May 2024 Curriculum Vitae

Seokhyun Hwang

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

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

EDUCATION

▣ **University of Washington, United States** 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 – September 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 & PUBLICATIONS

[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 (Accepted)

[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 (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 (Accepted)

[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 (Accepted)

[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 (Accepted)

[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 (Accepted)

[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 (Accepted)

[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 (Accepted)

[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

[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 for Supporting Walking in Virtual Environment and System for the Same."

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

KR Patent App. 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

▣ 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

▣ **HCI Korea'24, ACM SIGCHI (Korea Local Chapter)** 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

• A study involving law, ethics, morality, and philosophy of law