# Kyunghwan Kim

Master's Student @ School of Computing, KAIST

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*" I connect **Humans** with **Computers** through novel **Physical Interaction** techniques!! "*

## Education

**Korea Advanced Institute of Science and Technology (KAIST)** — *Mar. 2023 ~ Present*

*M.S. in* Computer Science (School of Computing) — *Daejeon, Republic of Korea*

· Human Computer Interaction Lab (HCIL) | *Advisor: Prof. Geehyuk Lee*

**Gwangju Institute of Science and Technology (GIST)** — *Mar. 2017 ~ Feb. 2023*

*B.S. in* Electrical Engineering and Computer Science — *Gwangju, Republic of Korea*

*Minor in* Culture Technology (CT), *Integrated Minor in* Economics *and* Business Administration

· Human-Centered Intelligent Systems (HCIS) Lab | *Advisor: Prof. Seungjun Kim*
· Thesis: Analysis of the Effect of Vection Generated by Directional Optical Flow in the VR Redirected Walking Scenario
· 🏆 ***Best B.S. Thesis Award*** *(1st place)* | 🏆 Graduated ***Cum Laude***

**University of California, Berkeley** — *Summer 2018*

*2018 Summer Session Program in* Computer Science (CS61C) *and* Statistics (STAT20) — *Berkeley, CA, USA*

## Research Experiences

**Human Computer Interaction Lab (HCIL), KAIST** — *Mar. 2023 ~ Present*

M.S. Student | *Advisor: Prof. Geehyuk Lee* — *Daejeon, Republic of Korea*

· Leading the 'Virtual Rolling Temple (VRT)' project, expanding the limited vertical on-device touch input space on narrow temples of smart glasses. Please refer to the Publications and Patents sections for more projects I have been involved in.

**Human-Centered Intelligent Systems (HCIS) Lab, GIST** — *May. 2021 ~ Dec. 2022*

Undergraduate Intern | *Advisor: Prof. Seungjun Kim* — *Gwangju, Republic of Korea*

· Visited MIT for on-site joint development of the sensor, as part of a *GIST-MIT Joint Research Project* on explainable AI services for drivers.
· Developed a VR experiment environment for the research on augmented sense at Redirected Walking. *(Unity, Arduino, VIVE Pro Eye)*
· Developed a 3D depth-based in-car AR environment that synchronizes to the movement of the car. *(Unity, ZED Mini, Oculus Quest 2)*
· Assisted research on Contextual Visibility of Public Signage.

**Human-Centered Computer Systems (HCS) Lab, Seoul National University (SNU)** — *Winter 2022*

Undergraduate Intern | *Advisor: Prof. Youngki Lee* — *Seoul, Republic of Korea*

· Conducted research on designing Human-AI Interaction (HAI) and User Interface (UI) in an XR environment. *(Unity, Oculus Quest 2)*

**Computer Vision Lab, GIST** — *Summer 2017*

Undergraduate Intern | *Advisor: Prof. Kin Choong Yow* — *Gwangju, Republic of Korea*

· Assisted research on the implementation of Free Viewpoint TV via OpenCV.

## Publications

[5] **Pro-Tact: Hierarchical Synthesis of Proprioception and Tactile Exploration for Eyes-Free Ray Pointing on Out-of-View VR Menu**
Yeonsu Kim, Jisu Yim, Kyunghwan Kim, Yohan Yun, and Geehyuk Lee
*UIST '24* [LINK]

[4] **STButton: Exploring Opportunities for Buttons with Spatio-Temporal Tactile Output**
Yeonsu Kim, Jisu Yim, Jaehyun Kim, Kyunghwan Kim, and Geehyuk Lee
*CHI '24 Interactivity (Extended Abstracts)* [LINK]
🏆 ***Honorable Mention****: Jury's Best Demo Recognition*

[3] **Evaluation of visual, auditory, and olfactory stimulus-based attractors for intermittent reorientation in virtual reality locomotion**
Jieun Lee, Seokhyun Hwang, Kyunghwan Kim, and SeungJun Kim
*Springer Virtual Reality '24* [LINK]

[2] **Virtual Rolling Temple: Expanding the Vertical Input Space of a Smart Glasses Touchpad**
Kyunghwan Kim, and Geehyuk Lee
*UIST '23 Demo (Adjunct)* [LINK]

[1] **Auditory and Olfactory Stimuli-Based Attractors to Induce Reorientation in Virtual Reality Forward Redirected Walking**
Jieun Lee, Seokhyun Hwang, Kyunghwan Kim, and SeungJun Kim
*CHI '22 LBW (Extended Abstracts)* [LINK]

## Patents

[3] **Utilizing the Think-aloud Protocol and Generative AI Models to Identify Problematic Moments in Lengthy Recordings of XR User Study**
Geehyuk Lee, Sunbum Kim, and Kyunghwan Kim
*KR 10-2024-0030536, Application Date: 04 Mar. 2024*

[2] **Button System Providing Spatiotemporal Tactile Output for Feedforward and Feedback**
Geehyuk Lee, Yeonsu Kim, Jisu Yim, Jaehyun Kim, and Kyunghwan Kim
*KR 10-2024-0012988, Application Date: 29 Jan. 2024*

[1] **Method and Device for Enabling 2D Input Using Linear Touch Sensor and Laser Speckle Sensor**
Geehyuk Lee, and Kyunghwan Kim
*KR 10-2024-0006763, Application Date: 16 Jan. 2024*

## Teaching Experiences

### Wearable User Interface (CS486), KAIST — *Spring 2024*

Teaching Assistant

- Organized hands-on practice sessions on Arduino physical user interfaces and provided general comments on class team projects.
- 🏆 ***Outstanding TA of the Semester Award*** *(22 out of 154 TAs selected)*

### Introduction to System Programming (CS230), KAIST — *Spring 2023*

Teaching Assistant

- Coordinated overall project on building a simple machine language compiler.

