Ju Wan Han

Personal Data

Graduate Student
Robotics Lab., Department of Mechanical Engineering,
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Nationality	Republic of Korea
Birth	June 01, 2000
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Research Interests

Biopotential(electroneurogram(ENG), electromyogram(sEMG)) processing, High speed DAQ system, Neuro-prosthesis and neuro-exoskeleton.

Education & Internship & Studying Abroad

2025.03-present	**Ph.D.,** Student in Department of Mechanical Engineering, Pohang University of Science and Technology (POSTECH), Pohang, Republic of Korea **Advisor:** Prof. Keehoon KIM
2023.03-2025.02	**M.S.,** Department of Mechanical Engineering, Pohang University of Science and Technology (POSTECH), Pohang, Republic of Korea **Advisor:** Prof. Keehoon KIM **Thesis:** Development of Peripheral Nerve Stimulation System with Gait Analysis for Sensory Function Restoration
2018.03-2023.02	**B.S.,** Department of Mechanical Engineering, Pohang University of Science and Technology (POSTECH), Pohang, Republic of Korea
2022.03-2022.09	Exchange student, Technische Universität Berlin (TUB), Berlin, Germany
2020.12-2022.01	Researcher, PACE
2019.06-2019.09	Internship, MiDas HnT
2016.03-2018.02	Sejong Science High School, Seoul, Republic of Korea

Awards and Honors

2026.06-present	Merit-based Scholarship for Science and Engineering (Doctoral), Korea Student Aid Foundation, Ministry of Education
2025.11	POSTECHIAN Fellowship, Creative Field, POSTECH
2025.05	Best Paper Award in Medical Robotics of IEEE International Conference on Robotics and Automation (ICRA)
2025.02	Excellence Award in 20th Robot Engineering and Design Show (RED SHOW) of KRoC 2025, KIRIA (Korea Institute for Robot Industry Advancement)
2023.11	POSTECHIAN Fellowship, Creative Field, POSTECH
2023.06	Best Project in MECH701-Complex system design, POSTECH
2022.12	Best Student Award in Mechanical Engineering Department, POSTECH
2022.10	Participation Award, 11th G-Star Student Startup Competition, Eastern Region (제11회 G-Star 대학생 창업경진대회 동부권)

2021.12 President's Award, National Research Foundation of Korea (연구재단이사장상) 8th Korea SW Convergence Hackathon (제8회 대한민국 SW융합 해커톤 대회)
2021.10 Mayor's Award, Daejeon Metropolitan City (대전광역시장상) Digital Innovation Sharing University Metaverse Competition (디지털 혁신공유대학 메타버스 경진대회)
2021.02 Grand Award, POSTECH Ungraduate Group Research Program (UGRP)
2020.12 Participation Award, GIST Technology Institute Director's Award (GIST 과학기술응용연구단장상) Joint Startup Competition of Science and Technology Specialized Universities (과기특성화대 공동창업경진대회)
2020.11 Grand Prize, 10th POSTECH Technology Startup Competition (제10회 과하게 매력적인 기술창업 경진대회), POSTECH
2020.10 Track Winner, Junction X Seoul 2020
2020.01 Grand Award, POSTECH Ungraduate Group Research Program (UGRP)
2020.03-2023.02 National Presidential Science Scholarship, Korea Student Aid Foundation, Ministry of Education
2018.03-2020.02 Full-tuition, Jigok Scholarship (POSTECH)

Publications

International Conference Papers

1. **Juwan Han**, Seunghyeon Park and Keehoon Kim, "In-Vivo Cable-Driven Rodent Ankle Exoskeleton System for Sensorimotor Rehabilitation," *IEEE International Concference on Robotics and Automation (ICRA)*, 2025.
2. **Juwan Han**, Yeoeun Kim and Keehoon Kim, "Muscle Synergy Shifts via Real-Time sEMG-Based Vibrotactile Biofeedback," *Work-in-progress in IEEE World Hpatics Conference (WHC)*, 2025.
3. Yunseo Park, **Juwan Han**, Seoyoung Choi and Keehoon Kim, "A Shared Control Framework for Prosthetic Hand Control: Fusing sEMG Intent with Vision-Based Autonomous Motion Planning," *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2026.

Domestic Journal

1. **Juwan Han**, Seong Hyun Park, Chae Hyeon Sim, Ju Won Whang, "Development of Smart driving monitoring device for Personal Mobility through Confusion Matrix verification," *Journal of The Korea Society of Computer and Information (JKSCI)*, 2022.

Domestic Conference

1. **Juwan Han**, Seoyoung Choi and Keehoon Kim, "Detection of Compound Action Potential in Peripheral Nerve Using Time-Domain Features," *The 19th Korea Robotics Society Annual Conference (KRoC)*, 2024.
2. **Juwan Han** and Keehoon Kim, "Hybrid Color-based Small Animal Gait Analysis System and its Application in Sensory Nerve Impaired Model," *The 20th Korea Robotics Society Annual Conference (KRoC)*, 2025.
3. **Juwan Han** and Keehoon Kim, "Decoding Proprioceptive Information from Peripheral Nerve Activity via Spike Sorting Feature," *The 21th Korea Robotics Society Annual Conference (KRoC)*, 2026.

4. Yunseo Park, **Juwan Han** and Keehoon Kim, "Real-Time Validation of Temporal-History EMG Processing for Stable Prosthetic Hand Control," *The 21th Korea Robotics Society Annual Conference (KRoC)*, 2026.

Patent

Pending

1. AN EXERCISE ANALYSIS SYSTEM AND A METHOD TO ANALYZE EXERCISE USING THE GRAPHICAL USER INTERFACE
운동 분석 시스템 및 그래픽유저인터페이스를 활용하여 운동을 분석하는 방법 (Application No. 10-2024-0167769 KR, PCT/KR2025/019267)
2. A DEVICE FOR PROVIDING ELECTROMYOGRAPHY FEEDBACK, ELECTROMYOGRAPHY-BASED FEEDBACK PROVIDING SYSTEM USING THE SAME, AND ELECTROMYOGRAPHY-BASED FEEDBACK PROVIDING METHOD
근전도 피드백 제공 디바이스, 이를 이용한 근전도 기반 피드백 제공 시스템 및 근전도 기반 피드백 제공 방법 (Application No. 10-2025-0073079 KR)

Media

1. 한주완, "당신의 사소한 도전을 응원합니다!" in POSTECHIAN, no. 167, pp. 54-55, Jul. 2020
2. D. Patel, "Mastering Research—Part 1/3: Choose Smart, Read Smarter! [Student's Corner]," in IEEE Robotics & Automation Magazine, vol. 32, no. 3, pp. 210-212, Sept. 2025

Languages, Skills and Abilities

Languages	Korean (mothertongue) English (intermediate) German (beginner)
Computer Skills	MATLAB, C/C++, LaTeX, Python OpenFOAM, SolidWorks, Inventor, Altium Adobe Illustrator & Premiere Pro
Hardware & Equipment	Embedded - Arduino, STM Embedded - PCB circuit design Manufacturing -3D printing, Laser cutting
Recent Technologies	Periperal nerve signal processing sEMG signal processing Vision-based motion capturing
ETC.	POSTECH Robotics club (POWER-ON) POSTECH Broadcast System (PBS) POSTECH Association of POSTECH Grown Companies(APGC) Lab NAEK Young Engineers Honor Society (YEHS)

Interests and Activities

Movie, Tennis, Gourmet