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Ayoung Kim (김아영)

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

Assistant Professor *Sep. 2014 - present*
Dept. of Civil and Environmental Engineering & KI Robotics
Korea Advanced Institute of Science Technology (KAIST)

Assistant Professor (Adjunct) *Sep. 2019 - present*
School of Computing
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, Path planning, Computer vision, Autonomous vehicles, Mobile robotics, Robotic perception

TEACHING & ADVISING

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

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

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

Ph.D. Students

- Hyunchul Roh (Ph.D. in Robotics Program (RP), Feb 2017) — CEO of DYPHI.
- Youngsik Shin (Ph.D. in Civil and Environmental Engineering (CEE)) — 2015–
- Younggun Cho (Ph.D. in CEE) — 2015–
- Youngji Kim (Ph.D. in CEE) — 2016–
- Jinyong Jeong (Ph.D. in CEE) — 2016–
- Joowan Kim (Ph.D. in CEE) — 2016–
- Yeong Sang Park (Ph.D. in CEE) — 2017–
- Junho Lee (Master/Ph.D. in CEE) — 2017–
- Giseop Kim (Ph.D. in CEE) — 2019–
- Sungho Yoon (Ph.D. in RP) — 2019–

Master Students

- Giseop Kim (Master in CEE Feb 2019) — 2017–2019
- Younghun Cho (Master in CEE) — 2018-
- MyungHwan Jeon (Master in RP) — 2018-
- Hyesu Jang (Master in CEE) — 2018-

Undergraduate Students

KAIST Undergraduate Research Program (URP) & CEE URP

· Younghun Cho & Hyesu Jang (**Encouragement Prize**) URP 2017
· Hyesu Jang (**Encouragement Prize**) URP 2018
· Chaemin Na & Jongwon Lee CEE URP 2018

Thesis Committee

Chair / Co-chair

· Hyunchul Roh (Ph.D. in RP) 2017
· Giseop Kim (Master in CEE) 2019
· Youngsik Shin (Ph.D. proposal) 2019
· Younggun Cho (Ph.D. proposal) 2019

PUBLICATIONS

International Journal

1.
2. Young-Sik Shin, Yeong Sang Park, and Ayoung Kim. DVL-SLAM: Sparse depth enhanced direct Visual-LiDAR SLAM. *Autonomous Robots*, 2019. Accepted. To appear
3. 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)*, 2019. Accepted. To appear
4. 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)*, 2019. Accepted. To appear
5. 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
6. 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
7. 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. In print
8. 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*, 2018. Accepted. To appear
9. 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
10. 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
11. 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
12. 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

13. 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
14. 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
15. 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
16. 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
17. 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
18. 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. 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)*, Macau, Nov. 2019. Accepted. To appear
2. 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)*, Daejeon, Sep. 2019. Accepted. To appear
3. 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)*, Daejeon, Sep. 2019. Accepted. To appear
4. 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)*, Daejeon, Sep. 2019. Accepted. To appear
5. 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)*, Jeju, Jun. 2019. In Print
6. 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)*, Jun. 2019. In Print
7. 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**)
8. Yeong Sang Park, Jinyong Jeong, Youngsik Shin, and Ayoung Kim. Radar dataset for robust localization and mapping in urban environment. In *ICRA Workshop on Dataset Generation and Benchmarking of SLAM Algorithms for Robotics and VR/AR*, Montreal, May. 2019

9. Hyesu Jang, Giseop Kim, Yeongjun Lee, and Ayoung Kim. CNN-based approach for opti-acoustic reciprocal feature matching. In *ICRA Workshop on Underwater Robotics Perception*, Montreal, May. 2019
10. 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**)
11. 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
12. 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
13. 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
14. 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
15. 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
16. 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
17. 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
18. 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
19. 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
20. 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
21. 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
22. 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
23. 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
24. 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

25. 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
26. 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
27. 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
28. 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
29. 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
30. 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
31. 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
32. 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
33. 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
34. 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
35. 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
36. 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
37. 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
38. 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
39. 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

40. 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

국내 저널

- 전명환, 이영준, 신영식, 장혜수, 여태경, 김아영, 강건한 CNN기반 수중 물체 인식을 위한 이미지 합성과 자동화된 Annotation Tool, *로봇공학회 논문지*, 14(2):139–149, 2019.
- 김주완, 권대현, 김아영, 급격한 광조건 변화 극복을 위한 영상 처리 기법 연구, *제어로봇시스템학회 논문지*, 23(1):22–25, 2017.
- 신영식, 이영준, 최현택, 김아영, 수중 영상 소나의 번들 조정과 3 차원 복원을 위한 운동 추정의 모호성에 관한 연구, *로봇공학회 논문지*, 11(2):52–59, 2016.
- 신영식, 조영근, 이영준, 최현택, 김아영, 항법 적용을 위한 수중 소나 영상 처리 요소 기법 비교 분석, *한국해양공학회지*, 30(3):214–220, 2016.

학회지

- 조영근, 정진용, 김아영 ICRA SLAM 동향 분석 *로봇과 인간, 한국로봇학회*, 14(3):3–10, 2017.
- 김아영 IROS SLAM 동향 분석 *로봇과 인간, 한국로봇학회*, 15(1):4–10, 2018.
- 김아영 로봇의 눈으로 보는 도시 *기계저널 (로봇의 지각), 대한기계학회*, 59(5):38–42, 2019.

