

# Jaeyeon Lee

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RESEARCH INTERESTS	Human-Computer Interaction (HCI), particularly, <ul style="list-style-type: none"><li>• Human haptic perception</li><li>• Physical user interfaces</li></ul>	
APPOINTMENT	<b>Ulsan National Institute of Science and Technology (UNIST)</b> Assistant Professor, Department of Computer Science and Engineering	Ulsan, Korea AUG. 2021 – Present
EDUCATION	<b>Korea Advanced Institute of Science and Technology (KAIST)</b> Ph.D. in Computer Science <i>Thesis:</i> “Non-Contact Wearable Tactile Display using Airflows” <i>Advisor:</i> Geehyuk Lee <i>Thesis Committee:</i> Jinah Park, Youn-kyung Lim, Andrea Bianchi, Juho Kim	Daejeon, Korea 2020
	<b>Korea Advanced Institute of Science and Technology (KAIST)</b> M.S., in Electrical Engineering <i>Thesis:</i> “Implementation of Four Port Birdcage Coil in 3 Tesla MRI System” <i>Advisor:</i> HyunWook Park	Daejeon, Korea 2012
	<b>KwangWoon University</b> B.Eng., in Information and Control Engineering	Seoul, Korea 2010
PROFESSIONAL EXPERIENCE	<b>Microsoft Research</b> Research Intern in Extended Perception, Interaction, and Cognition (EPIC) group Mentors: Mike Sinclair, Mar Gonzalez Franco, Eyal Ofek, Christian Holz, Ken Hinckley <ul style="list-style-type: none"><li>• VR controller for high-dexterity finger interaction (CHI’19)</li></ul>	Redmond, USA JUN. – AUG. 2018
	<b>Saarland University</b> Visiting Researcher in HCI Lab, hosted by Professor Jürgen Steimle <ul style="list-style-type: none"><li>• Human tactile perception with on-skin devices (CHI’19)</li><li>• On-skin tactile interfaces using soft actuators</li></ul>	Saarbrücken, Germany DEC. 2017 – APR. 2018
	<b>HCI Lab, KAIST</b> Research Assistant <ul style="list-style-type: none"><li>• Haptic illusions on rigid hand-held devices (UIST’19)</li><li>• Multimodal wearable tactile display (CHI’18)</li><li>• Interpersonal touch in interactive installations (Exhibition at National Science Museum in Korea, ISSM’17, DIS’18)</li><li>• Mode errors in Korean-English keyboard switching (CHI’19)</li><li>• Non-contact wearable tactile display (UIST’16)</li><li>• Smartwatch interaction (IJHCS, 2018)</li><li>• 3×3 wearable tactile display (CHI’15)</li></ul>	Daejeon, Korea 2014 – 2020 2019 2017 2017 2016 2016 2015 2014
	<b>Medical Systems Lab, Yonsei University</b> Research Assistant <ul style="list-style-type: none"><li>• Reconstruction algorithms for Computed Tomography (CT) images</li><li>• Quality assessment methods for medical images</li></ul>	Incheon, Korea 2012 – 2014
	<b>Image Computing Systems Lab, KAIST</b> Research Assistant <ul style="list-style-type: none"><li>• RF coils for brain Magnetic Resonance Imaging (MRI) systems</li></ul>	Daejeon, Korea 2010 – 2012
	<b>Human Media Communication &amp; Processing Lab, GIST</b> Research Intern	Gwangju, Korea JUN. – AUG. 2008

HONORS AND  
AWARDS

<b>Best Work-in-Progress Paper Finalists</b> WHC 2021	2021
<b>EECS Rising Stars in Korea</b>	2020
<b>Best Paper Honorable Mention Award</b> CHI 2019	2019
<b>Special Recognition for Outstanding Review</b> CHI 2019	2019
<b>Outstanding Paper Award</b> International Symposium of Science Museums	2017
<b>GradUS Global Scholarship</b> for research visit in Saarland University	2017
<b>UIST Doctoral Symposium Travel Grant</b>	2017
<b>SCF Summer School Travel Grant</b>	2017
<b>NAVER PhD Fellowship Award</b>	2016
<b>Google Travel Grant</b>	2016
<b>Outstanding TA Award</b> School of Computing, KAIST	2016
<b>Outstanding TA Award</b> School of Electrical Engineering, KAIST	2012
<b>1st Place at Graduation Exhibition</b> KwangWoon University	2010
<b>Full Scholarship for four years</b> KwangWoon University	2010

