



Seokhyun Hwang

- ▣ Human Computer Interaction
- ▣ VR / AR
- ▣ Haptic interface
- ▣ Wearable Device

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EDUCATION


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

RESEARCH EXPERIENCE

- ▣ **ACE Lab, United States (University of Washington)** September 2024 – Present
Ph.D. (Advisor: Jacob O. Wobbrock)
- ▣ **Human-Centered Intelligence Systems Lab, Korea (GIST)** September 2023 – August 2024
Research Associates
- ▣ **Human-Centered Intelligence Systems Lab, Korea (GIST)** September 2021 – August 2023
M.S. (Advisor: SeungJun Kim)
- ▣ **Human-Centered Intelligence Systems Lab, Korea (GIST)** January 2021 – August 2021
Research Intern (Advisor: SeungJun Kim)
- ▣ **Intelligent Medical Robotics Lab, Korea (GIST)** June 2020 – December 2020
Research Intern (Advisor: Jungwon Yoon)
- ▣ **BA Energy Lab, Korea** December 2019 – February 2020
Industrial-Academic Intern

CONFERENCES & JOURNALS

- [c.8] "Flip-Pelt: Motor-Driven Peltier Elements for Rapid Thermal Stimulation and Congruent Pressure Feedback in Virtual Reality"
Kang, S., Kim, G., **Hwang, S.**, Park, J., Elsharkawy, A., and Kim, S.
Proceedings of the ACM Symposium on User Interface Software and Technology (Accepted)
- [c.7] "TimelyTale: A Multimodal Dataset Assessing Passenger's Demands for Explanations in Highly Automated Vehicles"
Kim, G., **Hwang, S.**, Seong, M., Yeo, D., Daniela Rus, and Kim, S.
Proceedings of the ACM on IMWUT (Accepted)
- [c.6] "WatchCap: Improving Scanning Efficiency in People with Low Vision through Compensatory Head Movement Stimulation."
Jo, T., Yeo, D., Kim, G., **Hwang, S.**, and Kim, S.
Proceedings of the ACM on IMWUT
- [j.2] "Evaluation of Visual, Auditory, and Olfactory Stimulus-Based Attractors for Intermittent Reorientation in Virtual Reality Locomotion."
Lee, J., **Hwang, S.**, Ataya, A., and Kim, S.
Virtual Reality
- [c.5] "ErgoPulse: Electrifying Your Lower Body With Biomechanical Simulation-based Electrical Muscle Stimulation Haptic System in Virtual Reality."  **Honorable mention**
Hwang, S., Oh, J., Kang, S., Seong, M., Elsharkawy, A., and Kim, S.
Proceedings of the 2024 CHI conference on Human Factors in Computing Systems
- [c.4] "SYNC-VR: Synchronizing Your Senses to Conquer Motion Sickness for Enriching In-Vehicle Virtual Reality."  **Honorable mention**
Elsharkawy, A., Ataya, A., Yeo, D., An, E., **Hwang, S.**, and Kim, S.
Proceedings of the 2024 CHI conference on Human Factors in Computing Systems
- [j.1] "Effect of Optical Flow and User VR Familiarity on Curvature Gain Thresholds for Redirected Walking."
Lee, J., **Hwang, S.**, Ataya, A., and Kim, S.
Virtual Reality
- [c.3] "Enhancing Seamless Walking in Virtual Reality: Application of Bone-Conduction Vibration in Redirected Walking."  **Honorable mention**
Hwang, S., Kim, Y., Seo, Y., and Kim, S.
2023 IEEE International Symposium on Mixed and Augmented Reality (ISMAR)

- [c.2] "Designing Virtual Agent Human–Machine Interfaces Depending on the Communication and Anthropomorphism Levels in Augmented Reality."  **Honorable mention**

Kang, Y., Choi, S., An, E., Hwang, S., and Kim, S.

