KEEHOON KIM

Ph.D.
Associate Professor
Dept. of Mechanical Engineering
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Research Interests

- Robotics
  - Manipulation
  - Bilateral Teleoperation
  - Mechanism Design (Robot Hands, Exoskeleton)
  - Bio-Medical Robots (Bionics, Rehabilitation, Surgical Robots)
  - Bionic Signal Processing & Bionic Interfaces
  - Haptics
- System & Control Theory
  - Kinematics & Dynamics (Screw theory, Lie-Group theory, Underactuated Mechanism)
  - Advanced Control Theory (H-infinity, mu-synthesis)

Education

B.S.	Mar. 1996 – Aug. 1999	- Pohang University of Science and Technology, Pohang, Korea - Mechanical Engineering - GPA 3.72/4.3 - Diploma of Honors for 7 semesters - Honor Graduation with Magna Cum Laude
M.S.	Sep. 1999 – Aug. 2001	- Pohang University of Science and Technology, Pohang, Korea - Mechanical Engineering - Advisor: Prof. Wan Kyun Chung - Thesis: Design and Control of 6 DOF Parallel Manipulator for Haptic Display
Ph.D.	Sep. 2001 - May 2006	- Pohang University of Science and Technology, Pohang, Korea - Mechanical Engineering - Advisor: Prof. Wan Kyun Chung - Thesis: Quantitative Comparison Framework of Bilateral Teleoperation Systems

Research Experience

Sep. 2019 - present — Pohang University of Science and Technology (POSTECH), Pohang, Korea
Associate Professor, Dept. of Mechanical Eng.

July 2018 - June 2020 — University of Texas at Austin, Austin, TX, USA
Visiting Professor, Dept. of Mechanical Eng.

Mar. 2015 - Sep. 2019 — Korea Institute of Science and Technology (KIST), Seoul, Korea
Principal Research Scientist, Center for Robotics Research

Sep. 2018 - Sep. 2019 — KIST School, University of Science and Technology (UST)
Professor, Dept. of Nano-IT

Jun. 2015 - Present — Ministry of Food and Drug Safety
Expert Adviser, Dept. of Medical Devices

Sep. 2014 - Aug. 2018 — University of Science and Technology (UST), Korea
Associate Professor, Dept. of HCI & Robotics

May 2009 - Feb. 2015 — Korea Institute of Science and Technology (KIST), Seoul, Korea
Senior Research Scientist, Center for Cognitive Robotics Research

Sep. 2010 - Aug. 2014 — University of Science and Technology (UST), Korea
Assistant Professor, Dept. of HCI & Robotics

July 2006 - April 2009 — Northwestern University, Illinois, USA
Post-Doctoral Researcher
Director: J. Edward Colgate
- Developed haptic feedback interface for upper extremity prosthesis to restore sense of touch, pressure, vibration, shear, and temperature by a grant of DARPA Revolutionizing Prosthetics 2009.

Sep. 2003 - May 2004 — Case Western Reserve University, Ohio, USA
Visiting Student
Advisor: M. Cenk Cavusoglu
- Developed a systematic performance evaluation method for bilateral teleoperation systems using μ-synthesis.

Feb. 1999 - May 2006 — Pohang University of Science and Technology (POSTECH), Pohang, Korea
Research Assistant in Robotics & Bio-Mechatronics Laboratory
Advisor: Wan Kyun Chung
- Developed a human guided spine bone fusion surgical robot interface using bilateral teleoperation scheme by a grant of Korean Ministry of Health and Welfare.
- Developed a haptic interface for extreme industrial environments by a grant of POSCO.
- Developed a 7-DOF parallel type haptic device by grant of Korean Ministry of Science and Technology.

Sep. 1999 - Aug. 2002 — Pohang University of Science and Technology (POSTECH), Pohang, Korea
Teaching Assistant in Robotics & Bio-Mechatronics Laboratory
- Graded tests and homework for an undergraduate course on System Control (MECH322).
- Graded tests and homework, and developed experimental setup for graduate courses, Advanced Robotics (MEIE639) and Advanced Automatic Control (MEIE525).

Honors and Awards

Aug. 1999 **- Diploma of Honors for 7 semesters (Early graduation in 7 semesters)**
- Honor Graduation with Magna Cum Laude

Dec. 2005 **Grand Prize Winner of 11th POSCO Thesis Competition by POSCO** "Development of a Haptic Interface for O_2 Lance Manipulator in Electric Furnace." (Award: $7,000 & Japan-China Observation Tour)

Nov. 2013 **Commendation awarded by Minister of Science, ICT and Future Planning**
* 미래창조과학부 장관 표창

Dec. 2013 **Unsung Hero Award, Korea Institute of Science and Technology**

Oct. 2014 **2014 Top 10 Mechanic Technology of the Year Award, The Korean Federation of Mechanical Engineering Societies**
* 올해의 10대 기계기술, 한국기계기술총연합회

Nov. 2014 **KIST Outstanding Research Award**
* 이달의 KIST인 상, KIST

Dec. 2014 **Assistive Robot Technology (ART) Award, Korean Robotics Society**
* 학보 ART 상, 한국로봇학회

Feb. 2015 **Commendation awarded by Chairman of National Research Council of Science and Technology**
* 국가과학기술연구회 이사장상

Nov. 2015 **Bronze Medal, 2016 Korea Invention Promotion Association**
* 대한민국지식재산대전 동상, 한국발명진흥회

Mar. 2016 **KIST Excellent Development Team Award**
* KIST 우수개발팀상, KIST

July 2016 **2016 National R&D Excellence Award, Minister of Science, ICT and Future Planning**
* 2016년 국가연구개발 우수성과 100선, 미래창조과학부

Dec. 2016 **2016 Young Robotic Scientist Award, Korean Robotics Society**
* 2016년 젊은로봇공학자상, 한국로봇학회

Dec. 2017 **2025 Top 100 technologies and leaders, the National Academy of Engineering of Korea**
* 2025 대한민국을 이끌 100대 기술과 주역, 한국공학한림원

Dec. 2018 **Platinum Winner, 2018 Spark Design Awards**

Dec. 2019 **Finalist, 2019 IDEA, International Design Excellence Awards**

May 2023 **ICRA 2023 Conference Editorial Board Outstanding Associate Editors**

Dec. 2023 **Outstanding Teaching Award, System Control, POSTECH**

Feb. 2024 **Best Teaching Award, UGRP, POSTECH**

Nov. 2024 **Commendation awarded by Minister of Science and ICT**
* 과학기술정보통신부 장관 표창

Feb. 2025 **Best Teachidng Award, UGRP, POSTECH**

Feb. 2025 **Red-Show Award, the 2nd place, Korea Robotics Society**

Feb. 2025 **Samsung Human-Tech Silver Prize in the Mechanical Engineering, Samsung**