RESEARCH GRANTS

<b>A.I. Incubation Project</b> (80M KRW) as PI, UNIST	JAN. 2022 – DEC. 2023
<b>Start-up Research Grant</b> (150M KRW) as PI, UNIST	NOV. 2021 – OCT. 2024

PUBLICATIONS

**Peer-reviewed Conference and Journal Papers** (ACM CHI and UIST are premiere venues in HCI)

- 1. PseudoBend: Producing Haptic Illusions of Stretching, Bending, and Twisting Using Grain Vibrations**  
Seongkook Heo, **Jaeyeon Lee**, Daniel Wigdor. In *Proceedings of UIST 2019: ACM Symposium on User Interface Software and Technology*.
- 2. TORC: A Virtual Reality Controller for In-Hand High-Dexterity Finger Interaction**  
**Jaeyeon Lee**, Mike Sinclair, Mar Gonzalez-Franco, Eyal Ofek, Christian Holz. In *Proceedings of CHI 2019: ACM Conference on Human Factors in Computing Systems* (acceptance rate: 23.8%, 13 pages).
- 3. Diagnosing and Coping with Mode Errors in Korean-English Dual-language Keyboard**  
Sangyoon Lee, **Jaeyeon Lee**, Geehyuk Lee. In *Proceedings of CHI 2019: ACM Conference on Human Factors in Computing Systems* (acceptance rate: 23.8%, 12 pages).
- 4. Like A Second Skin: Understanding How Epidermal Devices Affect Human Tactile Perception**  
Aditya Shekhar Nittala, Klaus Kruttwig, **Jaeyeon Lee**, Roland Bennewitz, Eduard Arzt, Jürgen Steimle. In *Proceedings of CHI 2019: ACM Conference on Human Factors in Computing Systems* (acceptance rate: 23.8%, 16 pages). **Best Paper Honorable Mention Award**.
- 5. TouchBranch: Understanding Interpersonal Touches in Interactive Installation**  
Seungki Kim, Jiwoo Hong, **Jaeyeon Lee**, Hyunsook Choi, Geehyuk Lee, Woohun Lee. In *Proceedings of DIS 2018: ACM Conference on Designing Interactive Systems* (acceptance rate: 22%, 12 pages).
- 6. Exploring Multimodal Watch-back Tactile Display using Wind and Vibration**  
Youngbo Aram Shim, **Jaeyeon Lee**, Geehyuk Lee. In *Proceedings of CHI 2018: ACM Conference on Human Factors in Computing Systems* (acceptance rate: 26%, 12 pages).
- 7. Evaluation of Edge-based Interaction on a Square Smartwatch**  
Sungeun Ahn, **Jaeyeon Lee**, Keunwoo Park, Geehyuk Lee. *International Journal of Human-Computer Studies* 109 (2018): 68-78.
- 8. Developing and Understanding UX of the Interactive Installation with Interpersonal Touch Technology**  
Seungki Kim, Jiwoo Hong, **Jaeyeon Lee**, Geehyuk Lee, Woohun Lee, Hyunsook Choi. In *Proceedings of ISSM 2017: International Symposium on Science Museums*. **Outstanding Paper Award**.
- 9. Designing a Non-contact Wearable Tactile Display Using Airflows**  
**Jaeyeon Lee**, Geehyuk Lee. In *Proceedings of UIST 2016: ACM Symposium on User Interface Software and Technology* (acceptance rate: 21%, 12 pages).
- 10. Investigating the Information Transfer Efficiency of a 3×3 Watch-back Tactile Display**  
**Jaeyeon Lee**, Jaehyun Han, Geehyuk Lee. In *Proceedings of CHI 2015: ACM Conference on Human Factors in Computing Systems* (acceptance rate: 23%, 4 pages).

11. **Defying Gravity: A Novel Method of Converting Screen Orientation**  
Jaeyeon Lee, Da Young Ju. *International Journal of Smart Home 7.5* (2013).
12. **Implementation of Four Port Birdcage Coil in 3 Tesla MRI System**  
Jaeyeon Lee, ChangHeun Oh, HyunWook Park. In *Proceedings of ITC-CSCC 2012*.

