

Hyunjin Choi (최현진)

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1508C Sangmyung University, 31 Sangmyungdae-gil, Cheonan, Korea
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EDUCATION

- Sogang University** 2019
Ph.D. Department of Mechanical Engineering
Dissertation Title:
Assistance and Rehabilitation of People with Paretic Gait Using a Torque-controlled Wearable Robot
Advisor: Kyoungchul Kong
- Sogang University** 2012
B.S. Department of Physics (Magna Cum Laude)
B.E. Department of Economics

PROFESSIONAL EXPERIENCE

- Sangmyung University** 2020 - present
Assistant Professor
Department of Human Intelligence Robot Engineering
- Angel Robotics Co., Ltd** 2017 - 2020
Founding Member / Lead Engineer
- University Paris-Est Créteil (UPEC)** Summer 2013, 2014, 2015
Visiting Researcher
Laboratoire Images, Signaux et Systèmes Intelligents (LiSSi)
- Sogang University (Industry-University Cooperation Foundation)** 2012 - 2016
Student Researcher
EXO Lab (formerly RSC Lab)

ACADEMIC SERVICE

- IFAC Technical Committee on Robotics (TC 4.3)** 2024 - Present
Vice Chair
- ICROS (Institute of Control, Robotics, and Systems)** 2024 - 2026
Organizing Committee Member
- IFAC Symposium on Robotics** 2025
Proceedings Editor
- IFAC World Congress** 2026
Associate Editor

FELLOWSHIPS AND AWARDS

- Gold and Bronze Medal in Powered Exoskeleton Race** 2020
Cyathlon
Team Angel Robotics
- Young Researcher Award (우수신진연구자상)** 2019
Institute of Control, Robotics and Systems (제어로봇시스템학회)
- Top 10 Student Project Worldwide** 2017
National Instruments
- Top 10 Finalist** 2016
UAE AI & Robotics for Good
Project: Angelegs
- Global Ph.D. Fellowship** 2012 - 2016
National Research Foundation (NRF), Korea
Project: Study on a mechatronic rehabilitation system incorporating functional electrical stimulation and a robotic exoskeleton

† indicates corresponding author(s)

Journal Papers

1. H. Kim, K. Shi, **H. Choi**, D. Rha, K. Kong[†], “Real-time Spatiotemporal Gait Analysis Using a Hip Assistive Wearable Robot,” *IEEE Access*, vol. 14, pp. 36025–36035, 2026.
2. D.-E. Lim, S. Koo, **H. Choi**[†], “Hybrid Physics–LSTM Model for Vision-Based Ball Landing Point Prediction,” *Journal of the Korea Institute of Information and Communication Engineering (JKIECE)*, vol. 30, no. 2, pp. 217–223, 2026.
3. S. Koo, J.-H. Jo, **H. Choi**[†], “Initial-contact-timing Estimation Based on Supervised Learning in a Hip-assistive Wearable Robot,” *Journal of Institute of Control, Robotics and Systems*, vol. 32, no. 2, pp. 158–163, 2026.
4. J.-H. Jo, S. Koo, K.-H. Min, **H. Choi**[†], “Development of an FSR-IMU Integrated Insole System for Gait Analysis,” *The Journal of The Korea Institute of Electronic Communication Sciences (KIECS)*, vol. 21, no. 1, pp. 391–397, 2026.
5. S. Koo, J.-H. Jo, K.-H. Min, **H. Choi**[†], “Research on a Wearable Hand Gesture Recognition System Based on Pressure Sensors,” *The Journal of The Korea Institute of Electronic Communication Sciences (KIECS)*, vol. 20, no. 6, pp. 1367–1373, 2025.
6. H.-c. Kim, **H. Choi**[†], “Design of a Shoe-Mounted Ground Inclination Measurement System Using Time of Flight Sensors,” *The Journal of The Korea Institute of Electronic Communication Sciences (KIECS)*, vol. 19, no. 5, pp. 1005–1012, 2024.
7. H.-c. Kim, **H. Choi**[†], “Heel Trajectory Analysis Method of Walking using a Wearable Sensor,” *The Journal of The Korea Institute of Electronic Communication Sciences (KIECS)*, vol. 18, no. 4, pp. 731–736, 2023.
8. S. An, J. Feng, E. Song, K. Kong, J. Kim, **H. Choi**[†], “High-Accuracy Hand Gesture Recognition on the Wrist Tendon Group Using Pneumatic Mechanomyography (pMMG),” *IEEE Transactions on Industrial Informatics (TII)*, vol. 20, no. 2, pp. 1550–1561, 2023.
9. J.-h. Seong, **H. Choi**[†], “A Wearable Glove System for Rehabilitation of Finger Injured Patients,” *The Journal of The Korea Institute of Electronic Communication Sciences (KIECS)*, vol. 18, no. 2, pp. 379–385, 2023.
10. J. Choi, *et al.*, **H. Choi**, K. Kong[†], “The History and Future of the WalkON Suit: A Powered Exoskeleton for People With Disabilities,” *IEEE Industrial Electronics Magazine*, 2022.
11. H. Choi, J. Yeo, J.-h. Seong, **H. Choi**[†], “Development of Low-cost 3D Printing Bi-axial Pressure Sensor,” *Journal of Korea Robotics Society*, vol. 17, no. 2, pp. 152–158, 2022.
12. **H. Choi**, “Assistance of a Person with Muscular Weakness Using a Joint-Torque-Assisting Exoskeletal Robot,” *MDPI Applied Sciences*, vol. 11, no. 7, p. 3114, 2021.
13. **H. Choi**, K. Kong[†], “A Soft Three-Axis Force Sensor Based on Radially Symmetric Pneumatic Chambers,” *IEEE Sensors Journal*, vol. 19, no. 13, p. 5229, 2019.
14. **H. Choi**, K. Kong[†], “A User Interface System with See-Through Display for WalkON Suit: A Powered Exoskeleton for Complete Paraplegics,” *MDPI Applied Sciences*, vol. 2, p. 2287, 2018.
15. **H. Choi**, S. Oh, K. Kong[†], “Control of a Robotic Manipulator in the Polar Coordinate System using a Biarticular Actuation Mechanism,” *International Journal of Control, Automation, and Systems (IJCAS)*, vol. 14, no. 4, pp. 1095–1105, 2016.
16. B. Na, **H. Choi**, K. Kong[†], “Design of a Direct-Driven Linear Actuator for a High-Speed Quadruped Robot, Cheetaroid-I,” *IEEE/ASME Transactions on Mechatronics*, vol. 20, no. 2, pp. 924–933, 2014.