Mar. 2025 **Next-Generation Research Leader, POSTECH**

May. 2025 **2025 ICRA Best Paper Award in Medicine**

Publications

Journal Articles

1. Joonsub Byun, Joonseon Hwang, Yong-An Chung, Hyeonseok Jeong, Jooyeon Kim, Keehoon Kim "Exploring Immersion Through a fMRI-Compatible Multi-Finger Handheld Haptic Display"Plos One, 10.1371/journal.pone.0343297
2. Hyunggon Shin, Wankyun Chung, and Keehoon Kim, "Soft and flexible robot skin actuator using multilayer 3D pneumatic network," *Nature Communications*, vol. 16, no. 1, Art. no. 5575, July 2025. (SCIE, IF 15.7, JCR 7.4%, 2024)
3. Seok Kim, Junhyung Kim, Seungbeom Kim, Taehyun Yun, Jeong Hyeon Kim, ChangHee Son, Yongseok Lee, Keehoon Kim, Han Eol Lee, and Namjung Kim, "Shape memory polymer surfaces with controllable roughness for multiscale switchable dry adhesion," *Nature Communications*, vol. 16, no. 1, Art. no. 4954, May 2025. (SCIE, IF 15.7, JCR 7.4%, 2024)
4. Jaehyun Park, Yeoeun Kim, Il Seop Choi, Sang-Woo Choi, Seungmoon Choi, and Keehoon Kim, IEEE, "Assessment of Novel Haptic Interfaces for Digital Twin Teleoperation in High-Risk Steel Production," *IEEE Transactions on Industrial Informatics*, vol. 21, no. 8, pp. 5954-5964, August 2025. (SCIE, IF 9.9, JCR 5.1%, 2024)
5. Dongwoo Ko, Donghyeon Lee, Woongyong Lee, Keehoon Kim, and Wan Kyun Chung, "Compensation Modulation for Tracking Accuracy in Free Motion and Compliance During Interaction," *IEEE/ASME Transactions on Mechatronics*, vol. 30, no. 1, pp. 180-190, May 2025. (SCIE, IF 7.3, JCR 4.4%, 2024)
6. Jaewon Byun, Joonsub Byun, Junsu Kang, Inje Yi, Jung-Woo Lee, Kyoungseok Noh, Jong Chan Kim, Young-Ho Choi, Goobong Chung, Sang-Rok Oh, and Keehoon Kim, "Autonomous UV-C Disinfection and Wiping Robot: Assessment in a Hospital Environment," *IEEE Robotics and Automation Magazine*, 2024 (Accepted). (SCIE, IF 7.2, JCR 12.4%, 2024)
7. Suhyeon Kim, Hyeonsu Woo, Seungbin Yoon, HyungGon Shin, Keehoon Kim, Geonhwee Kim, and Geunbae Lim, "Saline-based microfluidic soft pressure sensor utilizing a three-dimensional focused electric field for motion and healthcare monitoring," *Biosensors and Bioelectronics*, vol. 267, Art. no. 116868, 2025. (SCIE, IF 10.5, JCR 2.7%, 2024)
8. Dayoon Kang, SeungTaek Hong, Seon-Jin Kim, Hwanyong Choi, Keehoon Kim, and Jinah Jang, "Robotics-assisted modular assembly of bioactive soft materials for enhanced organ fabrication," *Virtual and Physical Prototyping*, vol. 19, no. 1, Art. no. e2390484, 2024. (SCIE, IF 8.8, JCR 11.3%, 2024)
9. Yongseok Lee, and Keehoon Kim, "Accurate Robotic Pushing Manipulation through Online Model Estimation under Uncertain Object Properties," *IEEE Robotics and Automation Letters*, vol. 9, no. 10, pp. 8730-8737, October 2024. (SCIE, IF 5.3, JCR 25.0%, 2024)
10. Dongwoo Ko, Donghyeon Lee, Woongyong Lee, Keehoon Kim, and Wan Kyun Chung, "Compensation Modulation for Tracking Accuracy in Free Motion and Compliance During Interaction," *IEEE/ASME Transactions on Mechatronics*, vol. 30, no. 1, pp. 180-190, February 2025. (SCIE, IF 7.3, JCR 4.4%, 2024)
11. Jaewon Byun and Keehoon Kim, "Benefits of Employing Surface Electromyography Signals for Power-Assisted Control from an Agility Perspective" *IEEE Access*, vol. 12, pp.66100-66109, May

2024. (SCIE, IF 3.6, JCR 35.3%, 2024)

12. Dajin Lee, Daehyeon Nam, Jinhyuk Yoon, Dukchan Yoon, Seokwon Jeong, Keehoon Kim, and Seungmoon Choi, "A Comparative Study of Physical and Haptic Exhibits in an Informal Learning Environment," *IEEE Transactions on Haptics*, vol. 17, no. 4, pp. 557-566, December 2024. (SCIE, IF 2.8, JCR 40.6%, 2024)
13. Man Bok Hong, Dukchan Yoon, Jaehyun Park, and Keehoon Kim, "KULEX-Wrist: Design and Analysis of Linkage-Driven Exoskeleton for Wrist Assistance," *Journal of Mechanical Design*, vol. 146, no. 8, Art. no. e2390484, August 2024. (SCIE, IF 3.0, JCR 31.9%, 2024)
14. Seoyoung Choi, Wonwoo Cho, and Keehoon Kim, "Restoring natural upper limb movement through a wrist prosthetic module for partial hand amputees," *Journal of NeuroEngineering and Rehabilitation*, vol. 20, Art. no. 135, October 2023. (SCIE, IF 5.2, JCR 2.4%, 2023)
15. Jinhyuk Yoon, Donghyeon Lee, Jungyong Bang, Hyung Gon Shin, Wan Kyun Chung, Seungmoon Choi, and Keehoon Kim, "Cable-Driven Haptic Interface with Movable Bases Achieving Maximum Workspace and Isotropic Force Exertion," *IEEE Transactions on Haptics*, vol. 16, no. 3, pp. 365-378, September 2023. (SCIE, IF 2.4, JCR 40.6%, 2023)
16. Chaerin Hong, Seongsik Park, and Keehoon Kim, "sEMG-Based Gesture Recognition Using Temporal History," *IEEE Transactions on Biomedical Engineering*, vol. 70, no. 9, pp. 2655-2666, September 2023. (SCIE, IF 4.4, JCR 29.3%, 2023)
17. Uijung Yong, Donghwan Kim, Hojoong Kim, Dong Gyu Hwang, Sungkeon Cho, Hyoryung Nam, Sejin Kim, Taeyeong Kim, Unyong Jeong, Keehoon Kim, Wan Kyun Chung, Woon-Hong Yeo, and Jinah Jang , "Biohybrid 3D Printing of a Tissue-Sensor Platform for Wireless, Real-Time, and Continuous Monitoring of Drug-Induced Cardiotoxicity," *Advanced Materials*, vol. 35, no. 11, Art. no. 2208983, December 2022. (SCIE, IF 29.4, JCR 2.3%, 2022)
18. Donghyeon Lee, Dongwoo Ko, Wan Kyun Chung Fellow, IEEE, and Keehoon Kim, "Quadratic Programming-based Task Scaling for Safe and Passive Robot Arm Teleoperation," *IEEE/ASME Transactions on Mechatronics*, vol. 27, no. 4, pp. 1937-1945, August 2022. (SCIE, IF 6.4, JCR 7.8%, 2022)
19. Keehoon Kim, "A review of haptic feedback through peripheral nerve stimulation for upper extremity prosthetics," *Current Opinion in Biomedical Engineering*, vol. 21, Art. no. 100368, March 2022. (SCIE, IF 3.9, JCR 45.8%, 2022)
20. Dukchan Yoon, and Keehoon Kim, "Fully Passive Robotic Finger for Human-Inspired Adaptive Grasping in Environmental Constraints," *IEEE/ASME Transactions on Mechatronics*, vol. 27, no. 5, pp. 3841-3852, October 2022. (SCIE, IF 6.4, JCR 7.8%, 2022)
21. Jae Hyung Lee, Ye Eun Oh, Hyun Joo Lee, Keehoon Kim, and Song Joo Lee, "Quantification of Upper Limb Isometric Force Control Abilities for Evaluating Upper Limb Functions Among Prosthetic Users", *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 29, pp.2559-2568, December 2021. (SCIE, IF 4.5, JCR 14.7%, 2021)
22. Min Woo Lee, Namseon Jang, Nara Choi, Sungwook Yang, Jinwoo Jeong, Hyeong Soo Nam, Sang-Rok Oh, Keehoon Kim, and Donghyun Hwang, "In Vivo Cellular-Level 3D Imaging of Peripheral Nerves Using a Dual-Focusing Technique for Intra-Neural Interface Implantation," *Advanced Science*, vol. 9, no. 3, Art. no. 2102876, November 2021. (SCIE, IF 17.5, JCR 6.1%, 2021)
23. Ikjong Park, Han Sang Park, Hong Kyun Kim, Wan Kyun Chung, and Keehoon Kim, "Real-time measurement of intraocular pressure variation during automatic intravitreal injections: An ex-vivo experimental study using porcine eyes," *PLoS One*, vol. 16, no.8, Art. no. e0256344, August 2021. (SCIE, IF 3.8, JCR 39.2%, 2021)
24. Minjae Kim, Yaejin Moon, Jasmine Hunt, Kelly A. McKenzie, Adam Horin, Matt McGuire, Keehoon Kim, Levi J. Hargrove, and Arun Jayaraman, "A Novel Technique to Reject Artifact Components for Surface EMG Signals Recorded During Walking with Transcutaneous Spinal Cord Stimulation: A Pilot Study," *Frontiers in Human Neuroscience*, vol. 15, Art. no. 660583, June 2021. (SCIE, IF 3.5,

