

# Hyunsoo Lee

Ph.D. in Data Science [[Google Scholar](#)]

Research Assistant Professor at

KAIST School of Computing and Graduate School of Information Security

✉ [hslee90@kaist.ac.kr](mailto:hslee90@kaist.ac.kr) 🏠 <https://hslee90.github.io>

## RESEARCH INTERESTS

- Usable Security & Privacy
- Digital Health
- AI Safety
- Human-Computer Interaction (HCI)

## EDUCATION

### **Korea Advanced Institute of Science and Technology (KAIST)- Daejeon, Korea**

- **Ph.D in Data Science** *Sep 2019 – Aug 2023*
  - Adviser: Uichin Lee
  - Thesis: *Exploring User-Friendly Data Privacy Support in Multimodal Sensor-Based Digital Healthcare Contexts*
- **M.S. in Knowledge Service Engineering** *Sep 2017 – Aug 2019*
  - Adviser: Uichin Lee
  - Thesis: *Online behavior change support systems with commitment devices : a case study*

### **Chungnam National University - Daejeon, Korea**

- **B.A. in School of English Literature & International Economics** *Mar 2009 – Aug 2013*
  - GPA: 4.35/4.50 (Graduate *Cum Laude*)

## WORK EXPERIENCE

### **Research Assistant Professor at KAIST (School of Computing) - Daejeon, Korea** *Aug 2025-Present*

- **Postdoctoral Researcher at KAIST - Daejeon, Korea** *Sep 2023 – Jul 2025*
  - Understanding and conceptualizing collaborative privacy control in smarthome
  - Designed and evaluated informatic systems supporting mental health (personal/family)
  - Conducted LLM-based interaction studies to understand user perceptions of AI privacy risks

### **Previous Research & Industry Experience**

- **Researcher at KAIST - Daejeon, Korea** *Oct 2015 – Jun 2016*
  - Education platform contents design and DB analysis
- **Research Intern at KIRD - Daejeon, Korea** *Jan 2014 – Jan 2015*
  - R&D platform DB analysis
- **Intern at TripVi (Startup)- Seoul, Korea** *Aug 2013 – Dec 2013*
  - Mobile UI/UX design and market data analysis

## PUBLICATIONS

[C]: CONFERENCE

[J]: JOURNAL

[D]: DEMO

[DC]: DOMESTIC

CONFERENCE

[P]: POSTER

[C10] **Hyunsoo Lee**, Seyoung Jin, Hyoungshick Kim, Uichin Lee. “Mind the SIM: Awareness and Mental Models in a South Korean Case Study,” In *Proceedings of the ACM Conference on Human Factors in Computing Systems* (Barcelona, Spain, Apr 13-17, 2026). CHI ’26. ACM. (top conference)

[C9] Hyesoo Park, Sueun Jang, **Hyunsoo Lee\***, Gahee Kim, Uichin Lee. “Why stressed, Mom?: Exploring Family Reflection on Social and Emotional Sensor Data through Family Informatics,” In *Proceedings of the ACM Conference on Human Factors in Computing Systems* (Barcelona, Spain, Apr 13-17, 2026). CHI ’26. ACM. (top conference)  
(\*Corresponding author)

[C8] Youngji Koh, Chanhee Lee, Eunki Joung, **Hyunsoo Lee\***, Uichin Lee. “Harnessing Home IoT for Self-Tracking Emotional Wellbeing: Behavioral Patterns, Self-Reflection, and Privacy Concerns,” In the *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)* (Espoo, Finland, Oct 14-16, 2025). UbiComp’25. ACM. (top conference) (\*Corresponding author)

[C7] **Hyunsoo Lee**, Yugyeong Jung, Youwon Shin, Hyesoo Park, Woohyeok Choi, Uichin Lee. “FamilyScope: Visualizing Affective Aspects of Family Social Interactions using Passive Sensor Data,” In *The ACM Conference on Computer-Supported Cooperative Work and Social Computing* (San José, Costa Rica, Nov 9-13, 2024). CSCW’24. ACM. (top conference)

[D1] **Hyunsoo Lee**, Hyesoo Park. “Demonstrating FamilyScope: Visualizing Affective Aspects of Family Social Interactions using Passive Sensor Data,” In *The ACM Conference on Computer-Supported Cooperative Work and Social Computing* (San José, Costa Rica, Nov 9-13, 2024). CSCW’24. ACM. (top conference)