Interview & Media

- Education 3.0 강의 방식 소개 인터뷰, "강의 없앤 강의실... 학생들이 떠들썩해졌다" *조선일보*, 2017-05-04.

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

PATENTS

국내 특허

- 김주완, 조영근, 김아영, 베이지안 최적화를 이용한 카메라 속성 제어 방법 및 장치, 출원 *10-2019-0010600* (2019-01-28).
- 김아영, 김기섭, 김영철, 3차원 센서 데이터를 활용한 도심 속 관측자 중심의 시각 영역 분석 자동화 방법 및 장치, 출원 *10-2018-0086409* (2018-07-25), 등록 *10-1973903* (2019-04-23).
- 김아영, 이준호, 조영근, 김기섭, 노현철, 엔코더 프레임 장치 및 이를 이용한 차량 위치 측정 시스템, 출원 *10-2017-0099614* (2017-08-07), 등록 *10-1994339* (2019-06-24).
- 김아영, 신영식, 조영근, CNN을 이용한 이미지 디헤이징 방법 및 그 시스템, 출원 *10-2016-0147352* (2016-11-07), 등록 *10-1938945* (2019-01-09).

PRESENTATIONS

1. KAIST–NAVER Clova AI Workshop, KAIST, Daejeon, Korea, Jun., 2019.
2. Keynote speech, Workshop on Underwater Robotics Perception, ICRA, Montreal, Canada, May, 2019

3. AI+X Forum, School of Computing, KAIST, Daejeon, Korea, May., 2019.
4. SW Contents Research Laboratory, ETRI, Daejeon, Korea, May., 2019.
5. Mechanical Engineering, SNU, Seoul, Korea, May., 2019.
6. Czech technical university in Prague, Prague, Czech Republic, Apr., 2019.
7. Department of Naval Architecture & Ocean Engineering, Pusan National University (PNU), Busan, Korea, Feb., 2019.
8. Keynote speech, IEEE International Conference on Ubiquitous Robots, Honolulu, USA, Jun., 2018.
9. Women in Science and Engineering Session, ICROS Spring Conference, Institute of Control, Robotics and Systems (ICROS), May., 2017.
10. Civil and Environmental Engineering, Hong Kong University of Science and Technology (HKUST), Hong Kong, Jan., 2017.
11. Invited talk, Korea Intellectual Property Office, Daejeon, Aug., 2016.
12. Hyundai Engineering & Construction, Jul., 2016.
13. Korea Institute of Construction Technology (KICT), Seoul, Mar., 2016.
14. Autonomous Systems Lab, ETH Zurich, Feb., 2016.
15. Keynote speech, ICROS-KROS Joint Spring Conference, ICROS, Daejeon, May., 2015.
16. Daegu-Gyeongbuk Research Center, ETRI, Daegu, Korea, Feb., 2015.
17. Mechanical Engineering, PNU, Busan, Korea, Oct., 2014.
18. Digital Media Engineering, Busan University of Foreign Studies, Busan, Korea, Oct., 2014.
19. Civil and Environmental Engineering, KAIST, Daejeon, Korea, Apr., 2014.
20. Korea Institute of Ocean Science and Technology (KRISO), Daejeon, Korea, Nov., 2013.
21. Mechanical Engineering and Aerospace Engineering, SNU, Seoul, Korea, Sep., 2012.
22. Samsung Heavy Industries Research Institute, Daejeon, Korea, Sep., 2012.
23. Mechanical Engineering / Ocean and Resource Engineering, University of Hawaii, Honolulu, HI, USA, Sep., 2012.
24. Ocean Systems Engineering, KAIST, Daejeon, Korea, Nov., 2010.

AWARDS AND HONORS

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
2009, 2011	Rackham Travel Grant Award
2005 - 2007	Funding from Samsung Electronics, Inc.
2005	Graduated *Summa cum laude*, MAE, SNU.
2004	"Best Presentation Award of Bachelor Thesis", MAE, SNU.

PROFESSIONAL MEMBERSHIPS

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

· 평의원, 제어로봇시스템학회 (ICROS), 2019-2020.
· Chapter Vice Chair, IEEE OES Korea Chapter, 2019.
· Editor, IFAC CAMS/WROCO, 2019.
· 연구회총무이사, 한국수중수상로봇기술연구회, 한국해양공학회 (KSOE), 2017-2018.
· Publication Chair, IEEE Underwater Technology, 2017.
· 여성위원장, 제어로봇시스템학회 (ICROS), 2017.
· 연구부회장, 수중로봇연구회, 한국로봇학회 (KROS), 2016-2019.

Editorial Board

· Associate Editor, IEEE Robotics and Automation Letters (RA-L).

Workshop & Tutorial

· Workshop on Acoustic based Navigation for Marine Robots, IROS 2017.

Reviewer

· IEEE Robotics and Automation Letters (RA-L).
· IEEE Transactions on Industrial Electronics (TIE).
· Journal of Field Robotics (JFR).
· AIAA Journal of Guidance, Control, and Dynamics.
· Elsevier Robotics and Autonomous Systems (RAS).
· Elsevier Ocean Engineering (OE).
· 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).
· IEEE Intelligent Transportation Systems Conference (ITSC).
· Robotics: Science and Systems (RSS).
· International Conference on Control, Automation and Systems (ICCAS).

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