

Seokhyun (Shawn) Hwang

Ph.D. Student | University of Washington

▣ Human Computer Interaction
▣ Haptic Interface

▣ VR / AR
▣ Wearable Device

Email: seokhyun@uw.edu
Website: www.seokhyunhwang.com

EDUCATION

- ▣ **University of Washington, United States** | Information Science, Information School (Expected) Sep 2024 – Present
Doctor of Philosophy (Ph.D.) (Advisor: Jacob O. Wobbrock)
- ▣ **Gwangju Institute of Science and Technology, Korea** | Intelligent Robotics, School of Integrated Technology Sep 2021 – Aug 2023
Master of Science (M.S.) (Advisor: SeungJun Kim)
- ▣ **Gwangju Institute of Science and Technology, Korea** | Department of Mechanical Engineering Mar 2017 – Aug 2021
Bachelor of Science (B.S.)
- ▣ **Boston University, United States** Jun 2018 – Aug 2018
Exchange Student

PROFESSIONAL EXPERIENCE



- ▣ **University of Washington & Toyota Research Institute** | Research Assistant Jan 2025 – Present
- ▣ **Toyota Research Institute** | Research Intern (*Mentor: Alexandre Filipowicz & Scott Carter (Human-Centered AI Division)*) Jun 2025 – Sep 2025
- ▣ **University of Washington** | Teaching Assistant Sep 2024 – Dec 2024
- ▣ **Massachusetts Institute of Technology** | Visiting Researcher (*Advisor: Wojciech Matusik & Daniela Rus*) Sep 2023 – Oct 2023
- ▣ **Gwangju Institute of Science and Technology** | Research Associates Sep 2023 – Aug 2024
- ▣ **Gwangju Institute of Science and Technology** | Teaching Assistant Sep 2021 – Aug 2023
- ▣ **Human-Centered Intelligence Systems Lab** | Research Intern (*Advisor: SeungJun Kim*) Jan 2021 – Aug 2021
- ▣ **Intelligent Medical Robotics Lab** | Research Intern (*Advisor: Jungwon Yoon*) Jun 2020 – Dec 2020
- ▣ **BA Energy Lab** | Industrial-Academic Intern Dec 2019 – Feb 2020
- ▣ **National University of Laos & Khon Kaen University of Thailand** | Experiment Instructor (Educational Volunteer) Jul 2019
- ▣ **2019 GIST Science Camp for local community** | Instructor (Educational Volunteer) Jan 2019

TECHNICAL STRENGTHS

- ▣ **Modeling & Designing** | Autodesk Inventor, Fusion 360, Blender, KiCad
- ▣ **Software & Tools** | Unity, CARLA, MyoSuite, MATLAB, LABVIEW, COMSOL Multiphysics, Cubase, Adobe Premiere Pro, Final Cut Pro
- ▣ **Programming Languages** | C, C#, R, MATLAB, Python, JAVA