#### Extended Abstracts, Posters, and Work-in-Progress

1. **A Magnetorheological Elastomer Device for Programmable Actuation and Sensing of Soft Haptic Experiences**  
Bingxu Li\*, **Jaeyeon Lee\***, Gregory J. Gerling. In *Proceedings of WHC 2021: IEEE World Haptics Conference* (Work-in-Progress). **Best Paper Finalists**.
2. **PseudoBend: Producing Haptic Illusions of Stretching, Bending, and Twisting Using Grain Vibrations**  
Seongkook Heo, **Jaeyeon Lee**, Daniel Wigdor. In *Adjunct Publication of UIST 2019: ACM Symposium on User Interface Software and Technology* (Demonstration).
3. **Demonstration of TORC: A Virtual Reality Controller for In-Hand High-Dexterity Finger Interaction**  
**Jaeyeon Lee**, Mike Sinclair, Mar Gonzalez-Franco, Eyal Ofek, Christian Holz. In *Adjunct Publication of UIST 2019: ACM Symposium on User Interface Software and Technology* (Demonstration).
4. **Exploring Multimodal Watch-back Tactile Display using Wind and Vibration**  
Youngbo Aram Shim, **Jaeyeon Lee**, Geehyuk Lee. In *Extended Abstracts of CHI 2018: ACM Conference on Human Factors in Computing Systems* (Demonstration).
5. **Wind Tactor: An Airflow-based Wearable Tactile Display**  
**Jaeyeon Lee**. In *Adjunct Publication of UIST 2017: ACM Symposium on User Interface Software and Technology* (Doctoral Symposium).

#### Patents Pending and Issued

1. **Computer device for providing eye-based tactile interface and method of the same**  
KR Patent Application 10-2022-0018698, 2022-02-14.
2. **Presentation of continuous 6-dof parameters using wearable tactile display with multiple skin stretch factors**  
KR Patent 10-2339031, 2021-12-09.
3. **Smart-toggle for auto recovering from Korean-English mode errors**  
KR Patent 10-2197227, 2020-12-24.
4. **Virtual Reality Controller**  
US Patent 10-838486, 2020-11-17.
5. **Method of Outputting Tactile Pattern and Apparatuses Performing the same**  
KR Patent 10-2095639, 2020-03-25.
6. **Non-contact Wearable Tactile Display Device Using Airflows and Method of Operating the same**  
KR Patent 10-1879982, 2018-07-12.
7. **Transparent Display Device for Display Different Images on Two Sides**  
KR Patent 10-1718241, 2017-03-14.

#### Undergraduate Research Interns

Jiseong Kim	NOV. 2021 – Present
Buyeong Mun	NOV. 2021 – Present
Ga Yun Im	JUN. 2022 – Present
Sang Eun Seo	SEP. 2022 – Present

#### Senior Thesis/Project Advising (\*Second advisor)

김태영, 조영상, 박수근, 강호진*, 김동욱*	Fall 2022
Nurseiit Abdimomyn, 김승찬, 민초로, 오재엽, 양동기, 안혁*	Spring 2022

### **Masters Students Mentoring at KAIST HCI Lab**

Youngbo Aram Shim (Full Paper at CHI'18)	2017
Sangyoon Lee (Full Paper at CHI'19)	2016
Sunggeun Ahn (Paper in Int. Journal of Human-Computer Studies)	2015

### TEACHING

#### **Instructor**

Introduction to CSE (UNIST UNI111)	Fall 2022
Introduction to Human-Computer Interaction (UNIST CSE333, 101 students)	Spring 2022
Introduction to Robotics (UNIST CSE469, 38 students)	Spring 2022
Advanced Human-Computer Interaction (UNIST CSE523, 3 students)	Fall 2021
Introduction to CSE (UNIST UNI111, 125 students, 1 unit)	Fall 2021

#### **Teaching Assistant**

Human-Computer Interaction (KAIST CS584)	Fall 2018
Introduction to Human-Computer Interaction (KAIST CS374)	Spring 2017
Human-Computer Interaction (KAIST CS472)	Fall 2016
Human-Computer Interaction (KAIST CS472, <b>Outstanding TA Award</b> )	Fall 2015
Mathematics (Yonsei IIT2102)	Spring 2013
Introduction to Biomedical Imaging Systems (Yonsei IIT7011)	Fall 2012
Electronics Lab (KAIST EE305, <b>Outstanding TA Award</b> )	Fall 2011

#### **Panelists/Guest Lectures**

SIGCHI Korea Local Chapter Summer Event	JUL. 2022
Introduction to Research (KAIST CS492d)	Fall 2020
Introduction to Research (KAIST CS492c)	Fall 2018
Introduction to Human-Computer Interaction (KAIST CS374)	Spring 2018
Introduction to Human-Computer Interaction (KAIST CS374)	Spring 2017

