

# Kyunghwan Kim

PH.D. STUDENT @ SCHOOL OF COMPUTING, KAIST

✉ hi@kyunghwan.xyz | ✉ k0hwan.hci@gmail.com | 🏷 Homepage | 🏷 Google Scholar | 🐧 GitHub | 💬 LinkedIn

“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

- Identifying the transfer gap of motor skills from real-world interaction to AR/VR, focusing on how input sensing and system feedback are constrained by technical and environmental limitations.
- Designing and prototyping interaction schemes that preserve and leverage users' existing motor skills under AR/VR-specific limitations.
- Validating the schemes and hardware prototypes through iterative hardware prototyping and user studies, aiming to enable fast, low-effort skill transfer in AR/VR.

### 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, Meta Quest 2)

### Human-Centered Computer Systems (HCS) Lab, Seoul National University (SNU)

Winter 2022

UNDERGRADUATE INTERN | Advisor: Prof. Youngki Lee

- Built UnityEagleEye, an XR pipeline that overlays AI perception outputs on 360° VR video in Unity. (Unity, Meta 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.

## Awards & Honors

### RESEARCH & ACADEMIC

- 2025 **MSIT Minister's Award (Top 5/206 Teams)**, Team Geppetto, ICT Challenge 2025, Ministry of Science and ICT (MSIT) [LINK]
- 2024 **Outstanding TA of the Semester Award (Top 22/154 TAs)**, School of Computing, KAIST
- 2024 **Honorable Mention: Jury's Best Demo Recognition**, CHI 2024 Interactivity, ACM SIGCHI
- 2022 **Best B.S. Thesis Award (1st place)**, School of Electrical Engineering and Computer Science, GIST

### PROFESSIONAL & EXTRACURRICULAR

- 2025 **Commendation for Excellence in Science & Technology Reserve Forces Training**, ROK Army Consolidated Logistics School
- 2021 **Honorable Mention (Video Category)**, The 6th KOSMA Student Competition, Korean Society of Media and Arts (KOSMA)
- 2019 **Distinguished Trainee Award (8th/1,560 Recruits)**, ROK Air Force Basic Military Training Wing

## Publications

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- [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 Menus**  
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] **System for Providing Interaction (Spatiotemporal Tactile-Output Button for Feedforward and Feedback)**  
Geehyuk Lee, Yeonsu Kim, Jisu Yim, Jaehyun Kim, and Kyunghwan Kim  
*KR 10-2024-0176351, Application Date: 02 Dec. 2024*
- [2] **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*
- [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*

## Academic Services

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Student Volunteer    UIST '25  
                          ISMAR '25  
                          SIGCHI Korea Local Chapter '25

## Skills

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- Extended Reality**    Unity & C# (with Meta Quest 2, VIVE Pro Eye, HoloLens 2, ZED Mini, Mixed Reality Toolkit, and OpenXR)
- Programming**    C, Arduino, Python (+ Tensorflow, Pytorch), JavaScript, VBS
- 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))

## 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 comments on class team projects for CHI LBW.
- 🏆 **Outstanding TA of the Semester Award** (Top 22/154 TAs)

### Introduction to System Programming (CS230), KAIST

Spring 2023 and Spring 2025

#### TEACHING ASSISTANT

- Coordinated the course project on building a simple machine language compiler.

## Computer Programming (GS1401), GIST

Spring 2018 and Spring 2022

### TEACHING ASSISTANT

- Assisted weekly lab sessions, supported lecture Q&A, and developed practice questions across two semesters (85 and 108 students)

## 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 public speeches and managed members' Pathway progress, along with club materials design.

### EAT (English Adventure Time): GIST English Conversation Club

Dec. 2020 ~ Dec. 2022

#### PRESIDENT, MENTORING & FEEDBACK MANAGER | Advisor: Prof. Ellis Lee, Prof. John Wills

- Provided counsel for student hosts of each session about conversational skills and overall speech management.
- Planned and designed various club activities and help-out materials in collaboration with the professors.

### GDSC (Google Developer Student Clubs) GIST

Oct. 2021 ~ Jul. 2022

#### CORE TEAM: RESEARCH & DEVELOPMENT DIVISION

- Planned and managed the club's technical roadmap, co-led the AI/ML division, and maintained the club website.
- Hosted a 'CV Yourself With Overleaf' session for college students, delivering core CV concepts and guidance to draft CVs with a template.

### G.OnNaRae: GIST Student Ambassador

Sep. 2017 ~ Dec. 2018

#### FOREIGN GUEST PROTOCOL MANAGER, WEB CONTENTS DESIGNER, AND OFFICIAL BLOG MANAGER

- Provided on-site protocol support for international/VIP visitors, conducting guided tours and assisting scheduled visits.
- Planned and ran various on/offline promotional events, and designed SNS content for the school's branding and communication.

### GIST Toastmasters: International Association to Develop Public Speaking Skills

Sep. 2017 ~ Dec. 2018

#### VICE PRESIDENT OF IT AND DESIGN

- Supported club operations and member development by delivering regular speech evaluations and constructive feedback.
- Designed and established foundational club materials and homepage, including branding assets, templates, and event materials.

### My Little GIST: GIST Infinite Challenge Project

May. 2017 ~ Jan. 2018

#### TEAM LEADER, EXECUTIVE PRODUCER, AND VIDEO EDITOR

- Produced 10 video clips ranging from daily campus life to short films, receiving positive feedback from the campus community.

## Scholarships & Fundings

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### 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 SPACE TOP 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 at 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

## Military Service

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### Republic of Korea Air Force (ROKAF) – 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.