JCR 36.3%, 2021)

25. Hyung Gon Shin, Ikjong Park, Keehoon Kim, Hong Kyun Kim, and Wan Kyun Chung, “Sensor-embedded Automatic Grasping Forceps for Precise Corneal Suture in Penetrating Keratoplasty,” *Micromachines*, vol. 12, no. 5, Art. no. 484, April 2021. (SCIE, IF 3.5, JCR 36.3%, 2021)
26. Keondo Lee, Seong-Eun Kim, Junsang Doh, Keehoon Kim, and Wan Kyun Chung, “User-friendly image-activated microfluidic cell sorting technique using an optimized, fast deep-learning algorithm,” *Lab on a chip*, vol. 21, no. 9, March 2021. (SCIE, IF 7.5, JCR 7.6%, 2021)
27. Hyung Gon Shin, Ikjong Park, Keehoon Kim, Hong Kyun Kim, and Wan Kyun Chung, “Corneal Suturing Robot Capable of Producing Sutures with Desired Shape for Corneal Transplantation Surgery,” *IEEE Transactions on Robotics*, vol. 37, no. 1, pp. 304-312, February 2021. (SCIE, IF 6.8, JCR 23.3%, 2021)
28. Minjae Kim, Wan Kyun Chung, and Keehoon Kim, “Subject-Independent sEMG Pattern Recognition by Using a Muscle Source Activation Model,” *IEEE Robotics and Automation Letters*, vol. 5, no. 4, pp. 5175-5180, October 2020. (SCIE, IF 3.7, JCR 32.1%, 2020)
29. Namseon Jang, Yong Seok Ihn, Nara Choi, Gangyong Gu, Jinwoo Jeong, Sungwook Yang, Sehyuk Yim, Keehoon Kim, Sang-Rok Oh, and Donghyun Hwang, “Compact and Lightweight End-effectors to Drive Hand-operated Surgical Instruments for Robot-assisted Microsurgery,” *IEEE/ASME Transactions on Mechatronics*, vol. 25, no. 4, pp. 1933-1943, August 2020. (SCIE, IF 5.3, JCR 9.8%, 2020)
30. Ikjong Park, Hong Kyun Kim, Wan Kyun Chung, and Keehoon Kim, “Deep Learning Based Real-Time OCT Image Segmentation and Correction for Robotic Needle Insertion Systems,” *IEEE Robotics and Automation Letters*, vol. 5, no. 3, pp. 4517-4524, July 2020. (SCIE, IF 3.7, JCR 32.1%, 2020)
31. Sungwoo Park, Namseon Jang, Yong Seok Ihn, Sungwook Yang, Jinwoo Jeong, Sehyuk Yim, Sang-Rok Oh, Keehoon Kim, and Donghyun Hwang, “A Tele-operated Microsurgical Forceps-Driver with a Variable Stiffness Haptic Feedback Master Device," *IEEE Robotics and Automation Letters*, vol. 5, no. 2, pp. 1946-1953, April 2020. (SCIE, IF 3.7, JCR 32.1%, 2020)
32. Seokho Nam, Woongyong Lee, Sunkyum Yoo, Keehoon Kim, and Wan Kyun Chung, “Development of Backdrivable Servovalve with Feedback Spring for Enhanced Electro-Hydraulic Torque Actuator”, *IEEE Robotics and Automation Letters*, vol. 5, no. 2, pp. 3145-3152, April 2020. (SCIE, IF 3.7, JCR 32.1%, 2020)
33. Woongyong Lee, Sunkyum Yoo, Seokho Nam, Keehoon Kim, and Wan Kyun Chung, “Passivity-Based Robust Compliance Control of Electro-Hydraulic Robot Manipulators with Joint Angle Limit", *IEEE Robotics and Automation Letters*, vol. 5, no. 2, pp. 3190-3197, April 2020. (SCIE, IF 3.7, JCR 32.1%, 2020)
34. Seongsik Park, Wan Kyun Chung, and Keehoon Kim, “Training-Free Bayesian Self-Adaptive Classification for sEMG Pattern Recognition Including Motion Transition,” *IEEE Transactions on Biomedical Engineering*, vol. 67, no. 6, pp. 1775-1786, June 2020. (SCIE, IF 4.5, JCR 16.0%, 2020)
35. Seongsik Park, Wan Kyun Chung, and Keehoon Kim, “Hierarchical Motion Segmentation Through sEMG for Continuous Lower Limb Motions,” *IEEE Robotics and Automation Letters*, vol. 4, no. 4, pp. 4402-4409, October 2019. (SCIE, IF 3.6, JCR 21.4%, 2019)
36. Tongil Park, Keehoon Kim, Sang-Rok Oh, and Youngsu Cha, “Electrohydraulic actuator for a soft gripper,” *Soft Robotics*, vol. 7, no.1, pp. 68-75, February 2020. (SCIE, IF 8.1, JCR 7.1% - #2/28 in Robotics, 2020)
37. Man Bok Hong, Sin Jung Kim, Yong Seok Ihn, Gu-Cheol Jeong, and Keehoon Kim, “KULEX-Hand: An Underactuated Wearable Hand for Grasping Power Assistance,” *IEEE Transactions on Robotics*, vol. 35, issue 2, pp.420-432, April 2019. (SCIE, IF 6.123, JCR 10.7% - #3/28 in Robotics, 2019)
38. Seongsik Park, Woongyong Lee, Wan Kyun Chung, and Keehoon Kim, “Programming by Demonstration using the Tele-Impedance Control Scheme: Verification by an sEMG-Controlled Ball-Trapping Robot,” *IEEE Transactions on Industrial Informatics*, vol. 15, issue 2, pp. 998-1006,

February 2019. (SCI, IF 9.112, JCR 3.7%, 2019)