Proceedings of the 2023 International Conference on Automotive UI

- [c.1] "Electrical, Vibrational, and Cooling Stimuli-Based Redirected Walking: Comparison of Various Vestibular Stimulation-Based Redirected Walking Systems."

Hwang, S., Lee, J., Kim, Y., Seo, Y, and Kim, S.

Proceedings of the 2023 CHI conference on Human Factors in Computing Systems

POSTERS & WORKSHOPS

- [w.4] "Proposal of a Framework for Enhancing Teleoperation Experience with Biomechanical Simulation-Based Electrical Muscle Stimulation in Virtual Reality"

Hwang, S., Kang, S., Oh, J., Park, J., Shin, S., Yiyue Luo, Joseph DelPreto, Wojciech Matusik, Daniela Rus, and Kim, S.

UbiComp/ISWC '24 Adjunct (Accepted)

- [w.3] "Adaptive In-Vehicle Virtual Reality for Reducing Motion Sickness: Manipulating Passenger Posture During Driving Events"

Elsharkawy, A., Ataya, A., Yeo, D., Seong, M., Hwang, S., Joseph DelPreto, Wojciech Matusik, Daniela Rus, and Kim, S.

UbiComp/ISWC '24 Adjunct (Accepted)

- [w.2] "Intelligence Walker: A Seamless Mobility Assist Device for the Elderly."

Choi, Y., Yeo, D., Hwang, S., Seong, M., Moon, J., Yiyue Luo, Wojciech Matusik, Daniela Rus, and Kim, K.

2024 IEEE ICRA Workshop on Wearable

- [w.1] "Dual-sided Peltier Elements for Rapid Thermal Feedback in Wearables."

Kang, S., Kim, G., Hwang, S., Park, J., Elsharkawy, A., and Kim, S.

2024 IEEE ICRA Workshop on Wearable

- [p.4] "GaitWay: Gait Data-Based VR Locomotion Prediction System Robust to Visual Distraction."

Kim, Y., Hwang, S., Oh, J., and Kim, S.

Extended Abstracts of the 2024 CHI conference on Human Factors in Computing Systems

- [p.3] "Curving the Virtual Route: Applying Redirected Steering Gains for Active Locomotion in In-Car VR."

Gim, B., Kang, S., Kim, G, Yeo, D., Hwang, S., and Kim, S.

Extended Abstracts of the 2024 CHI conference on Human Factors in Computing Systems

[p.2] "REVES: Redirection Enhancement Using Four-Pole Vestibular Electrode Stimulation."

Hwang, S., Lee, J., Kim, Y., and Kim, S.

Extended Abstracts of the 2022 CHI conference on Human Factors in Computing Systems

[p.1] "Auditory and Olfactory Stimuli-Based Attractors to Induce Reorientation in Virtual Reality Forward Redirected Walking."

Lee, J., Hwang, S., Kim, K., and Kim, S.

Extended Abstracts of the 2022 CHI conference on Human Factors in Computing Systems

PATENTS & COPYRIGHTED CONTENTS

[pa.1] "Method and System for Supporting Walking in Virtual Environment."

Hwang, S., Lee, J., Kim, Y., Seo, Y., and Kim, S.

US Patent App. 18/783,599 || KR Patent App. 10-2023-0,155,898

[cc.2] "Mobility-Linked Virtual Reality-Based Underwater Exploration Immersive Content Game Software (Underwater Exploration & Ocean Trash Collection Game)."

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.

Copyright for Computer Program Works C-2022-050134

[cc.1] "Mobility-Linked Virtual Reality-Based Underwater Exploration Immersive Content Game Software (Underwater Exploration & Underwater Gem Collection Game)."

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.

