Atlanta, May., 2025.
6. Keynote speech, workshop on Robots in the Wild, ICRA, Atlanta, May., 2025.
7. Keynote speech, 4th Workshop on Future of Construction, ICRA, Atlanta, May., 2025.
8. Keynote speech, workshop on Autonomous Driving in Adverse Weather, ICRA, Atlanta, May., 2025.
9. Robotics and AI Institute (RAI Institute), May., 2025.
10. MIT, Spark Lab, Apr., 2025.
11. Birmingham University, Feb., 2025.
12. Loughborough University, Feb., 2025.
13. University College London, Dec., 2024.
14. ORIentate Seminar, Oxford University, Nov., 2024.
15. Technical University of Munich, Oct., 2024.
16. Keynote speech, workshop on From Learning-based to Foundation Models for Mapping Challenges and Opportunities, IROS, Abu Dhabi, Oct., 2024.
17. Keynote speech, workshop on Back to the Future: Robot Learning Going Probabilistic, ICRA, Yokohama, May., 2024.
18. Naval Architecture and Marine Engineering, University of Michigan, Ann Arbor, Oct., 2023.
19. Keynote speech, Workshop on Robot Learning and SLAM, ICCV, Paris, Oct, 2023.
20. Keynote speech, Workshop on Closing the Loop on Localization, IROS, Detroit, Oct, 2023.
21. Keynote speech, Workshop on Novel Sensors for Autonomous Vehicle Perception, IROS, Detroit, Oct, 2023.
22. Imperial College London, Jun., 2023.
23. University of Oxford, Jun., 2023.
24. Stevens Institute for AI Seminar Series, Apr., 2023.
25. Keynote speech, IROS, Kyoto, Oct, 2022.
26. Agency for Defense Development (ADD), Jan., 2022.
27. Samsung Advanced Institute of Technology, Dec., 2021.

28. The School of Civil, Architectural Engineering, and Landscape Architecture Sungkyunkwan University (SKKU), Nov., 2021.
29. Hanwha Defense, Nov., 2021.
30. KAUST Research Conference on Robotics and Autonomy, Mar., 2021.
31. Keynote speech, Workshop on Emerging Learning and Algorithmic Methods for Data Association in Robotics, ICRA, Paris, May, 2020.
32. KAIST School of Computing Colloquium, Apr., 2020.
33. Australian Centre for Field Robotics (ACFR), Sydney, Austrailia, Nov., 2019.
34. Keynote speech, AutoNUE Workshop International Conference on Computer Vision (ICCV), Seoul, Korea, Nov., 2019.
35. Keynote speech, International Conference on Control, Automation and Systems (ICCAS), Jeju, Korea, Oct., 2019.
36. Mechanical Engineering, KAIST, Daejeon, Korea, Oct., 2019.
37. Keynote speech, A Robotic State of Mind Workshop, Holomatic, Wuhan, China, Jun., 2019.
38. KAIST–NAVER Clova AI Workshop, KAIST, Daejeon, Korea, Jun., 2019.
39. Keynote speech, Workshop on Underwater Robotics Perception, ICRA, Montreal, Canada, May, 2019
40. AI+X Forum, School of Computing, KAIST, Daejeon, Korea, May., 2019.
41. SW Contents Research Laboratory, ETRI, Daejeon, Korea, May., 2019.
42. Mechanical Engineering, SNU, Seoul, Korea, May., 2019.
43. Czech technical university in Prague, Prague, Czech Republic, Apr., 2019.
44. Department of Naval Architecture & Ocean Engineering, Pusan National University (PNU), Busan, Korea, Feb., 2019.
45. Keynote speech, IEEE International Conference on Ubiquitous Robots, Honolulu, USA, Jun., 2018.
46. Women in Science and Engineering Session, ICROS Spring Conference, Institute of Control, Robotics and Systems (ICROS), May., 2017.
47. Civil and Environmental Engineering, Hong Kong University of Science and Technology (HKUST), Hong Kong, Jan., 2017.
48. Invited talk, Korea Intellectual Property Office, Daejeon, Aug., 2016.
49. Hyundai Engineering & Construction, Jul., 2016.
50. Korea Institute of Construction Technology (KICT), Seoul, Mar., 2016.
51. Autonomous Systems Lab, ETH Zurich, Feb., 2016.
52. Keynote speech, ICROS-KROS Joint Spring Conference, ICROS, Daejeon, May., 2015.
53. Daegu-Gyeongbuk Research Center, ETRI, Daegu, Korea, Feb., 2015.
54. Mechanical Engineering, PNU, Busan, Korea, Oct., 2014.
55. Digital Media Engineering, Busan University of Foreign Studies, Busan, Korea, Oct., 2014.
56. Civil and Environmental Engineering, KAIST, Daejeon, Korea, Apr., 2014.
57. Korea Institute of Ocean Science and Technology (KRISO), Daejeon, Korea, Nov., 2013.
58. Mechanical Engineering and Aerospace Engineering, SNU, Seoul, Korea, Sep., 2012.
59. Samsung Heavy Industries Research Institute, Daejeon, Korea, Sep., 2012.
60. Mechanical Engineering / Ocean and Resource Engineering, University of Hawaii, Honolulu, HI, USA, Sep., 2012.
61. Ocean Systems Engineering, KAIST, Daejeon, Korea, Nov., 2010.