[C6] **Hyunsoo Lee**, Yugyeong Jung, Emily Law, Seolyeong Bae, Uichin Lee. “PriviAware: Exploring Data Visualization and Dynamic Privacy Control Support for Data Collection in Mobile Sensing Research,” In *Proceedings of the ACM Conference on Human Factors in Computing Systems* (Hawaii, USA, May 11-16, 2024). CHI ’24. ACM. (top conference)

[J1] **Hyunsoo Lee** and Uichin Lee. “Toward Dynamic Consent for Privacy-Aware Pervasive Health and Well-being: A scoping review and research directions,” *IEEE International Conference on Pervasive Computing and Communications*. IEEE’22. Volume 21, Issue 4. IEEE.

[C5] **Hyunsoo Lee**, Soowon Kang, Uichin Lee. “Understanding Perceived Benefits and Privacy Risks in Open Dataset Collection for Mobile Affective Computing,” In the *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)* (Cambridge, UK, Sep 11-15, 2022). UbiComp’22. ACM. (top conference)

[DC2] Youwon Shin, **Hyunsoo Lee**, Woohyeok Choi, Hee-pyung Kim, Yong Jeong, Uichin Lee. “Smart Home IoT Technology and Privacy Research Trends,” In *Korea Computer Congress 2022 (KCC’22)*.

[DC1] Jinhyuk Jang, **Hyunsoo Lee**, Uichin Lee. “Pilot System Design Study for User-Friendly Mobile/Wearable Sensor Data Collection,” In *Korea Computer Congress 2022 (KCC’22)*.

[C4] **Hyunsoo Lee**, Uichin Lee. “Dynamic Consent for Sensor-Driven Research,” *International Conference on Mobile Computing and Ubiquitous Networking*. (Tokyo, Japan,

Nov 17-19, 2021). ICMU'21. IEEE.

[C3] **Hyunsoo Lee**, Auk Kim, Hwajung Hong, Uichin Lee. "Sticky Goals: Understanding Goal Commitments for Behavioral Changes in the Wild," In *Proceedings of the ACM Conference on Human Factors in Computing Systems* (Yokohama, Japan, May 8-13, 2021). CHI'21. ACM. (top conference)

[C2] Joonyoung Park, **Hyunsoo Lee**, Sangkeun Park, Kyong-Mee Chung, Uichin Lee. "GoldenTime: Exploring System-Driven Timeboxing and Micro-Financial Incentives for Self-Regulated Phone Use," In *Proceedings of the ACM Conference on Human Factors in Computing Systems* (Yokohama, Japan, May 8-13, 2021). CHI'21. ACM. (top conference)

[P3] **Hyunsoo Lee**, Uichin Lee. "Privacy Concerns of Digital Phenotyping for Older Adults with Mental Health Issues," In *CHI 2020 NETWORKED PRIVACY WORKSHOP* (Hawaii, USA, April 25-30, 2020). CHI '20. ACM. (top conference)

[C1] Jaejeung Kim, Joonyoung Park, **Hyunsoo Lee**, Minsam Ko, Uichin Lee. "LocknType: Lockout Task Intervention for Discouraging Smartphone App Use," In *Proceedings of the ACM Conference on Human Factors in Computing Systems* (Glasgow, Scotland UK, May 4-9, 2019). CHI'19, ACM. (top conference)

[P2] Uichin Lee, **Hyunsoo Lee**, Joonyoung Park. "Positive Computing for Digital Wellbeing," In *Designing for Digital Wellbeing: A Research & Practice Agenda* (Glasgow, Scotland UK, May 4-9, 2019). CHI'19, ACM. (top conference)

[P1] **Hyunsoo Lee**, Hwajung Hong, Uichin Lee. "Commitment devices in online behavior change support systems," In *AsianHCI'19: Proceedings of Asian CHI Symposium 2019: Emerging HCI Research Collection* (Glasgow, Scotland UK, May 4-9, 2019). CHI'19, ACM. (top conference)

## HONORS & AWARDS

- Special Recognition for Outstanding Reviews (ACM CHI) *Dec 2024*
- Special Recognition for Outstanding Reviews (ACM CHI) *Dec 2023*
- Outstanding PhD Student of the year, Graduate School of Data Science *Dec 2022*
- Outstanding TA for Education4.0 Program at KAIST (Spring semester) *Sep 2022*
- Outstanding PhD Student of the year, Graduate School of Data Science *Dec 2021*
- Outstanding PhD Student of the year, Graduate School of Data Science *Dec 2020*