Copyright for Computer Program Works C-2022-050133

TEACHING EXPERIENCE

▣ XR Project Class Teaching Assistant, Korea (GIST)

2022 Fall Semester – 2023 Spring Semester

Teaching Assistant

- Served as a teaching assistant in a project-based class
- Responsible for teaching, exam preparation, and evaluation of the Unity-based XR project

▣ 2019 GIST Global Science Camp, National University of Laos (NUOL), Laos

July 2019

Experiment Instructor

- Educational volunteer for college students of the NUOL and Khon, Kaen University of Thailand
- Teaching & Experimental Assist in the production of Dye-Sensitized Solar Cells using Anthocyanin

▣ 2019 GIST Science Camp, Korea (GIST)

January 2019

Experiment Team Leader, Design Team Leader

- Providing experimental education to elementary and middle school students in the community

AWARDS & HONORS

- ▣ **Special Recognitions, ACM IMWUT** Aug 2024
 - Special Recognitions for Outstanding Reviews in 2024 IMWUT
- ▣ **Honorable Mentions, 2024 CHI conference on Human Factors in Computing Systems** May 2024
 - Honorable mention for being in the top 5% of conference papers (*ErgoPulse*)
- ▣ **Honorable Mentions, 2024 CHI conference on Human Factors in Computing Systems** May 2024
 - Honorable mention for being in the top 5% of conference papers (*SYNC-VR*)
- ▣ **Honorable Mentions, IEEE ISMAR** October 2023
 - Honorable mention for being in the top 1% of conference papers
- ▣ **Honorable Mentions, International ACM Conference on Automotive UI** September 2023
 - Honorable mention for being in the top 5% of conference papers
- ▣ **Special Recognitions, ACM UIST** May 2023
 - Special Recognitions for Outstanding Reviews in 2023 UIST
- ▣ **Gwangju Institute of Science and Technology President Award, Korea** August 2020
 - 1st prize in table tennis robot at the 4th GIST Creative Convergence Competition in 2020
- ▣ **Scholarship for Academic Excellence, Korea** September 2020 – December 2020
 - GIST Scholarship for Academic Excellence
- ▣ **Industry-Academic Cooperation Scholarship, Korea** December 2019 – February 2020
 - Industry-Academic Cooperation Scholarship in BA Energy Lab
- ▣ **Scholarship for Overseas Summer Semester Exchange Students, United States** June 2018 – August 2018
 - Boston University Summer Semester Exchange Student Scholarship
- ▣ **GIST Scholarship (Government supported), Korea** March 2017 – August 2021
 - GIST Bachelor's Degree Government Scholarship

INVITED TALKS

- ▣ **University of Chicago, Human Computer Integration Lab** January 2024
 - Invited Presentation (hosted by Pedro Lopes).

▣ HCI Korea 2024, ACM SIGCHI

January 2024

- Invited Presentation in Top-Conference Sessions on Vestibular Stimuli-Based Redirected Walking.

TECHNICAL STRENGTHS

▣ Modeling & Designing

- Autodesk Inventor
- SolidWorks
- Blender
- KiCad

▣ Software & Tools

- COMSOL Multiphysics
- LABVIEW
- MATLAB
- Unity
- Three.js
- Cubase
- Adobe Premiere Pro
- Final Cut Pro

▣ Programming Languages

- C, C#, Python, JAVA, MATLAB

EXTRA-CURRICULAR ACTIVITIES

▣ GIST Society of Automotive Engineers, Korea (GIST)

October 2020 – March 2022

Founder

- GIST College Student Self-Created Automobile Club Establishment
- Responsible for designing and manufacturing steering systems

▣ GIST Student Creative Activity Support Initiative, Korea (GIST)

March 2020 – November 2020

Team Leader

- Support for student clubs in the COVID-19 Era
- Producing and distributing performance/activity videos
- Funded by GIST over 4,500\$

▣ GIST Broadcasting Station, Korea (GIST)

March 2019 – November 2020

Founder

Filming / Editing manager

- Establish a video production station of GIST
- Producing promotional videos for schools, videos of student activities, etc.
- Funded by GIST over 30,000\$.

▣ GIST Human Rights Center, Korea (GIST).

December 2018 – March 2019

Research Intern (Advisor: Kim, Gunoo)

- Intern of the Human Rights Center on campus - involving law, ethics, morality, and philosophy of law