39. Sehyuk Yim, Ye-Eun Oh, Jinwoo Jeong, Yong Seok Ihn, Donghyun Hwang, Sang-Rok Oh, and Keehoon Kim, "Handheld Nerve Electrode Insertion Tool," *IEEE/ASME Transactions on Mechatronics*, vol. 23, issue 5, pp. 2525-2530, October 2018. (SCI, IF 4.9, JCR 5.4%, 2018)
40. Minjae Kim, Keehoon Kim, and Wan Kyun Chung, "Simple and Fast Compensation of sEMG Interface Rotation for Robust Hand Motion Recognition," *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 26, no. 12, pp. 2397-2406, December 2018. (SCIE, IF 3.5, JCR 7.7%, 2018)
41. Donghyun Hwang, Yong Seok Ihn, and Keehoon Kim, "Compact Modular Cycloidal Motor with Embedded Shape Memory Alloy Wires," *IEEE Transactions on Industrial Electronics*, vol. 65, issue 5, pp. 4028-4038, May 2018. (SCIE, IF 7.5, JCR 1.6%, 2018)
42. Maria Florencia Deslivia, Hyun-Joo Lee, Rizki Fajar Zulkarnain, Bin Zhu, Arnold Adikrishna, In-ho Jeon, and Keehoon Kim, "The Effect of Split Nerve on Electromyography Signal Pattern in a Rat Model," *Journal of Reconstructive Microsurgery*, vol. 34, no. 2, pp.95-102, 2018. (SCIE, IF 1.8, JCR 51.7%, 2018)
43. Jaemin Lee, Min Kyu Kim, and Keehoon Kim, "A Control Scheme to Minimize Muscle Energy for Power Assistant Robotic Systems under Unknown External Perturbation," *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 25, no. 12, pp.2313-2327, December 2017. (SCIE, IF 4.0, JCR 4.6%, 2017)
44. Donghyun Hwang, Jaemin Lee, and Keehoon Kim, "On the Design of a Miniature Haptic Ring for Cutaneous Force Feedback Using Shape Memory Alloy Actuators," *Smart Materials and Structures*, vol. 26, no. 10, Art. no. 105002, September 2017. (SCIE, IF 3.0, JCR 14.8%, 2017)
45. Maria Florencia Deslivia, Hyun-joo Lee, Rizki Fajar Zulkamain, Zhu Bin, Arnold Adikrishna, In-ho Jeon, and Keehoon Kim, "Reinnervated Split-muscle Technique for Creating Additional Myoelectric Sites in Animal Model," *Plastic and Reconstructive Surgery*, vol.138, no.6, pp.997-1010, December 2016. (SCI, IF 3.8, JCR 11.7%, 2016)
46. Youngsu Cha, Jin Hong, Jaemin Lee, Jung-Min Park, and Keehoon Kim, "Flexible piezoelectric energy harvesting from mouse click motions," *Sensors*, vol. 16, no. 7, Art. no. 1045, July 2016. (SCIE, IF 2.7, JCR 17.2%, 2016)
47. Young Eun Huh, Seonhong Hwang, Keehoon Kim, Won-Ho Chung, Jinyoung Youn, and Jin Whan Cho, "Postural sensory correlates of freezing of gait in Parkinson's disease", *Parkinsonism & Related Disorders*, vol. 25, pp. 72-77, April 2016. (SCIE, IF 4.5, JCR 16.5%, 2016)
48. Keehoon Kim, J. Edward Colgate, "Haptic Feedback Enhances Grip Force Control of sEMG-Controlled Prosthetic Hands in Targeted Reinnervation Amputees," *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 20, no.6, pp. 798-805, November 2012. (SCIE, IF 3.3, JCR 4.7%, 2012)
49. Paul D. Marasco, Keehoon Kim, J. Edward Colgate, Michael A. Peshkin, and Todd A. Kuiken, "Robotic Touch Shifts Perception of Embodiment to a Prosthesis in Targeted Reinnervation Amputees," *Brain*, vol. 134, no. 3, pp. 747-758, March 2011. (SCI, IF 9.5, JCR 2.6%, 2011)
50. Keehoon Kim, J. Edward Colgate, Julio J. Santos-Munne, Alex Makhlin, and Michael A. Peshkin, "On the Design of Miniature Haptic Devices for Upper Extremity Prosthetics," *IEEE/ASME Transactions on Mechatronics*, vol. 15, no. 1, pp. 27-39, February 2010. (SCIE, IF 2.6, JCR 2.6%, 2010)
51. Keehoon Kim, Wan Kyun Chung, and M. Cenk Cavusoglu, "Description of Instantaneous Restriction Space for Multi-DOFs Bilateral Teleoperation Systems Using Position Sensors in Unstructured Environments", *IEEE Transactions on Robotics*, vol. 25, no. 5, pp. 1150-1158, October 2009. (SCIE, IF 2.0, JCR 12.5% - #2/16 in Robotics, 2009)
52. Jongwon Lee, Inwook Hwang, Keehoon Kim, Seungmoon Choi, Wan Kyun Chung, and Young Soo Kim, "Cooperative robotic assistant with drill-by-wire end-effector for spinal fusion surgery," *Industrial Robot: An International Journal*, vol. 36, no. 1, pp. 60-72, January 2009. (SCIE, IF 1.0, JCR

56.7%, 2009)

53. Keehoon Kim, M. Cenk Cavusoglu, and Wan Kyun Chung, "Quantitative Comparison of Bilateral Teleoperation Systems Using μ-Synthesis," *IEEE Transactions on Robotics*, vol. 23, no. 4, pp. 776-789, August 2007. (SCI, IF 2.0, JCR 7.7% - #1/13 in Robotics, 2007)
54. Keehoon Kim, and Wan Kyun Chung, Sang Yep Nam, "Accurate Force Reflection Method for Multi-DOF Haptic Interface Using Instantaneous Restriction Space without Force Sensor in an Unstructured Environment," *Advanced Robotics*, vol. 21, no. 1-2, pp.87-104, 2007. (SCIE, IF 0.5, JCR 61.5%, 2007)

Refereed Conference Papers

1. Yongseok Lee, and Keehoon Kim, "Accurate Robotic Pushing Manipulation through Online Model Estimation under Uncertain Object Properties," IEEE International Conference on Robotics and Automation (ICRA), 2025.
2. Yongseok Lee, and Keehoon Kim, "Goal-Driven Robotic Pushing Manipulation under Uncertain Object Properties," IEEE International Conference on Robotics and Automation (ICRA), 2025.
3. Jaehyun Park, IL SEOP CHOI, Sang-Woo Choi, and Keehoon Kim, "Design, Implementation, and Validation of an Ungrounded Visuo-Tactile Haptic Interface for Robotic Teleoperation in High-Risk Steel Production," IEEE International Conference on Robotics and Automation (ICRA), 2025.
4. Juwan Han, Seunghyeon Park, and Keehoon Kim, "In-Vivo Tendon-Driven Rodent Ankle Exoskeleton System for Sensorimotor Rehabilitation," IEEE International Conference on Robotics and Automation (ICRA), 2025.
5. Jaehyun Park, IL SEOP CHOI, Sang-Woo Choi, Keehoon Kim, "Adaptive Haptic Control Interface for Safeguarding Robotic Teleoperation in Hazardous Steelmaking Environments," IEEE International Conference on Robotics and Automation (ICRA), 2024
6. Dongwoo Ko, Donghyeon Lee, Wan Kyun Chung, Keehoon Kim, "Bounded Compensation with Friction Estimation for Accurate Motion Tracking and Compliant Behavior of Industrial Manipulators," IEEE International Conference on Robotics and Automation (ICRA), 2023.
7. Donghyeon Lee, Dongwoo Ko, Wan Kyun Chung, Keehoon Kim, "Maximal Manipulation Framework using Quadratic Programming for a Teleoperated Robotic System with Articulated bodies," IEEE International Conference on Robotics and Automation (ICRA), 2022.
8. Donghyeon Lee, Wan Kyun Chung, Keehoon Kim, "Safety-oriented Bilateral Teleoperation Framework for Contact-rich Tasks in Hazardous Workspaces," IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2021.
9. Minjae Kim*, Wan Kyun Chung, Keehoon Kim, "Subject-Independent sEMG Pattern Recognition by Using a Muscle Source Activation Model," IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2020.
10. Ikjong Park, Hong-Kyun Kim, Wan Kyun Chung, Keehoon Kim, "Deep Learning Based Real-Time OCT Image Segmentation and Correction for Robotic Needle Insertion Systems," IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2020.
11. Donghyeon Lee, Woongyong Lee, Wan Kyun Chung, Keehoon Kim, "Robust Micro-Particle Manipulation in a Microfluidic Channel Network Using Gravity-Induced Pressure Actuators," IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2020.
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16. Byeongkyu Lim, Keehoon Kim, Sang-Rok Oh, Donghyun Hwang, “HaptiCube: A Compact 5-DoF Finger-Wearable Tactile Interface,” IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2019.
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19. Namseon Jang, Yong Seok Ihn, Jinwoo Jeong, Sungwook Yang, Sehyuk Yim, Sang-Rok Oh, Keehoon Kim, Donghyun Hwang, “A Miniature Suction-gripper with Passive and Active Microneedle Arrays to Manipulate Peripheral Nerves,” IEEE International Conference on Robotics and Automation (ICRA), May 2019.
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21. Donghyun Hwang, Member, IEEE, ByeongKyu Lim, Hyun Gi Jung, Yong Seok Ihn, Jinwoo Jeong, Sehyuk Yim, Sang-Rok Oh, Keehoon Kim, “A Pilot Study on the Novel Non-invasive Nerve-Holder with Negative-pressure Suctions,” Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), 2018.
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25. Sehyuk Yim, Donghyun Hwang, Yong Seok Ihn, Jinwoo Jeong, Sang-Rok Oh, and Keehoon Kim, “A Handheld Device for Magnetically Inserting a Neural Interface into a Peripheral Nervous System,” Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), pp.226-229, 2017.
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38. Jaemin Lee, Minkyu Kim, Sang-Rok Oh, Keehoon Kim, “Integrated Control Method for Power-Assisted Rehabilitation: Ellipsoid Regression and Impedance Control,” IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), September 14-18, 2014. Chicago, IL, USA.
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52. Keehoon Kim, Wan Kyun Chung, M. Cenk Cavusoglu, “Restriction Space Projection Method for Position Sensor Based Force Reflection of Multi Degrees-of-Freedom Bilateral Teleoperation Systems in Unstructured Environments,” *International Conference on Robotics and Automation (ICRA*), Alaska, USA, May 3-8, 2010.
53. Jongwon Lee, Keehoon Kim, Wan Kyun Chung, Seungmoon Choi, Young Soo Kim, “Development of Human Guided Surgical Robot System for Spinal Fusion, CMSS-I,” *International Conference on Robotics and Automation (ICRA)*, California, USA, May 19-23, 2008.
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61. Keehoon Kim and Wan Kyun Chung, "Accurate Force Reflection for Kinematically Dissimilar Bilateral Teleoperation Systems Using Instantaneous Restriction Space," *International Conference on Robotics and Automation (ICRA)*, Orlando, USA, May 15-19, 2006.
62. Keehoon Kim, Wan Kyun Chung, and Youngil Youm, "Accurate Multi-DOF Kinesthetic Haptic Display Using Instantaneous Restriction Space," *International Conference on Intelligent Robots and Systems (IROS),* Edmonton, Canada, Aug.3-5, 2005.
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67. Keehoon Kim, Doik Kim, Wan Kyun Chung, and Youngil Youm, "Human Factor for Kinematic Design of a Haptic Device," *Proc. of the 32nd International Symposium on Robotics*, Seoul, Korea, pp. 135-140, April 19-21, 2001.
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Technology Transfers & Start-Ups