Refereed Conference Papers

1. 장우혁, 정민규, 최승민, 강범수, **최현진**[†], “Development of a Real-time Exercise Posture Estimation System using a Wearable Multi-modal Sensor Network,” *ICROS 2026*.
2. S. Koo, W. Jang, M.-g. Jung, **H. Choi**[†], “Gait-Period-Informed Bi-LSTM Estimation of Knee Kinematic Peaks from Hip Joint Kinematics,” *ICROS 2026*.
3. 임재승, 이상현, 김민서, **최현진**[†], “Development of a Vision-based Elevator Door Control System for Boarding Safety of Mobility-Vulnerable Users,” *ICROS 2026*.
4. 홍성은, 박병선, 전서진, **최현진**[†], “Design of a Wrist Posture-Based Carpal Tunnel Syndrome Prevention System,” *ICROS 2026*.
5. 나재웅, 김민섭, 김도균, **최현진**[†], “Development of a Wearable Bidirectional Communication Assistance System for the Hearing Impaired Using Vosk and MediaPipe,” *ICROS 2026*.
6. 임승현, 김현민, 고동진, **최현진**[†], “An adaptive robotic gripper system based on real-time object recognition,” *ICROS 2026*.

7. 노재윤, 임태운, 이나현, **최현진**[†], “Cognitive-Based Adaptive Camouflage robot Platform for Prior Reconnaissance in Dangerous Areas,” *ICROS 2026*.
8. S. Koo, J.-H. Jo, **H. Choi**[†], “Abnormal Gait Detection in Parkinson’s Disease Using a Waist-Worn Robot,” *KRoC 2026*.
9. C. Ko, K. Kong, **H. Choi**[†], “Real-time Gait Recognition of Multiple Stair-climbing Modes for Hip-assisting Wearable Robots,” *IFAC Symposium on Robotics 2025*.
10. S. Koo, K.-H. Min, J.-H. Jo, **H. Choi**[†], “A Study on Hand Gesture Recognition System Using a Wearable Pressure Sensor Band,” *ICROS 2025*. (학부생논문상)
11. 하성민, 김선우, 정세림, **최현진**[†], “Door Element Detection and Distance Measurement System for the Visually Impaired Using Stereo Vision and YOLOv8 Early Fusion,” *ICROS 2025*.
12. 문태식, 이수민, 임동혁, **최현진**[†], “A MediaPipe-Based Sign Language Translation System for Improving Hospital Medical Services,” *ICROS 2025*.
13. J.-H. Jo, K.-H. Min, S. Koo, **H. Choi**[†], “Gait Analysis Insole Research Based on Pressure Sensing Sensor and Inertial Measurement Technology,” *ICROS 2025*.
14. 이준우, 조훈희, 이예진, **최현진**[†], “A Posture-Adaptive Shield Control Robot System Based on 3D LiDAR and Infrared Keypoint Detection,” *ICROS 2025*. (학부생논문상)
15. 임다운, 강현민, 권수빈, **최현진**[†], “Landing Point Prediction of a Freely Moving Ball Using a Vision-Based Hybrid Model,” *ICROS 2025*.
16. H.-c. Kim, J. Kim, E. Song, **H. Choi**[†], K. Kong, “Feasibility of pMMG Sensors for Muscle Activity Assessment in Squat Exercises,” *ICCAS 2024*.
17. 최정빈, 신승연, 이성현, 최상균, **최현진**[†], “Quantity-Adjustable Meal Assistance Robot System,” *ICROS 2024*. (학부생논문상)