### Computer Programming (GS1401), GIST — *Spring 2018 and Spring 2022*

Teaching Assistant

- Assisted weekly lab sessions and made a few practice questions for the lectures of 85 and 108 students in total, respectively.

### Open GIST Science Lab, GIST — *Jul. 2017*

Session Assistant

- Assisted local high school students' Raspberry Pi experiments in a social contribution event of GIST.

## Extracurricular Activities

### Daedeok Toastmasters: International Association to Develop Public Speaking Skills — *Jul. 2023 ~ Present*

Vice President of Education *(Sep. 2023 ~ Mar. 2024)*

- Provided feedback on speeches at the meeting and managed members' *Pathway* progress along with designing club materials.

### EAT (English Adventure Time): GIST English Conversation Club — *Dec. 2020 ~ Dec. 2022*

Mentoring & Feedback Manager | *Advisor: Prof. Ellis Lee, Prof. John Wills*

- Provided counsel for student hosts of each session about conversational skills and overall session management.
- Planned and designed various club help-out materials and the recruiting process, in company with the professors.

### GDSC (Google Developer Student Clubs) GIST — *Oct. 2021 ~ Jul. 2022*

Core Team: Research & Development Division

- Managed & planned the overall technical progress and the homepage of the club, as well as its AI/ML department.
- Hosted a 'CV Yourself With OverLeaf' session for college students, so that they can learn about and make their own CVs with a template.

### G.OnNaRae: GIST Student Ambassador — *Sep. 2017 ~ Dec. 2018*

Foreign Guest Protocol Manager, Web Contents Designer, and Official Blog Manager

- Had exclusive responsibility for foreign tasks and foreign guest protocol.
- Planned and implemented various designs of SNS contents and on/offline events to promote GIST.

**GIST Toastmasters: International Association to Develop Public Speaking Skills** *Sep. 2017 ~ Dec. 2018*

Vice President of IT and Design

· Took general care of the club as vice president, along with designing club material and managing the club homepage.

**My Little GIST: GIST Infinite Challenge Project** *May. 2017 ~ Jan. 2018*

Team Leader, Executive Producer, and Video Editor

· Produced 10 short video clips that can closely relate to the daily lives of people in GIST, and got favorable reactions.

## Skills

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|---|---|
| **Extended Reality** | **Unity** & C# (with Oculus Quest 2, VIVE Pro Eye, HoloLens 2, ZED Mini, Mixed Reality Toolkit, and OpenXR) |
| **Programming** | **C**, **Arduino**, Python (with Tensorflow and Pytorch), VBS, Java |
| **Design & Prototyping** | *Adobe*: **Premiere**, **Photoshop**, Illustrator \| *Autodesk*: **Fusion 360**, **Eagle**, Sketchbook |
| **Linguistic** | *Native*: **Korean** \| *Fluent*: **English** (**TOEIC 970**/990 (April 2022), **New TEPS 448**/600 (May 2022)) |

## Scholarships & Fundings

**Government Funded Scholarship for KAIST Graduate Students** *Spring 2023 ~ Present*

KAIST *KRW 8,800,000 (USD 6,500) per semester*

**Funding for Student Projects on Enhancing the UX of Productivity Tools in AR** *Jul. 2024 ~ Dec. 2024*

KAIST SpaceTop Research Center *KRW 7,000,000 (USD 5,200) in total*

**Government Funded Scholarship for GIST Undergraduate Students** *Spring 2017 ~ Fall 2022*

GIST College *KRW 3,400,000 (USD 2,500) per semester*

**Scholarship for High Academic Achievement** *Fall 2017 and Spring 2021*

GIST College *KRW 720,000 (USD 540) per semester*

**Funding for Summer Session Program Abroad (UC Berkeley)** *Summer 2018*

GIST College *(More details in the Education section)* *KRW 8,000,000 (USD 6,000) in total*

**Funding for GIST Infinite Challenge Project** *May. 2017 ~ Jan. 2018*

GIST College *(More details in the Extracurricular Activities section)* *KRW 7,000,000 (USD 5,200) in total*

## Coursera Certificates

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|---|---|
| **User Interface Design** | · Introduction to UI Design |
| | · Human-Centered Design: an Introduction |
| **Extended Reality for Everybody** | · User Experience & Interaction Design for AR/VR/MR/XR |
| | · Developing AR/VR/MR/XR Apps with WebXR, Unity & Unreal |
| **DeepLearning.AI Professional** | · Natural Language Processing in TensorFlow |

## Military Service

**Republic of Korea Air Force *(Obligation Fulfilled)*** *Jan. 2019 ~ Nov. 2020*

Air Force Operations Command (AFOC) S&S Group, Ground Transport Management Team

· Automated vehicle managerial workflow with HanCell VBA (similar to Excel VBS) scripting.