

# Kyunghwan Kim

PH.D. STUDENT @ SCHOOL OF COMPUTING, KAIST

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“ I connect **Humans** with **Computers** through novel **Input Devices** and **Physical Interaction** techniques!! ”

## Education

### Korea Advanced Institute of Science and Technology (KAIST)

Mar. 2023 ~ Present

Ph.D. in COMPUTER SCIENCE (SCHOOL OF COMPUTING)

(Mar. 2025 ~ Present)

M.S. in COMPUTER SCIENCE (SCHOOL OF COMPUTING)

(Mar. 2023 ~ Feb. 2025)

· M.S. Thesis: Virtual Rolling Temple (VRT): Expanding the Vertical Input Space of a Thin Smart Glasses Touchpad

### Gwangju Institute of Science and Technology (GIST)

Mar. 2017 ~ Feb. 2023

B.S. in ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

Minor in CULTURE TECHNOLOGY (CT), Integrated Minor in ECONOMICS and BUSINESS ADMINISTRATION

· B.S. 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)

## Research Experiences

### Human Computer Interaction (HCI) Lab, KAIST

Mar. 2023 ~ Present

M.S. STUDENT & PH.D. STUDENT | Advisor: Prof. Geehyuk Lee

· Leading the ‘Rolling Temple (RT)’ 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 at the HCI Lab.

### Human-Centered Intelligent Systems (HCIS) Lab, GIST

May. 2021 ~ Dec. 2022

UNDERGRADUATE INTERN | Advisor: Prof. Seungjun Kim

- 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

· 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

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

## Publications

- [6] **Ball20: An In-Hand Near-Spherical 20-Sided Tangible Controller for Diverse Gesture Interaction in AR/VR**  
Sunbum Kim, [Kyunghwan Kim](#), Changsung Lim, and Geehyuk Lee  
CHI '25 LBW (Extended Abstracts) [LINK]
- [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

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- [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

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### 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 and Spring 2025

#### 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

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### 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

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

## Scholarships & Fundings

### Government Funded Scholarship for KAIST Graduate Students

KAIST

Spring 2023 ~ Present

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

### Funding for Student Projects on Enhancing the UX of Productivity Tools in AR

KAIST SPACETOP RESEARCH CENTER

Jul. 2024 ~ Dec. 2024

KRW 7,000,000 (USD 5,200) in total

### Government Funded Scholarship for GIST Undergraduate Students

GIST COLLEGE

Spring 2017 ~ Fall 2022

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

### Scholarship for High Academic Achievement

GIST COLLEGE

Fall 2017 and Spring 2021

KRW 720,000 (USD 540) per semester

### Funding for Summer Session Program Abroad (UC Berkeley)

GIST COLLEGE (More details in the Education section)

Summer 2018

KRW 8,000,000 (USD 6,000) in total

### Funding for GIST Infinite Challenge Project

GIST COLLEGE (More details in the Extracurricular Activities section)

May. 2017 ~ Jan. 2018

KRW 7,000,000 (USD 5,200) in total

## Coursera Certificates

<b>User Interface Design</b>	<ul style="list-style-type: none"><li>· Introduction to UI Design</li><li>· Human-Centered Design: an Introduction</li></ul>
<b>Extended Reality for Everybody</b>	<ul style="list-style-type: none"><li>· User Experience &amp; Interaction Design for AR/VR/MR/XR</li><li>· Developing AR/VR/MR/XR Apps with WebXR, Unity &amp; Unreal</li></ul>
<b>DeepLearning.AI Professional</b>	<ul style="list-style-type: none"><li>· Natural Language Processing in TensorFlow</li></ul>

## 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.