18. 이종혁, 이유빈, 김유중, **최현진**[†], “Development of Remote Indoor Security Platform Based on Visual-Audio Information,” *ICROS 2024*.
19. 노승서, 김영준, 윤정빈, **최현진**[†], “Deep Learning Based Development of a Web Service for identifying Drug-Food Interactions,” *ICROS 2024*. (학부생논문상)
20. 남택권, 자흐라 바탈 제프리, 지태규, 송지호, **최현진**[†], “Generative AI-Based Intelligent Vehicle Proximity Space Perception System,” *ICROS 2024*.
21. 김준수, 조영빈, **최현진**[†], “Development of a Wearable Fire Alarm System for the Hearing Impaired,” *ICROS 2024*.
22. T. Kim, E. Song, S. An, **H. Choi**[†], K. Kong, “Leaf-Inspired FSR Array and Insole-Type Sensor Module for Mobile Three-Dimensional Ground Reaction Force Estimation,” *ICRA 2024*.
23. E. Song, S. An, M. Kang, **H. Choi**[†], K. Kong, “Wearable Robot Embedded Human Muscle Activity Monitoring System and Human-Oriented Joint Torque Calculation,” *IFAC World Congress 2023*.
24. 황윤미, 김지민, 조경근, **최현진**[†], “Device for Fall Detection System for Elderly Living Alone,” *ICROS 2023*. (학부생논문상)
25. 박주형, 김영운, 황유성, 김동준, **최현진**[†], “Automatic Trash Sorting System Using Deep Learning,” *ICROS 2023*.
26. 안성우, 박세민, 김재현, 김동규, **최현진**[†], “Ceiling Type Automatic Serving Robot Using Object Recognition and Image Processing,” *ICROS 2023*.
27. 최근영, 조현근, 하태형, 장호렬, **최현진**[†], “A Finger Wearable Device that Reads Braille for The Visually Impaired,” *ICROS 2023*. (학부생논문상)
28. 조찬우, 문정원, 이지훈, 김은찬, **최현진**[†], “Design and Construction of a Low-Cost Home Smart Security System Capable of Real-Time Monitoring,” *ICROS 2023*.
29. 김효원, 구혜진, 김나빈, **최현진**[†], “Customized Information Service Using Face Recognition,” *ICROS 2023*.
30. 이소화, 석혜원, 김예지, 신유진, **최현진**[†], “Ankle Rehabilitation Assistive Robot for Patients with Lateral Collateral Ligament Injuries,” *ICROS 2023*. (학부생논문상)
31. 구유하, 김희찬, 문건수, **최현진**[†], “A Gait Phase Prediction System using Wearable Sensors,” *ICROS 2023*.
32. 박지훈, 이우진, 이찬진, **최현진**[†], “Development of Pothole Detection Algorithm using 3D point Cloud,” *ICROS 2023*.
33. 이성민, 권시은, 박은서, 전동렬, **최현진**[†], “Posture Correction System Using Artificial Intelligence,” *ICROS 2023*.
34. S. An, E. Song, **H. Choi**[†], K. Kong, “Measurement of Force Myography in Level Gait and Stair Gait,” *IFAC Symposium on Mechatronics 2022*.
35. E. Song, S. An, **H. Choi**[†], K. Kong, “Soft Sensor Unit for Measurement of Large Scale Multi-axis Force,” *Asian Control Conference (ASCC 2022)*.
36. 김민경, **최현진**[†], “Posture Analysis and Classification System Using Wearable Sensors and k-NN,” *ICROS*

2022.

