

BIOGRAPHY

Seokhyun Hwang is a Ph.D. student in Information Science at the University of Washington, advised by Jacob O. Wobbrock. His research is in human-computer interaction (HCI), with a focus on interactive systems that adapt to individual differences and changes in users’ physical, perceptual, and cognitive states. He has authored 26 academic papers, including eight as first author, and is a co-inventor on two patent families, including two granted Korean patents and a U.S. patent application. His work has received five paper awards, including an ACM CHI 2025 Best Paper Award, two ACM CHI 2024 Honorable Mention Awards, an IEEE ISMAR 2023 Honorable Mention Award, and an ACM AutomotiveUI 2023 Honorable Mention Award. His research has been featured by more than 60 media outlets. His research has been supported by the TRI University Research Partnership, the De Luca Foundation’s Seed for Science program, and fellowships from the University of Washington. He holds an M.S. in Intelligent Robotics and a B.S. in Mechanical Engineering from the Gwangju Institute of Science and Technology.

EDUCATION

University of Washington, United States Information Science, Information School (Expected)	Sep 2024 – Present
· <i>Doctor of Philosophy (Ph.D.) (Advisor: Jacob O. Wobbrock)</i>	
Gwangju Institute of Science and Technology, Korea Intelligent Robotics, School of Integrated Technology	Sep 2021 – Aug 2023
· <i>Master of Science (M.S.) (Advisor: SeungJun Kim)</i>	
Gwangju Institute of Science and Technology, Korea Department of Mechanical Engineering	Mar 2017 – Aug 2021
· <i>Bachelor of Science (B.S.)</i>	

RESEARCH 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
Massachusetts Institute of Technology Visiting Researcher (Advisors: Wojciech Matusik & Daniela Rus)	Sep 2023 – Oct 2023
Gwangju Institute of Science and Technology Research Associate	Sep 2023 – Aug 2024

SELECTED 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
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
Honorable Mention, 2024 CHI conference on Human Factors in Computing Systems Top 5% of Conference Papers [c.5]	May 2024
Honorable Mention, 2024 CHI conference on Human Factors in Computing Systems Top 5% of Conference Papers [c.4]	May 2024
Honorable Mention, IEEE International Symposium on Mixed and Augmented Reality 2nd Prize of Conference Papers [c.3]	Oct 2023
Honorable Mention, International ACM Conference on Automotive UI Top 5% of Conference Papers [c.2]	Sep 2023
Government-Sponsored Full Scholarship, Korea Master’s & Bachelor’s Program	Mar 2017 – Aug 2023

CONFERENCES & JOURNALS

[c.15]	Moon, J., Ma, M., Yang, Q., Choi, Y., Hwang, S. , Burden, B., Kim, K., Luo, Y. “A Closed-Loop CPR Training Glove with Integrated Tactile Sensing and Haptic Feedback.” <i>2026 IEEE International Conference on Robotics & Automation</i>
[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.” <i>Proceedings of the 2026 CHI conference on Human Factors in Computing Systems</i>
[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.” <i>Proceedings of the 2025 ACM Symposium on User Interface Software and Technology</i>
[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.” <i>Virtual Reality</i> 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.” <i>Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies</i> , 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 Terrain 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 Approach to Assessing Passengers' Explanation Demands 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." *Virtual Reality* **28**, 35 (2024)
- [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*

PEER-REVIEWED SHORT PAPERS

- [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 Advancing Wearable Devices and Applications through Novel Design, Sensing, Actuation, and AI*
- [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. KR102946187B1*
- [pa.1] Kim, S., **Hwang, S.**, Kim, Y., Seo, Y., and Lee, J. "Method and System for Supporting Walking in Virtual Environment." *US Patent App. US20250159408A1 / KR Patent. KR102916251B1*

[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)

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

TEACHING EXPERIENCE

University of Washington Teaching Practicum (IMT 565B: Designing Information Experiences)	Mar 2026 – Jun 2026
University of Washington Teaching Practicum (HCID 520: User Interface Software & Technology)	Jan 2026 – Mar 2026
University of Washington Teaching Assistant (INFO360: Design Methods)	Sep 2024 – Dec 2024
Gwangju Institute of Science and Technology Teaching Assistant (RT6304: XR Project Class)	Sep 2022 – Aug 2023

LEADERSHIP & ACADEMIC SERVICE

Research Mentoring

- Mentees (current affiliations): YoungIn Kim (KAIST), Youngseok Seo (KAIST), Jeongju Park (GIST), Semoo Shin (GIST), Juwon Um (GIST), Ali Askari Rizvi (University of Washington), and Jayme Kim (University of Washington)

Associate Chair

- UbiComp/ISWC 2024 Workshop on AI-infused Physical Systems (I4U)  **Service recognition**

Conference & Journal Reviewer

- CHI (2026, 2025); CHI EA (2026, 2024, 2023); TEI (2025)  **Recognition for an outstanding review**; VRST (2024); UIST (2026, 2023)  **Recognition for an outstanding review**; EuroHaptics (2026); IMWUT (2026, 2024)  **Recognition for an outstanding review**
- International Journal of Human–Computer Interaction (2024, 2025, 2026)

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	