1. Power Assistant Robotic Systems, Gemtech Co. LTD, 2014. ($150,000, 5% Royalty)
2. Stereotactic Surgical Robotic System, Neuromeka Co., 2015 ($100,000, 5% Royalty)
3. Motion Capturing Algorithm based on sEMG, Hyoil CTA, 2015 ($100,000, 3% Royalty)
4. sEMG-based Sports Coaching System, 2015 ($150,000, 5% Royalty)
5. Logon.U Co., a start-up company, 2015
6. March Bionics Co., a start-up company, 2024

Patents

Registered

1. END EFFECTOR FOR SPINE BONE FUSION SYSTEMS
   뼈 융합 수술 시스템을 위한 엔드 이펙터 (Patent No. 10-0705998, KR)
2. HAPTIC INTERFACE FOR OXYGEN LANCE MANIPULATOR IN ELECTRIC FURNACE
   힘 반영 전기로 산소 취입기 조작을 위한 햅틱 인터페이스 장치 (Patent No. 10-0823095, KR)
3. RESTRICTION SPACE CALCULATION METHOD USING POSITION SENSORS OF MULTI DEGREES-OF-FREEDOM MANIPULATOR
   다관절 매니퓰레이터의 위치 센서를 이용한 제한공간 산출 방법 (Patent No. 1145243, KR)
4. MATERIAL SCREENING APPARATUS
   재료 감별 장치 (Patent No. 1402862 KR, 13/812290 US, PCT/KR2010/004917,)
5. APPARATUS FOR SUPPORTING A MUSCULAR STRENGTH OF ARM
   상지 근력 보조장치 (Patent No. 10-1280364KR)
6. PRECISE PLACEMENT DEVICE FOR PRECISE INSERTION OF INSERT
   뇌정위 수술을 위한 전극 삽입 장치 (Patent No. 1205891 KR, Patent No. 9498299 US)
7. EXOSKELETON MECHANISM FOR LIMB POWER ASSISTANCE,
   근력보조를 위한 외골격장치 (Patent No. 1295004 KR, Patent No. 9592174 US)
8. SPHERICAL TRANSMISSION JOINT
   경사 축의 회전동력전달을 위한 구형 조인트 (Patent No. 1283933 KR, PATENT No. 8,763,490 US)
9. TACTILE DISPLAY AND ITS CONTROL METHOD USING SQUEEZE FILM EFFECT
   스퀴즈막 효과를 이용한 촉감 디스플레이를 구비한 전자 장치 (PATENT No. 1383012 KR, Application No. 13/768,292 US)
10. WEARABLE ELECTROMYOGRAM SENSOR SYSTEM
    착용형 근전도 시스템 (PATENT No. 10-1501661 KR, Patent No. 9999391 US)
11. PLANT STATUS AUTOMATIC ANALYSIS DEVICE AND ANALYSIS METHOD USING THEREOF
    식물상태 자동화 분석장치 및 이를 이용한 식물 분석 방법 (Patent No. 10-156426 KR, 001041 PCT, Application No. 201580013834.9 CN)
12. APPARATUS FOR SUPPORTING A MUSCULAR STRENGTH OF ARM
    상지 근력 강화 보조 장치 (Patent No. 10-1538407, Patent No. ZL201580017826.1 CN, PCT/KR2015/003550)
13. APPARATUS FOR SUPPORTING A MUSCULAR STRNGTH AND A KIT HAVING THE SAME
    상지 근력 강화 장치 및 이를 구비한 키트 (PATENT No. 10-1523014 KR, Application No. 201580017828.0 CN, PCT/KR2015/003767)
14. Apparatus for Upper Limb Rehabilitation
    상지재활기 (Patent NO. 30-0777253 KR)
15. Apparatus for supporting a muscular strength
    상지운동기 (Patent NO. 30-0777250 KR, 30-0777251 KR, 30-0777252 KR)
16. ROBOT FINGER STRUCTURE
    로봇손가락 구조체 (Patent No. 10-1610745 KR, 005986 PCT)
17. AUTOMATIC SYSTEM FOR PLANT PHENOTYPE ANALYSIS
    식물분석 자동화 시스템 (Patent No. 10-1600903 KR, Application No. 201580078067.X CN, PCT/KR2015/ 003124)
18. POTS FOR PLANT PHENOTYPING
    식물뿌리 표현형 측정을 위한 식물 생육 용기 (Patent No. 10-1666034 KR)
19. PLANT PHENOTYPE ANALYSIS APPARATUS
    식물 표현체 분석장치 (Patent No. 10-1600906 KR, PCT/KR2016/000773)

20. WEARABLE DEVICE FOR HAPTIC DISPLAY
    착용형 촉감 전달 장치 (Patent No. 10-1658513 KR, Application No. 15/567421, PCT/KR2015/008332)
21. SENSOR MODULE FOR BIONIC SIGNAL ACQUISITION
    생체 신호 측정용 센서 모듈 (Patent No. 30-0837978 KR)
22. HIGH-TORQUE FLAT MOTOR WITH FLEXURE MECHANISM
    유연기구 기반 고토크 플랫 모터 (Patent No. 10-1703052 KR, Application No. 14/938324)
23. NEURAL PROBE ARRAY OF HIGH PERFORMANCE AND FOR MINIMIZED DAMAGE OF NEURON
    신경 손상을 최소화한 고성능 신경 탐침 구조체 (Patent No. 10-1700886 KR, Application No. 15-077172 US, Application No. 201680041169.9 CN, Application No. 16830771.8 EU, PCT/KR2016/008035)
24. APPARATUS FOR INVASIVE INSERTION OF ELECTRODE STRUCTURE
    침습형 신경전극 삽입 장치 (Patent No. 10-1842618 KR, Application No. 15/678894 US)