CONFERENCES & JOURNALS

- [c.15] Moon, J., Ma, M., Yang, Q., **Hwang, S.**, Choi, Y., Kim, K., Burden, B., Luo, Y. "A Closed-Loop CPR Training Glove with Integrated Tactile Sensing and Haptic Feedback." *2026 IEEE International Conference on Robotics & Automation*
- [c.14] **Hwang, S.**, Shen, X., Filipowicz, A., Best, A., Costa, J., Carter, S., Fogarty, J., Wobbrock, J. "A Framework for Adapting In-Car Touchscreen Interfaces to Driver Behaviors, Perception, and Cognition." *Proceedings of the 2026 CHI conference on Human Factors in Computing Systems*
- [c.13] Shen, X.*, **Hwang, S.***, Kong, J., Filipowicz, A., Best, A., Costa, J., Carter, S., Fogarty, J., Wobbrock, J. "Touchscreens in Motion: Quantifying the Impact of Cognitive Load on Distracted Drivers." *Proceedings of the 2025 ACM Symposium on User Interface Software and Technology*
- [j.3] Ataya, A., Elsharkawy, A., Lee, J., **Hwang, S.**, Seong, M., and Kim, S. "ReD shoes: actuated footwear for multisensory redirected walking in virtual reality." *Virtual Reality 29, 158 (2025)*
- [c.12] Kang, Y., Park, J., **Hwang, S.**, Seong, M., Kim, G., Kim, S. "You're the One Whom I'm Talking To: The Role of Contextual External Human-Machine Interfaces in Multi-Road User Conflict Scenarios." *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies, Vol. 9, No. 3*
- [c.11] 🏆 [Best Paper] **Hwang, S.***, Kang, S.*, Oh, J.*, Park, J., Shin, S., Luo, Y., DelPreto, J., Lee, S., Lee, K., Matusik, W., Rus, D., Kim, S. "TelePulse: Enhancing the Teleoperation Experience through Biomechanical Simulation-Based Electrical Muscle Stimulation in Virtual Reality." *Proceedings of the 2025 CHI conference on Human Factors in Computing Systems*
- [c.10] Gim, B., **Hwang, S.**, Kang, S., Kim, G., Yeo, D., Kim, S. "I Want to Break Free: Enabling User-Applied Active Locomotion in In-Car VR through Contextual Cues." *Proceedings of the 2025 CHI conference on Human Factors in Computing Systems*
- [c.9] Choi, Y., **Hwang, S.**, Moon, J., Lee, H., Yeo, D., Seong, M., Luo, Y., Kim, S., Matusik, W., Rus, D., Kim, K. "Adaptive Walker: User Intention and Environmentally Aware Intelligent Walker with High-resolution Tactile and IMU Sensor." *2025 IEEE International Conference on Robotics & Automation*
- [c.8] Kang, S., Kim, G., **Hwang, S.**, Park, J., Elsharkawy, A., and Kim, S. "Flip-Pelt: Motor-Driven Peltier Elements for Rapid Thermal Stimulation and Congruent Pressure Feedback in Virtual Reality." *Proceedings of the 2024 ACM Symposium on User Interface Software and Technology*
- [c.7] Kim, G., **Hwang, S.**, Seong, M., Yeo, D., Rus, D., and Kim, S. "TimelyTale: A Multimodal Dataset Assessing Passenger's Demands for Explanations in Highly Automated Vehicles." *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies, Vol. 8, No. 3*
- [c.6] Jo, T., Yeo, D., Kim, G., **Hwang, S.**, and Kim, S. "WatchCap: Improving Scanning Efficiency in People with Low Vision through Compensatory Head Movement Stimulation." *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies, Vol. 8, No. 2*
- [j.2] Lee, J., **Hwang, S.**, Kim, K., and Kim, S. "Evaluation of Visual, Auditory, and Olfactory Stimulus-Based Attractors for Intermittent Reorientation in Virtual Reality Locomotion." *Virtual Reality 28, 104 (2024)*
- [c.5] 🏆 [Honorable Mention] **Hwang, S.**, Oh, J., Kang, S., Seong, M., Elsharkawy, A., and Kim, S. "ErgoPulse: Electrifying Your Lower Body With Biomechanical Simulation-based Electrical Muscle Stimulation Haptic System in Virtual Reality." *Proceedings of the 2024 CHI conference on Human Factors in Computing Systems*
- [c.4] 🏆 [Honorable Mention] Elsharkawy, A., Ataya, A., Yeo, D., An, E., **Hwang, S.**, and Kim, S. "SYNC-VR: Synchronizing Your Senses to Conquer Motion Sickness for Enriching In-Vehicle Virtual Reality." *Proceedings of the 2024 CHI conference on Human Factors in Computing Systems*
- [j.1] Lee, J., **Hwang, S.**, Ataya, A., and Kim, S. "Effect of Optical Flow and User VR Familiarity on Curvature Gain Thresholds for Redirected Walking."

- [c.3]  **[Honorable Mention] Hwang, S.**, Kim, Y., Seo, Y., and Kim, S. “Enhancing Seamless Walking in Virtual Reality: Application of Bone-Conduction Vibration in Redirected Walking.” *2023 IEEE International Symposium on Mixed and Augmented Reality (ISMAR)*
- [c.2]  **[Honorable Mention] Kang, Y., Choi, S., An, E., Hwang, S.**, and Kim, S. “Designing Virtual Agent Human–Machine Interfaces Depending on the Communication and Anthropomorphism Levels in Augmented Reality.” *Proceedings of the 2023 International Conference on Automotive UI*
- [c.1] **Hwang, S.**, Lee, J., Kim, Y., Seo, Y., and Kim, S. “Electrical, Vibrational, and Cooling Stimuli-Based Redirected Walking: Comparison of Various Vestibular Stimulation-Based Redirected Walking Systems.” *Proceedings of the 2023 CHI conference on Human Factors in Computing Systems*




