37. 유진영, 김정현, 김현준, 방유석, **최현진**[†], “A Study on the Height Adjustable and Table Setting Serving Robot,” *ICROS 2022*.
38. 여준성, 최현수, 성지훈, **최현진**[†], “Design of Soft Force Sensor with Gallium-Filled Microchannels,” *ICROS 2022*. (학부생논문상)
39. 김세호, 모시원, 김경수, 김영재, **최현진**[†], “Customized Haptic Gloves for Better User Experience,” *ICROS 2022*. (학부생논문상)
40. 안수빈, 한상현, 정재혁, 방시온, 김지현, **최현진**[†], “HandShape Recognition Display for Infant Small Muscle Development,” *ICROS 2022*.
41. 정성호, 김재욱, 김희찬, 최현수, **최현진**[†], “Mitigating side effects of crutches and walking assistance smart crutches device,” *ICROS 2022*.
42. 여준성, 김범석, 허광성, 현무림, **최현진**[†], “Industrial Disaster Prevention Smart Safety Equipment Using ZigBee and central safety management system,” *ICROS 2022*.
43. 남재욱, 김민경, 김성연, 이상우, **최현진**[†], “Ceiling Electric Vehicle Charge System Using Magnetic Connector,” *ICROS 2022*.
44. 유동현, 김동규, 서동민, 전우혁, **최현진**[†], “Development of Text to Braille Translate Device Using OCR,” *ICROS 2022*.
45. 최선일, 김규린, 정태혁, 신희준, 황병욱, **최현진**[†], “Modular Autonomous Parking System for Shared Scooters,” *ICROS 2022*.
46. S. An, **H. Choi**, K. Kong[†], “Development of Wireless Pneumatic Myography Sensor for Real-time Muscle Contraction Measurement,” *ICCAS 2021*.
47. 전대현, 김시원, 성지훈, 조민지, **최현진**[†], “A Research on the Performance of Force Feedback Using V/AR,” *ICROS 2021*.
48. 김보경, 김지현, 최혜정, **최현진**[†], “Foot Pressure and Movement Measurement Analysis For Standing State Detection,” *ICROS 2021*.

COURSES TAUGHT AT SANGMYUNG UNIVERSITY

Signals and Systems	Fall 2020, 2021, 2022, 2023
Robot Operating System (ROS)	Fall 2020, 2021, 2022, 2023, 2024
Human-Robot Interface Engineering	Fall 2020, 2021, 2022, 2023
Control Engineering and Design	Spring 2021, 2022, 2023
Capstone Design I	Spring 2021, 2022, 2023, 2024
Probability and Statistics	Spring 2021, 2022
Healthcare and Rehabilitation Robotics	Spring 2023, 2024

RESEARCH GRANTS

Current

Development of a wearable robot platform for assisting elderly individuals and paralysis patients using ultra-lightweight, high-power hybrid actuator based on shape memory alloy-coil fiber artificial muscles 2025 – 2029

Co-PI · National Research Foundation of Korea

(형상기억합금 코일 섬유형 인공근육기반 초경량·고출력 하이브리드 구동기를 적용한 고령자 및 하지마비 장애인 보조용 웨어러블 로봇 플랫폼 개발)

Past

A Study on the Built-in Motion Analysis System of Wearable Gait Rehabilitation Robot 2021 – 2024

PI · National Research Foundation of Korea

(착용형 보행재활로봇의 내장형 동작분석 시스템 연구)

PATENTS

Motion Intention Measurement Sensor and Motion Intention Measurement System	Korean Patent No. 10-2841080 (Jul. 2025)
Overshoe-type device for measuring ground reaction force	Korean Patent No. 10-2219037 (Feb. 2021)
Driving unit of multi-joint robot	Korean Patent No. 10-2244673 (Apr. 2021)
Controlling method of lower body assisting robot	Korean Patent No. 10-2162485 (Sep. 2020)
Ground reaction force sensor module	Korean Patent No. 10-2095439 (Mar. 2020)
Multi-axis force sensor and multi-axis force sensing system	Korean Patent No. 10-2041710 (Oct. 2019)

Crutch for wearable robot system
Method of using wearable assisting device

Korean Patent Pending No. 10-2022-0064912 (2022)
Korean Patent Pending No. 10-2022-0014421 (2022)