Pending

1. DETECTOR AND STIMULATOR FOR FEEDBACK IN A PROSTHESIS (Application No. 11/677564, US)
2. PLANAR NEURAL PROBE STRUCTURE AND ITS ASSEMBLY STRUCTURE FOR CHRONIC IMPLANTATION
   체내 이식이 가능한 평면구조의 침습형 신경전극과 소형삽입기구 (Application No. 2016-0149218 KR, 15/721217 US)
3. APPARATUS FOR INSERTION OF NERVE ELECTRODES
   받침형 신경고정부가 통합된 기계식 신경전극 삽입장치 (Application No. 2017-0108811 KR, 15/907832 US)
4. TACTILE TRANSMISSION DEVICE AND USER INTERFACE SYSTEM
   손가락 착용형 다자유도 촉감 전달 장치 (Application No. 2017-0164960 KR)
5. PERIPHERAL NERVE FIXING APPARATUS
   음압기반 말초신경 고정 장치 (Application No. 2018-0043058 KR)
6. HIGH PRECISION ROBOTIC PLATFORM MANIPULATING
   말초 신경 미세 조작이 가능한 로봇 플랫폼 (Application No. 2018-0056323 KR)
7. APPARATUS FOR HOLD AND RELEASE OF ELECTRODE
   전극 고정 및 릴리즈 장치 (Application No. 2018-0057576 KR)
8. MULTI-LAYERED SOFT PNEUMATIC ACTUATOR AND ROBOT DEVICE WITH THE SAME
   다층 소프트 공압액추에이터 및 이를 구비한 로봇 기구 (Application No. 10-2021-0149086 KR, 18/070,657 US)
9. SERVO VALVE
   서보 밸브 (Application No. 10-2021-0149086 KR)
10. TISSUE FIXATION PAD AND AUTOMATIC NEEDLE INSERTION DEVICE HAVING THE SAME
    조직 고정 패드 및 이를 구비한 자동 바늘 삽입 장치 (Application No. 10-2021-0130077 KR)
11. PARALLEL TYPE GRIPPER
    병렬형 그리퍼 (Application No. 10-2021-0112628 KR 17/894,989 US)
12. CHUCK AND PARALLEL TYPE GRIPPER INCLUDING THE
    척 및 이를 포함하는 병렬형 그리퍼 (Application No. 10-2555507 KR)
13. TRAINING-FREE BAYESIAN SELF-ADAPTIVE CLASSIFICATION FOR SEMG PATTERN RECOGNITION INCLUDING MOTION TRANSITION
    모션 전이를 포함하는 근전도 패턴인식을 위한 무학습 베이시안 자가적응 분류 (Application No. 10-2021-0063564 KR 10-2022-0060383 KR)
14. Image-based Microfluidic Cell Sorter and Microfluidic Cell Sorting Method Using Deep Learning Algorithm
    딥 러닝 알고리즘을 이용한 이미지 기반의 미세유체 세포 분류기 및 미세유체 세포 분류 방법 (Application No. 10-2022-0034156 KR

Grants (as a Principal Investigator)

1. Principal Investigator, $1,950,000, 2010~2014
   ADL Support System for the Elderly and Disabled, Ministry of Knowledge and Economy,
   연구책임자, 1,950,000,000원, 2010~2014
   노약자/장애인을 위한 근력보조 시스템 개발, 산업원천기술개발사업, 지식경제부

2. Principal Investigator, $1,600,000, 2010~2012 (Phase I)
   Decoding of Human Intention and Restoration of Sensory Perception based on Bionic Interface, Global Frontier R&D Program, Ministry of Science, ICT, and Future Planning..
   연구책임자, 1,600,000,000원, 2010~2012 (1단계 2년)
   바이오닉 인터페이스 기반 의도인식 및 감각전달 기술 개발, 글로벌프론티어사업, 교육과학부

3. Principal Investigator, $2,400,000, 2012~2015 (Phase II)
   Prediction of human motion intention based on surface electromyogram and restoration of multi-sensory feedback for sensory-motor skills through remote-controlled avatar, Global Frontier R&D Program, Ministry of Science, ICT, and Future Planning..
   연구책임자, 2,400,000,000원, 2012~2015 (2단계 3년)
   원격존재를 통한 감각-운동 작업을 위한 근전도 신호 기반의 동작의도 예측 및 능동 촉감 복원 기술 개발, 글로벌프론티어사업, 미래창조과학부

4. Principal Investigator, $3,000,000, 2015~2019 (Phase III)
   Predcition of motion intention based on surface-electromyogram and wearable tactile display for sensory-motor skills, Global Frontier R&D Program, Ministry of Science, ICT, and Future Planning..
   연구책임자, 2,400,000,000원, 2015~2019 (3단계 4년)
   감각-운동 작업을 위한 근전도 신호 기반의 동작의도 예측 및 착용형 촉감 디스플레이 기술 개발, 글로벌프론티어사업, 미래창조과학부

5. Principal Investigator, $200,000, 2015~2017
   Decoding of High Speed Motion Intention using sEMG signals, Ministry of Science, ICT, and Future Planning.
   연구책임자, 200,000,000원, 2015~2017 (2년)
   근전도 신호 기반 고속 동작 인식 기술 상용화, 미래창조과학부

6. Principal Investigator, $600,000, 2015~2017
   Development of sEMG based Motion Capturing System, Start-Up Supporting Program (Phase II), Korea Institute of Science and Technology
   연구책임자, 600,000,000원, 2015~2017 (2년)
   근전도 기반 모션캡처 시스템 개발, 창업지원프로그램(디딤돌 II), 한국과학기술연구원

7. Principal Investigator, $2,820,000, 2014~2017 (Phase I)
   Development of Measurement and Analysis System for Decoding of Motor and Sensory Bionic-Signals and Bionic Arms Controlled by Bionic Interfaces, Ministry of Science, ICT, and Future Planning
   연구책임자, $2,820,000,000원, 2014~2017 (1단계 3년)
   동작과 촉감 전달을 위한 생체신호 측정 분석 시스템 및 생체신호 기반 제어기능을 갖는 bionic arm 개발, 미래창조과학부

8. Principal Investigator, $7,450,000, 2017~2020 (Phase II)
   System Integration and Demonstration of Bionic Arms Controlled by Bionic Interfaces, Ministry of Science and ICT
   연구책임자, $7,450,000,000원, 2017~2020 (2단계 3년)
   생체신호 기반 제어기능을 갖는 bionic arm 시스템 인테그레이션 및 실증, 과학기술정보통신부

9. Co-Principal Investigator, $150,000, 2020
   Virtual Reality Force Feedback Controller Based User Biosignal Interface and Contents Control Technology, Ministry of Science and ICT
   참여기관 연구책임자, 150,000,000원, 2020 (1년)
   가상현실 역감 컨트롤러 기반 사용자 생체신호 인터페이스 및 콘텐츠 조작 기술, 과학기술정보통신부

10. Principal Investigator, $630,000, 2020 -2024
    Development of Haptic Interface for Tele-Robotic Systems at POSCO Blast Furnace
    연구책임자, 630,000,000원, 2020-2024
    고로 출선구 지금 제거 작업을 위한 로봇 원격 조종 (teleoperation) 햅틱 마스터 장치 개발, POSCO

11. Co-Principal Investigator, $200,000, 2020~2021
    Development and Validation of Real-Virtual Blended Exhibits for In-Depth Embodied Learning of Scientific Principles, Ministry of Science and ICT
    참여기관 연구책임자, 200,000,000원, 2020~2021
    과학적 원리의 심도 있는 체화 학습을 위한 실제-가상 혼합형 전시물 개발 및 효과 검증, 과학기술정보통신부

12. Principal Investigator, $1,200,000, 2020~2024
    Development of Intelligent Autonomous Disinfection Robot System for Multi-use Facilities and Living Space, Ministry of Science and ICT
    연구책임자, 1,200,000,000원, 2020~2024
    지능형 자율 방역로봇을 위한 작업설계 및 제어 알고리즘 개발, 과학기술정보통신부

13. Principal Investigator, $3,000,000, 2022~2026
    Bionic Nerve Interface for Metaverse sharing Sensory-Motor Information of Multiple Users, Ministry of Science and ICT
    연구책임자, 3,000,000,000원, 2022~2026
    다수 사용자간 운동-감각 초연결 메타버스 구현을 위한 바이오닉 신경 인터페이스 기술, 과학기술정보통신부

14. Co-Principal Investigator, $650,000, 2022~2025
    Development of Robotic Technology of Mobile Manipulation capable of Recognizing and Grasping Objects for Unmanned Dish Collection Service, Ministry of Trade, Industry and Energy
    참여기관, 650,000,000원, 2022~2025
    식후 빈 그릇 수거의 무인화를 위한 다양한 식기의 인식/파지가 가능한 모바일 머니퓰레이션 기반의 서비스 로봇 기술 개발, 산업통상자원부