POSTERS & WORKSHOPS

- [w.4] **Hwang, S.**, Kang, S., Oh, J., Park, J., Shin, S., Luo, Y., DelPreto, J., Matusik, W., Rus, D., and Kim, S. “Proposal of a Framework for Enhancing Teleoperation Experience with Biomechanical Simulation-Based Electrical Muscle Stimulation in Virtual Reality.” *UbiComp '24: Companion of the 2024 on ACM International Joint Conference on Pervasive and Ubiquitous Computing*
- [w.3] Elsharkawy, A., Ataya, A., Yeo, D., Seong, M., **Hwang, S.**, DelPreto, J., Matusik, W., Rus, D., and Kim, S. “Adaptive In-Vehicle Virtual Reality for Reducing Motion Sickness: Manipulating Passenger Posture During Driving Events.” *UbiComp '24: Companion of the 2024 on ACM International Joint Conference on Pervasive and Ubiquitous Computing*
- [w.2] Choi, Y., Yeo, D., **Hwang, S.**, Seong, M., Moon, J., Luo, Y., Matusik, W., Rus, D., and Kim, K. “Intelligence Walker: A Seamless Mobility Assist Device for the Elderly.” *2024 IEEE ICRA Workshop on Wearable*
- [w.1] Kang, S., Kim, G., **Hwang, S.**, Park, J., Elsharkawy, A., and Kim, S. “Dual-sided Peltier Elements for Rapid Thermal Feedback in Wearables.” *2024 IEEE ICRA Workshop on Wearable*
- [p.4] Kim, Y., **Hwang, S.**, Oh, J., and Kim, S. “GaitWay: Gait Data-Based VR Locomotion Prediction System Robust to Visual Distraction.” *Extended Abstracts of the 2024 CHI conference on Human Factors in Computing Systems*
- [p.3] Gim, B., Kang, S., Kim, G., Yeo, D., **Hwang, S.**, and Kim, S. “Curving the Virtual Route: Applying Redirected Steering Gains for Active Locomotion in In-Car VR.” *Extended Abstracts of the 2024 CHI conference on Human Factors in Computing Systems*
- [p.2] **Hwang, S.**, Lee, J., Kim, Y., and Kim, S. “REVES: Redirection Enhancement Using Four-Pole Vestibular Electrode Stimulation.” *Extended Abstracts of the 2022 CHI conference on Human Factors in Computing Systems*
- [p.1] Lee, J., **Hwang, S.**, Kim, K., and Kim, S. “Auditory and Olfactory Stimuli-Based Attractors to Induce Reorientation in Virtual Reality Forward Redirected Walking.” *Extended Abstracts of the 2022 CHI conference on Human Factors in Computing Systems*





PATENTS & COPYRIGHTED CONTENTS

- [pa.2] Kim, S., Kang, S., Kim, G., **Hwang, S.**, Park, J., Elsharkawy, A. “Haptic wearable devices for tactile experiences.” *KR Patent App. KR102541073*
- [pa.1] **Hwang, S.**, Lee, J., Kim, Y., Seo, Y., and Kim, S. “Method and System for Supporting Walking in Virtual Environment.” *US Patent App. US20250159408A1 | KR Patent App. KR20250069327A*
- [cc.1, 2] Kim, S., Kang, S., Kang, Y., Kim, K., Seong, M., An, E., Yang, H., Yeo, D., Oh, J., Jeon, H., Jo, T., and **Hwang, S.** “Mobility-Linked Virtual Reality-Based Underwater Exploration Immersive Content Game Software ([cc.2]: Underwater Exploration & Ocean Trash Collection Game). & ([cc.1]: Underwater Exploration & Underwater Gem Collection Game).” *Copyright for Computer Program Works [cc.2]: C-2022-050134 & [cc.1]: C-2022-050133 (KR)*

AWARDS & HONORS

-  **University Research Partnership, Toyota Research Institute** Jan 2025 – Present
-  **Best Paper, 2025 CHI conference on Human Factors in Computing Systems | Top 1% of Conference Papers [c.11]** May 2025
-  **Special Recognitions, ACM TEI | Outstanding Reviews in 2025 TEI** Sep 2025
-  **Seed for Science, De Luca Foundation** Feb 2025
-  **Gell Mason Endowed Fellowship, University of Washington** Sep 2024
-  **Provost-Funded Fellow, University of Washington** Sep 2024
-  **Startup Funding, University of Washington** Sep 2024
-  **Special Recognitions, ACM IMWUT | Outstanding Reviews in 2024 IMWUT** Aug 2024
-  **Honorable Mentions, 2024 CHI conference on Human Factors in Computing Systems | Top 5% of Conference Papers [c.5]** May 2024
-  **Honorable Mentions, 2024 CHI conference on Human Factors in Computing Systems | Top 5% of Conference Papers [c.4]** May 2024
-  **Honorable Mentions, IEEE International Symposium on Mixed and Augmented Reality | 2nd Prize of Conference Papers [c.3]** Oct 2023
-  **Honorable Mentions, International ACM Conference on Automotive UI | Top 5% of Conference Papers [c.2]** Sep 2023
-  **Special Recognitions, ACM UIST | Outstanding Reviews in 2023 UIST** May 2023
-  **Government-Sponsored Scholarship, Korea | Master’s Degree Government Scholarship** Sep 2021 – Aug 2023
-  **President Award, GIST | 1st Prize in Table Tennis Robot at the 4th GIST Creative Convergence Competition in 2020** Aug 2020
-  **Scholarship for Academic Excellence** Sep 2020 – Dec 2020
-  **Industry-Academic Cooperation Scholarship** Dec 2019 – Feb 2020
-  **Scholarship for Overseas Summer Semester Exchange Students | Boston University Exchange Student Scholarship** Jun 2018 – Aug 2018
-  **Government-Sponsored Scholarship, Korea | Bachelor’s Degree Government Scholarship** Mar 2017 – Aug 2021