### INVITED TALKS

#### **Rich and Intuitive Haptic Interaction for Future Computers**

KAIST	OCT. 2022
DGIST	AUG. 2022
Korea Computer Congress - KIISE Women Workshop	JUL. 2022
Kyung Hee University	JUN. 2022
Yonsei University	MAY. 2022
Pohang University of Science and Technology (POSTECH)	APR. 2022
KwangWoon University	NOV. 2021
UNIST CSE	NOV. 2021
UNIST Design	OCT. 2021
KAIST Ada Lovelace Day	OCT. 2021

#### **Wearable Tactile Displays using Wind and Vibration**

Korean Institute of Information Scientist & Engineers (KIISE) - Women Workshop	OCT. 2020
HCI Engineering & Design Lab, Texas A&M University, USA	OCT. 2020
EECS Rising Stars in Korea	SEP. 2020
Human-Computer Integration Lab, University of Chicago, USA	SEP. 2019
Soft Transducers Lab, École Polytechnique Fédérale de Lausanne, Switzerland	APR. 2018
Human-Computer Interaction Lab, Saarland University, Germany	DEC. 2017
Dynamic Graphics Project Lab, University of Toronto, Canada	NOV. 2017
Interactive Computing Lab, KAIST	AUG. 2017
KIXLAB, KAIST	AUG. 2016

#### **Reading CHI Papers to Write CHI Papers**

ACM SIGCHI Local Chapter Workshop: How to Write a CHI paper?	AUG. 2020
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#### **TORC: A Virtual Reality Controller for In-Hand High-Dexterity Finger Interaction**

ACM SIGCHI Local Chapter Workshop: CHI Preview	APR. 2019
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#### **Designing a Non-Contact Wearable Tactile Display using Airflows**

	HCI@KAIST Seminar	OCT. 2016
	<b>Investigating the Information Transfer Efficiency of a 3×3 Watch-back Tactile Display</b>	
	Post-CHI Workshop	APR. 2015
SELECTED PRESS	<b>Upload VR</b>	MAY. 2019
	Microsoft Shows Off Haptic VR Controller, Simulates Grabbing With Thumb & Two Fingers	
	<b>PC Games</b>	MAY. 2019
	Microsoft's oxymoronic controller could be the most immersive VR peripheral yet	
	<b>VentureBeat</b>	MAY. 2019
	Microsoft's TORC will let you feel squeezable objects in AR and VR	
	<b>Microsoft Research Blog</b>	MAY. 2019
	Introducing TORC: A rigid haptic controller that renders elastic objects	
	<b>Fast Company</b>	APR. 2018
	Inventing The Next Computer	
	<b>KAIST School of Computing Research Highlights</b>	JAN. 2017
	Can a wearable tactile display transfer information without a contact?	
ACADEMIC SERVICES	<b>Steering Committee</b>	
	• ACM SIGCHI Korea Local Chapter, Education Co-Chair	MAR. 2022 – Present
	<b>Organizing Committee</b>	
	• ACM SIGCHI Local Chapter Workshop Co-Chair	2022
	• ACM CHI'23 Interactivity (Demo) Co-Chair	2022
	• ACM AHs'21 Poster Co-Chair	2021
	• ACM SIGCHI Local Chapter Workshop Mentorship Co-Chair	2020
	• ACM ISS'19 Student Volunteer Co-Chair	2019
	<b>Program Committee</b>	
	• ACM CHI'23 Papers	2022
	• ACM MobileHCI'19 Late-Breaking Results	2019
	• ACM CHI'19 Late-Breaking Work	2019
	• ACM TEI'17 Work-In-Progress	2017
	• ACM CHI'17 Interactivity	2017
	<b>Departmental Committee</b>	
	• Student/Events/Public Relations	AUG. 2021 – Present
	<b>Reviewer</b>	
	• ACM CHI	2018 – 2022
	• ACM UIST	2018 – 2022
	• ACM VRST	2022
	• IEEE VR Conference	2019 – 2020, 2022
	• IEEE ISMAR	2020
	• ACM SUI	2022
	• ACM CSCW	2020
	• ACM TEI	2017 – 2019
	• ACM DIS	2018
	• ACM ISWC	2017
	• Journals: IEEE Transactions on Haptics, IEEE VR Journal	
	<b>Student Volunteer</b>	
	• ACM CHI	2015, 2016
	• ACM UIST	2015, 2018