15. Co-Principal Investigator, $1,050,000, 2022~2026
    Development of Dismantling Work Technology for Recycling of Variety EV Battery Packs with Human Robot Cooperation, Ministry of Trade, Industry and Energy
    참여기관, 1,050,000,000원, 2022~2026
    다품종 EV 폐배터리팩의 재활용을 위한 인간-로봇 협업 해체 작업 기술 개발, 산업통상자원부

16. Co-Principal Investigator, $450,000, 2024~2028
    Development of Tactile Intelligence in Robotic Hands Based on Tactile Data Learning for Manipulating Irregular Multiple Types of Objects, Ministry of Trade, Industry and Energy
    참여기관, 450,000,000원, 2024~2028
    비정형 다종 물체 조작 작업을 위한 촉각 데이터 학습 기반 로봇핸드 촉각 지능 기술 개발, 산업통상자원부

Invited Talks

*** ICRA 2025 Keynote Speech, "Rethinking Robotic Intelligence: From More Control to Better Design," May 5, 2025**

1. "Rethinking Robotic Intelligence: From More Control to Better Design," MARS Forum, Sep. 4, 2025.
2. "Rethinking Robotic Intelligence: From More Control to Better Design," USTH, PTIT, HUST, Vietnam Hanoi Aug. 21, 2025
3. "Toward Autonomous Robots Empowered by Bionic Interface and Learn-by-Demonstration Approach,"Korean Orthpaedic Research Society, June 14, 2025.
4. "Toward Autonomous Robots Empowered by Bionic Interface and Learn-by-Demonstration

Approach," POSCO, May 27, 2025.

5. "Toward Autonomous Robots Empowered by Bionic Interface and Learn-by-Demonstration Approach," KOTMI, April 3, 2025.
6. "Human Hand Skill Transfer to Autonomous Robots," Keynote, Annual Congress of KSS, Nov. 1, 2024.
7. "Learn from Demonstration as a Strategy for Robotic Hand Manipulation," Samsung Electronics, Aug. 22, 2024
8. "Toward Autonomous Robots Empowered by Bionic Interface and Learn-by-Demonstration Approach," Seoul National University of Science and Technology, Jan. 10, 2024.
9. "Toward Autonomous Robots Empowered by Bionic Interface and Learn-by-Demonstration Approach," Samsung Electronics, Dec. 20, 2023.
10. "The Future Development Direction of Robot Technology for Work in Complex and Hazardous Environments," POSCO DX, Sep. 20, 2023
11. "Bionic Interface: Prediction of Human Motion Intention and Haptic Feedback," Seoul National University, April 21, 2023.
12. "Bionic Interface: Decoding Human Motion Intention and Haptic Feedback," Sungkyunkwan Univ (SKKU)., March 10, 2022.
13. "Bionic Interface: Decoding Human Motion Intention and Haptic Feedback," Sungkyunkwan Univ (SKKU)., Nov. 18, 2021.
14. "Bionic Interface: Decoding Human Motion Intention and Haptic Interface," Samsung Electronics, Aug. 6, 2021
15. "Assistant Robotic Technologies: Research to Commercialization," National Rehabilitation Institute, July 1, 2021.
16. "Assistant Robotic Technologies: Research to Commercialization," POSCO, Jan. 27, 2021.
17. "A microsurgical robotic system for nerve manipulation," The 1st KNUH Future Medicine International Symposium, Dec. 4, 2020.
18. "Decoding Human Motion Intention Using Bionic Interface," RIST, April 3, 2020.
19. "Assistant Robotic Technologies: Research to Commercialization," University of Texas at Austin, Sep. 21, 2018.
20. "Assistant Robotic Technologies: Research to Commercialization," POSTECH, Sep. 3, 2018.
21. "Robotic Technologies in Science Fiction," Korea Ministry of Science and ICT, June 19, 2018.
22. "Robotic Technologies in Science Fiction," Korea Job World, May 16, 2018.
23. "Prediction of Human Motion Intention Using Bionic Interface: Research to Commercialization," Joong-Ang University, March 15, 2018.
24. "Prediction of Human Motion Intention Using Bionic Interface," Republic of Korea Army Training and Doctrine Command, Dec. 6, 2017.
25. "Prediction of Human Motion Intention Using Bionic Interface: Research to Commercialization," World Robot Conference, Beijing, China, Aug. 27, 2017.
26. "Prediction of Human Motion Intention Using Bionic Interface," Korean Medical Association, July 1, 2017.
27. "Robotic Technologies in Science Fiction," Korea Job World, June 8, 2017.
28. "Robotic Technologies in Science Fiction," Gyenggi Science High School for the Gifted, Mar. 25, 2017.
29. "Robotic Technologies in Science Fiction," Science Station, Sangwolgok Station, Mar. 17, 2017.
30. "Prediction of Human Motion Intention Using Bionic Interface," Asan Hospital, May 10, 2017.
31. "Robotic Technologies in Science Fiction," TOZ study, Mar. 18, 2017.
32. "Prediction of Human Motion Intention: Research to Commercialization," UNIST, Ulsan, Nov. 16, 2016.
33. "Prediction of Human Motion Intention: Research to Commercialization," KAIST, Daejeon, Nov. 2, 2016
34. "Prediction of Human Motion Intention: Research to Commercialization," World Robot Conference, Beijing, China, Oct. 22, 2016
35. "Prediction of Human Motion Intention: Research to Commercialization," Sungkyunkwan Univ., Oct.

6, 2016

36. “Robotic Technologies in Science Fiction,” Seongbuk-Gu, KIST Science Talk, Aug. 4, 2016.
37. “Assistant Robotic Technologies in Bio-Medical Applications,” World Robot Conference, Beijing, China, Nov. 24, 2015.
38. “KULEX, KIST Upper Limb Exoskeleton,” Korea-Swiss Life Science Symposium, Oct. 22, 2015.
39. “Development of sEMG Sensor Systems and Industrial Applications,” Korea Development Bank, Oct. 16, 2015.
40. “Decoding of Human Motion Intention Using Bionic Interface,” DGIST, Sep. 16, 2015.
41. “Development of sEMG Sensor Systems and Industrial Applications,” Educational Center for Future Technology, Sep. 11, 2015.
42. “Prediction of Human Motion Intention Using Bionic-Interface,” Korea-Japan Robotics Workshop, Sep. 4, 2015.
43. “Robotic Technologies in Science Fiction,” Seongbuk-Gu, KIST Science Talk, Aug. 4, 2015.
44. “Assistant Robotic Technologies in Bio-Medical Applications,” Bionics Forum, July 2, 2015.
45. “Assistant Robotic Technologies in Bio-Medical Applications,” Yonsei University, April 3, 2015.
46. “Assistant Robotic Technologies in Bio-Medical Applications,” Korea University, Dec. 9, 2014
47. “Robotic Technologies in Science Fiction”, Science Talk on Saturday, Dec. 6, 2014.
48. “Assistant Robotic Technologies in Bio-Medical Applications,” Kookmin University, Nov. 24, 2014.
49. “Assistant Robotic Technologies in Bio-Medical Applications,” Pohang University of Science and Technology (POSTECH), Oct. 29, 2014.
50. “Assistant Robotic Technologies in Bio-Medical Applications,” The Institute of Electronics and Information Engineers (IEIE), Oct. 15, 2014.
51. “Assistant Robotic Technologies in Bio-Medical Applications,” Seoul Samsung Hospital, Sep. 1, 2014.
52. “Assistant Robotic Technologies in Bio-Medical Applications,” Asan Hospital, Annual Symposium of Center for Biomedical Engineering Research Center, Nov. 27, 2013
53. “Robotic Technologies in Science Fiction”, Science Touch on Friday, Nov. 8, 2013.
54. “Robotic Technologies in Science Fiction”, Center for Women in Science Engineering and Technology, July 30, 2013.
55. “Decoding of Motion Intention & Restoration of Haptic Sensation for Upper Extremity Amputees”, Bulgaria-Korea Science and Technology Forum, Jun. 3, 2013
56. “Decoding of Motion Intention and Restoration of Haptic Sensation for Upper Extremity Amputees”, Asan Hospital, Dec. 14, 2012.
57. “Assistant Robotics in Bio-Medical Applications”, Seoul National University, Oct. 31, 2012.
58. “Assistant Robotics in Bio-Medical Applications”, Daegu-Kyoungbuk Institute of Science and Technolgoy (DGIST), Sep. 12, 2012.
59. “Assistant Robotics in Bio-Medical Applications”, Hanyang University WCU, July 25, 2012.
60. “Assistant Robotics in Bio-Medical Applications”, Bulgaria-Korea Science and Technology Forum, Jun. 28, 2012.
61. “Restoration of Haptic Sensation for Upper Extremity Amputees”, International Workshop on Cognition, Control and Learning, Jan. 6, 2012
62. “Assistant Robotics in Bio-Medical Applications”, Dept. of Orthopedics, Asan Hospital, Oct. 25, 2011.
63. “Assistant Robotics in Bio-Medical Applications”, Dept. of Radiology, Asan Hospital, Aug. 25, 2011.
64. “Toward Neurocontrolled Upper Extremity Prosthesis: Decoding of Human Motion Intention & Restoration of Haptic Sensation,” Technische Universitat Munchen, Germany, May 26, 2011.
65. “Restoration of Haptic Sensation: Toward Neurocontrolled Upper Extremity Prosthesis,” ETH, Switzerland, May 23, 2011.
66. “Restoration of Haptic Sensation: Toward Neurocontrolled Upper Extremity Prosthesis,” Sungkyunkwan University, Apr. 25, 2011.
67. “Assistant Robotics Technologies in Bio-Medical Application,” Robotic Surgery Symposium, Asan