INVITED TALKS

-  **University of Washington, Information School | Invited lightning talk (25th anniversary Information School Research Fair)** Mar 2026
-  **Toyota Research Institute | Invited presentation (hosted by Alexandre Filipowicz)** Aug 2025
-  **University of Chicago, Human Computer Integration Lab | Invited presentation (hosted by Pedro Lopes)** Jan 2024
-  **HCI Korea 2024, ACM SIGCHI | Invited presentation on “Vestibular Stimuli-Based Redirected Walking” (hosted by Inseok Hwang)** Jan 2024

ACADEMIC SERVICE

▣ Associate Chair

- UbiComp/ISWC 2024 Workshop on AI-infused Physical Systems (I4U) 🏆 Service recognition for AC contributions

▣ Conference Reviewer

- CHI (4 in 2026, 4 in 2025); CHI EA (1 in 2026, 2 in 2024, 1 in 2023); TEI (1 in 2025) 🏆 Recognition for an outstanding review; VRST (1 in 2024); UIST (1 in 2026, 1 in 2023) 🏆 Recognition for an outstanding review; EuroHaptics (2 in 2026); IMWUT (1 in 2026)

▣ Journal Reviewer

- International Journal of Human-Computer Interaction (3 in 2024, 5 in 2025, 3 in 2026; incl. multi-round reviews)

MEDIA COVERAGE

- ▣ **“UW study finds touch screens in cars create a multitasking problem that impacts driving.”** Dec 2025
 - Outlets: UW News; GeekWire; KIRO Seattle's morning News; KOMO News; Spotlight on America; Techradar; El Confidencial
- ▣ **“Development of communication technology that informs road users of when autonomous vehicles will stop.”** Dec 2025
 - Outlets: Veritas Alpha; Kyosu Shinmun; AI Times
- ▣ **“Expanding virtual space by 43%: Developing technology that overcomes VR walking limitations.”** Dec 2025
 - Outlets: HelloDD; Veritas Alpha; Herald Business; News1 Korea; Newsworker
- ▣ **“Grandma, you no longer have to push a stroller: AI-equipped walking robot for older adults.”** Jun 2025
 - Outlets: The Robot News; E-News Today; E-Dong-A; Newsworker; NEWSIS; AI Times; Seoul Economic Daily; Veritas Alpha
- ▣ **“Shaken car? No problem” – Enjoy VR without motion-sickness even while riding..”** May 2025
 - Outlets: Veritas Alpha; OhmyNews; Namdo Ilbo; Herald Business; Web Economy
- ▣ **“Robot’s received force transmitted directly to human arm: Joint development by GIST and MIT.”** May 2025
 - Outlets: Digital Chosun Ilbo; AI Times; Yonhap News Agency; EBN; News1 Korea; Newsworker; Veritas Alpha
- ▣ **“Autonomous driving safety information displayed at the right moment: GIST-MIT paper receives top 1% award.”** Oct 2024
 - Outlets: NEWSIS; The University Journal; Newsworker; E-News Today; Veritas Alpha
- ▣ **“Wearable hat helps low-vision users by turning their heads more: WatchCap developed.”** Sep 2024
 - Outlets: Brain Media; Medical News; ITDaily; Dong-A Science; Wide Economy; NEWSIS; The University Journal; and 3 more
- ▣ **“GIST research team receives two Honorable Mention awards at ACM CHI 2024 for VR interface work.”** May 2024
 - Outlets: Namdo Ilbo; AI Times; ITDaily
- ▣ **“GIST virtual-reality interface research wins best-paper awards at IEEE ISMAR 2023.”** Nov 2023
 - Outlets: BoanNews; AI Times; NEWSIS; News1 Korea; AVING News; Veritas Alpha; Newsworker; Newspim