# Daehwa Kim

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**RESEARCH INTERESTS**

My research focuses on building sensing system for next generation interaction paradigm, with a specific emphasis on spatial computing. In particular, my efforts have been dedicated to the transformation of antenna technologies into viable interface solutions. I explore wireless (RF) signals as a means of machine perception, enabling a comprehension of users' fine-grained physical actions, including hand and face poses. I presented papers at ACM CHI and UIST and have received two Best paper nominations at CHI.

**EDUCATION**

**Ph.D. student, Carnegie Mellon University**, School of Computer Science, Human-Computer Interaction Institute — Sep 2022 – Current
- Advised by Prof. Chris Harrison at Future Interfaces Group

**M.Sc., KAIST**, School of Computing — Mar 2019 – Feb 2021
- Advised by Prof. Geehyuk Lee at Human-Computer Interaction Lab
- Graduated with 2020 Best Thesis Award

**B.S., UNIST**, Electrical and Computer Engineering — Mar 2015 – Feb 2019
- Computer Science and Engineering (Major) and Electrical Engineering (Minor)
- Entered with top honors.
- Summer session program, University of the Arts London, London, UK — Jul 2018

**PROFESSIONAL EXPERIENCE**

**Meta Reality Labs**, Redmond, WA — May 2023 – Aug 2023
- Research Scientist Intern
- Manager: Dr. Eric Whitmire

**Future Interfaces Group**, Carnegie Mellon University, Pittsburgh, PA — Sep 2021 – Apr 2022
- Research Associate, Human-Computer Interaction Institute
- Advisor: Prof. Chris Harrison

**KAIST HCI Lab**, Daejeon — Mar 2018 – Jun 2018
- Undergraduate Research Student, School of Computing
- Advisor: Prof. Geehyuk Lee

**Hyper-connected Communication Research Laboratory**, ETRI — Jan 2018 – Mar 2018
- Research Intern

**AWARDS & HONORS**

**Best Paper Honorable Mention Award**, ACM CHI 2022 — May 2022
- Craig Shultz, Daehwa Kim, Karan Ahuja, and Chris Harrison, "TriboTouch: Micro-Patterned Surfaces for Low Latency Touchscreens" in *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems*, New Orleans, LA, USA, Apr 2022.

**Best Paper Honorable Mention Award**, ACM CHI 2021 — May 2021
- Daehwa Kim, Keunwoo Park, and Geehyuk Lee, "AtaTouch: Robust Finger Pinch Detection for a VR Controller Using RF Return Loss" in *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*, Yokohama, Japan.

**Best Master's Thesis Award**, KAIST School of Computing — Feb 2021
- Thesis: "OddEyeCam: Sensing Technique for Body-Centric Peephole Interaction Using WFoV RGB and NFoV Depth Cameras"

**Uni-Star Scholarship**, UNIST — Mar 2015 – Feb 2019
- Tuition + academic funding every semester for the top rank in entrance exam

**PUBLICATIONS**

[1] Daehwa Kim, Vimal Mollyn, Chris Harrison, "WorldPoint: Finger Pointing as a Rapid and Natural Trigger for In-The-Wild Mobile Interactions" in *Proceedings of the 2023 ACM International Conference on Interactive Surfaces and Spaces,* Pittsburgh, USA, Nov 2023.

[2] Daehwa Kim, Chris Harrison, "Pantœnna: Mouth Pose Estimation for VR/AR Headsets Using Low-Profile Antenna and Impedance Characteristic Sensing" in *Proceedings of the 36th Annual ACM Symposium on User Interface Software and Technology*, San Francisco, USA, Oct 2023.

[3]  Hui-Shyong Yeo, Erwin Wu, <u>Daehwa Kim</u>, Juyoung Lee, Hyung-il Kim, Seo Young Oh, Luna Takagi, Woontack Woo, Hideki Koike, and Aaron J Quigley, "OmniSense: Exploring Novel Input Sensing and Interaction Techniques on Mobile Device with Omni-Directional Camera" in *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*, Hamburg, Germany, Apr 2023.

[4]  <u>Daehwa Kim</u>, and Chris Harrison, "EtherPose: Continuous Hand Pose Tracking with Wrist-Worn Antenna Impedance" in *Proceedings of the 35th Annual ACM Symposium on User Interface Software and Technology*, Bend, Oregon, USA, Oct 2022.

[5]  Craig Shultz, <u>Daehwa Kim</u>, Karan Ahuja, and Chris Harrison, "TriboTouch: Micro-Patterned Surfaces for Low Latency Touchscreens" in *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems*, New Orleans, LA, USA, Apr 2022. <span style="color:red">Best Paper Honorable Mention Award; Top 5%</span>

[6]  <u>Daehwa Kim</u>, Keunwoo Park, and Geehyuk Lee, "AtaTouch: Robust Finger Pinch Detection for a VR Controller Using RF Return Loss" in *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*, Yokohama, Japan. <span style="color:red">Best Paper Honorable Mention Award; Top 5%</span>

[7]  <u>Daehwa Kim</u>, Keunwoo Park, and Geehyuk Lee, "OddEyeCam: A Sensing Technique for Body-Centric Peephole Interaction Using WFoV RGB and NFoV Depth Cameras" in *Proceedings of the 33rd Annual ACM Symposium on User Interface Software and Technology*, Virtual Event, USA, Oct 2020.

[8]  Keunwoo Park, <u>Daehwa Kim</u>, Seongkook Heo, and Geehyuk Lee, "MagTouch: Robust Finger Identification for a Smartwatch Using a Magnet Ring and a Built-in Magnetometer" in *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, Honolulu, Hawaii, USA, Apr 2020.

**ACADEMIC SERVICE**

**Reviewer**
- CHI '24, IMWUT '23, SIGGRAPH '23 Poster, UIST '23, CHI '23, UIST '22, CHI '22 LBW, IMWUT '21, CHI '21 LBW