Hospital, Feb. 11, 2011.

68. "Assistant Robotics Technologies in Bio-Medical Application," Robotic Surgery Center, Asan Hospital, Feb. 8, 2011.
69. "Toward Neurocontrolled Upper Extremity Prosthesis: Trends, Issues, and Perspectives," the Guro Industrials, Dec. 21, 2010.
70. "Assistant Robotics Technologies in Bio-Medical Application," Asan-KIST Symposium, Asan Hospital, Nov. 16, 2010.
71. "Toward Neurocontrolled Upper Extremity Prosthesis: Trends, Issues, and Perspectives," Korea University, Nov. 8, 2010.
72. "Assistant Robotics Technologies in Rehabilitation Applications," Hyundai Rotem, Oct. 21, 2010.
73. "Toward Neurocontrolled Upper Extremity Prosthesis: Restoration of Haptic Sensation," KAIST, Daejon, June 10, 2010.
74. "Restoration of Haptic Sensation for Upper Extremity Prosthesis," Seoul National University, Seoul Korea, Dec. 1, 2009.
75. "Assistant Robotics in Bio-Medical Applications: Restoration of Haptic Sensation for Upper Extremity Prosthesis," Korea Institute of Industrial Technology, Ansan, Korea, July 17, 2009
76. "Assistant Robot Technologies in Bio-Medical Applications," Korea Institute of Science and Technology (KIST), Seoul, Korea, January 9, 2009.
77. "Assistant Robot Technologies in Bio-Medical Applications," Kyungpook National University, Daegu, Korea, January 7, 2009.
78. "Haptic Feedback for Upper Extremity Prosthetics," Rehabilitation Institute of Chicago, Chicago, USA, February 29, 2008
79. "Assistant Robot Technologies in Bio-Medical Application," Gwangju Institute of Science and Technology (GIST), Gwangju, Korea, February 4, 2008
80. "Research on Upper Extremity Prosthetics", Pohang Institute of Intelligent Robotics, Pohang, Korea, October 9, 2007.
81. "Towards Tele-Presence", Korea Institute of Industrial Technology, Ansan, Korea, April 5, 2006.

Professional Service

Served as a committee member for international conference, including:

- 2011 IEEE International Conference on Mechatronics and Automation (ICMA), Program Committee
- 2012 IEEE International Conference on Intelligent Robots and Systems (IROS), Associate Editor
- 2012 Korea Robotics Society Annual Conference (KROC), Local Chair
- 2013 IEEE International Conference on Intelligent Robots and Systems (IROS), Associate Editor
- 2013 Korea Robotics Society Annual Conference (KROC), Financial Chair
- 2013 IEEE International Conference on Intelligent Robots and Systems (IROS), Associate Editor
- 2013 International Conference on Ubiquitous Robots and Ambient Intelligence (URAI), Local Chair
- 2014 IEEE International Conference on Robotics and Automation (ICRA), Associate Editor
- 2014 IEEE International Conference on Intelligent Robots and Systems (IROS), Associate Editor
- 2014 International Conference on Ubiquitous Robots and Ambient Intelligence (URAI), Finance Chair
- 2015 IEEE International Conference on Robotics and Automation (ICRA), Associate Editor
- 2015 Workshop of IEEE International Conference on Robotics and Automation (ICRA), Co-Organizer
- 2015 IEEE International Conference on Intelligent Robots and Systems (IROS), Editor
- 2016 IEEE International Conference on Intelligent Robots and Systems (IROS), Editor
- 2016 Journal of Korea Robotics Society, Editor.
- 2017 Korea Robotics Society Annual Conference (KROC), Exhibition Chair
- 2017 IEEE International Conference on Robotics and Automation (ICRA), Associate Editor
- 2017 IEEE International Conference on Intelligent Robots and Systems (IROS), Editor
- 2017 International Conference on Ubiquitous Robots and Ambient Intelligence (URAI)
- 2017 IEEE International Conference on Intelligent Robots and Systems (IROS), Editor
- 2018 IEEE International Conference on Intelligent Robots and Systems (IROS), Editor

- 2018 Korea Robotics Society Annual Conference (KROC), Exhibition Chair
- 2019 Korea Robotics Society Annual Conference (KROC), Tutorial Chair
- 2018 IEEE International Conference on Intelligent Robots and Systems (IROS), Editor
- 2019 IEEE International Conference on Robotics and Automation (ICRA), Associate Editor
- 2019 IEEE International Conference on Intelligent Robots and Systems (IROS), Editor
- 2020 IEEE International Conference on Robotics and Automation (ICRA), Associate Editor
- 2020 IEEE International Conference on Intelligent Robots and Systems (IROS), Session Chair
- 2021 IEEE Transactions on Haptics – the World Haptics Conference 2021, Guest Editor
- 2021 Korea Robotics Society Annual Conference (KROC), Program Chair
- 2022 IEEE international Conferences on Robotics and Automation (ICRA), Associate Editor
- 2022 IEEE Transactions on Haptics – Haptics Symposium 2022, Guest Editor
- 2023 IEEE international Conferences on Robotics and Automation (ICRA), Associate Editor
- 2023 IEEE Ubiquitous Robot 2003 (UR2003), Program Chair
- 2024 IEEE international Conferences on Robotics and Automation (ICRA), Associate Editor
- 2016-2023 IEEE Robotics and Automation Society, Technical Committee, Telerobotics, Co-Chair
- 2021-Now Intelligent Service Robotics, Editor
- 2024-Now IEEE Robotic and Automation Letters, Associate Editor
- 2024-Now IEEE Transactions on Robotics and Automation Practice, Senior Editor
- 2025-Now IEEE Transactions on Automation Sicence and Engineering, Senior Editor

Served as a reviewer for international journals, including:
- IEEE Transactions on Robotics
- IEEE Transactions on Neural Systems and Rehabilitation Engineering
- IEEE Transactions on Haptics
- IEEE Transactions on Biomedical Engineering
- IEEE Transactions on Mechatronics
- IEEE Spectrum
- International Journal of Robotics Research
- Journal of Neuroengineering and Rehabilitation
- Advanced Robotics
- Robotica
- ASME Journal of Dynamic Systems Measurement and Control
- International Journal of Control, Automation, and Systems (IJCAS)
- Journal of Mechanical Science and Technology
- Journal of Biomedical and Health Informatics

Served as a reviewer for international conference, including:
- IEEE International Conference on Robotics and Automation
- IEEE/RSJ International Conference on Intelligent Robots and Systems
- Symposium on Haptic Interfaces
- IEEE International Symposium on Robots and Human Interactive Communications
- IEEE International Conference on Mechatronics and Automation.
- IEEE RAS & EMBS International Conference on Biomedical Robotics and Biomechatronics