## AWARDS AND HONORS

*2025* "Best paper award on robot perception finalist", ICRA
*2024* "Science and Technology Outstanding Paper Award", KOFST
*2024* "KROS Best Paper Award", Korea Robotics Society (KROS)
*2023* "Outstanding Lecturer Award", SNU
*2023* "KROS Paper Award", KROS
*2021* "Outstanding AE", RA-L, IEEE
*2020* "Outstanding Lecturer Award", CEE, KAIST
*2019* "Young Researcher Award", KROS
*2019* "Appreciation plaque", Korean marie robot technology society (KMRTS)
*2016* "Excellent Reviewer", The ICROS
*2016* "Young Scientist at Summer Davos Forum", The World Economic Forum (WEF)
*2015* "Excellence Award", Ministry of Science, ICT and Future Planning (MSIP)
*2015* "Best Presenter Award", KMRTS
*2015* "Young Researchers Award", ICROS
*2005* Graduated *Summa cum laude*, MAE, SNU.
*2004* "Best Presentation Award of Bachelor Thesis", MAE, SNU.

## PROFESSIONAL MEMBERSHIPS

*2022 -* Korean Society of Mechanical Engineers (KSME)
*2014 -* Institute of Control, Robotics and Systems (ICROS)
*2014 -* Women in Science, Engineering and Technology (WISET), Guest Mentor
*2014 -* Korean Society of Ocean Engineering (KSOE)
*2014 -* Korea Robotics Society (KROS)
*2011 -* IEEE Robotics and Automation Society
*2011 -* IEEE Women in Engineering
*2011 -* IEEE Oceanic Engineering Society
*2008 -* Institute of Electrical and Electronics Engineers (IEEE)

## SERVICES

### Committee

*Academic Societies*

· Workshop Chair, ICRA, 2027.
· Workshop Chair, RSS, 2025.
· Video and Media Chair, IROS, 2025.
· Associate VP, IEEE RAS MAB, 2022–2023.
· Activity Funding Committee, IFAC, 2020-present.
· Chapter Vice Chair, IEEE OES Korea Chapter, 2019-present.
· IROS ICROS Best Application Paper Award Committee, 2019–2022.
· Senior Program Committee, IROS, 2020, 2023.
· Publication Chair, IEEE Underwater Technology, 2017.

### Editorial Board

· Senior Editor, IEEE Robotics and Automation Letters (RA-L) 2026.
· Senior Area Chair, RSS, 2026.
· Associate Editor, IJRR, 2023–2025.
· Area Chair, RSS, 2023–2024.
· Associate Editor, IEEE Transactions on Robotics (T-RO) 2020–2023.
· Associate Editor, IEEE Robotics and Automation Letters (RA-L) 2019–2021.

· Senior Editor, IEEE UR, 2020, 2021, 2022.
· Associate Editor, IEEE IROS, 2020, 2022.
· Editor, IFAC CAMS/WROCO, 2019.

**Workshop & Tutorial Organizer**

· Workshop on Thermal Infrared in Robotics (TIRO), ICRA 2025.
· Workshop on Radar in Robotics: Resilience from Signal to Navigation, ICRA 2024.
· Workshop on Radar Perception for All-Weather Autonomy, ICRA 2021.
· Workshop on Reliable Deployment of Machine Learning for Long-Term Autonomy, ~~ICRA~~ IROS 2020. (Workshop has postponed to IROS 2020 due to COVID-19).
· Workshop on Acoustic based Navigation for Marine Robots, IROS 2017.

**Reviewer**

· IEEE Transactions on Robotics (T-RO).
· IEEE Transactions on Mechatronics (T-Mech).
· IEEE Transactions on Industrial Electronics (T-IE).
· IEEE Robotics and Automation Letters (RA-L).
· Field Robotics (FR)
· Science Report
· Journal of Field Robotics (JFR).
· AIAA Journal of Guidance, Control, and Dynamics.
· Elsevier Robotics and Autonomous Systems (RAS).
· Elsevier Ocean Engineering (OE).
· ASME Journal of Autonomous Vehicles and Systems.
· International Journal of Control, Automation and Systems (IJCAS).
· International Journal of Precision Engineering and Manufacturing.
· IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).
· IEEE International Conference on Robotics and Automation (ICRA).
· Robotics: Science and Systems (RSS).
· Conference on Robot Learning (CoRL).
· IEEE Intelligent Transportation Systems Conference (ITSC).
· International Conference on Control, Automation and Systems (ICCAS).

Revised November 24, 2025