## TALKS

- Human-Centered System Design for User Security and Privacy in the Era of Multimodal Sensing** *Jul 2025*
  - Early-Career Researcher Session, KCC'25
    - Introduced my recent research on designing human-centered systems that support usable security and privacy in ubiquitous, sensor-rich environments
- An Empirical Study on LLM-Driven Privacy Attacks and Assessing Privacy Risks** *Feb 2025*
  - Multi-Modal AI Safety Benchmark Workshop, IEEE BigComp'25

- Introduced privacy threats in LLM interactions and interface implications for user trust

### **User-Friendly Privacy Design in Ubiquitous Computing**

*Jun 2024*

#### ■ PhD Forum, KCC'24

- Discussed human-centered privacy design for context-aware computing

### **Supporting User Data Privacy in Digital Healthcare Systems**

*Apr 2024*

#### ■ Graduate School of Information Science, Yonsei University

- Shared technological strategies for user empowerment in health-related data privacy

### **Enhancing UX in Security & Privacy for Multi-Modal Environment**

*Nov 2023*

#### ■ Security & Privacy Team, Samsung Research

- Introduced interaction design approaches for privacy-preserving smart environments

### **Applying Human-Centered Design to Security & Privacy Research**

*Nov 2023*

#### ■ Graduate School of Convergence Security, Sungkyunkwan University

- Introduced HCI-driven approaches to usable security in sociotechnical systems

### **Privacy and Security in Ubiquitous Computing Contexts**

*May 2022*

#### ■ Graduate School of Computing, Chungnam National University

- Shared research overview of user-centered privacy in sensor-rich environments

### **Understanding User Experiences in Behavior Change Support Systems**

*Feb 2022*

#### ■ Outstanding paper presentation, HCI Korea'22

- Presented empirical findings on goal-setting and user engagement in persuasive systems

## **TEACHING EXPERIENCE**

- **Instructor**, Introduction to Human-Computer Interaction (KAIST CS Dept, Spring 2026)
- **Instructor**, Human-Centered Security and Privacy (KAIST CS Dept, Fall 2025)
- **Co-Instructor**, Human-Computer Interaction (KAIST CS Dept, Fall 2023)
- **Teaching Assistant**, Human-Computer Interaction (KAIST CS Dept, Spring 2022)
- **Teaching Assistant**, Human-Computer Interaction (KAIST CS Dept & Industrial System Engineering, Spring 2021)

## **SUPERVISION & MENTORSHIP**

- **Youngji Koh (Ph.D. Student)** - KAIST, *Mar 2023 – Present*
  - Co-led the design and implementation of a domestic informatics system for mental health
  - Advised on statistical/qualitative analysis and research writing; paper accepted to IMWUT'25
- **Seolyeong Bae (Undergraduate)** - GIST, *Jun 2023 – Aug 2023*
  - Guided mobile app design for contextual user consent interaction
  - Mentored on user study method; paper published at CHI'24
- **Emily Law (M.S. Student)** - KAIST, *Jan 2023 – Jun 2023*
  - Guided mobile app design for contextual user consent interaction
  - Supervised user study and master's thesis development
- **Hyesoo Park (M.S. Student)** - KAIST → Georgia Tech, *Mar 2022 – Present*
  - Guided the design and implementation of informatics system for child development
  - Advised on qualitative analysis and research writing; paper under revision

- **Seheon Kim (Undergraduate)** - KAIST, *Jun 2022 – Aug 2022*
  - Guided the living lab design for IoT-based health data collection
  - Mentored on research ideation and user study methods
- **Juhwan Yong (Undergraduate)** - Kangwon National University, *Jun 2022 – Aug 2022*
  - Guided the living lab design for IoT-based health data collection
  - Mentored on research ideation and user study methods
- **Jinhyuk Jang (Undergraduate)** - KAIST, *Jan 2022 – June 2022*
  - Mentored the design of privacy-aware data visualization for wearable sensors
  - Advised on user study and research writing; paper published at KCC'22
- **Youwon Shin (M.S. Student)** - KAIST, *Apr 2021 – Dec 2022*
  - Co-led the design and implementation of a family informatics system
  - Supervised user study and master's thesis development

## RESEARCH PROJECTS

(\* indicates role as PI or lab-level project manager)

### 📁 AI Safety (Security & Privacy)

- **Design and Simulation of Physical AI-Based Collaborative Intelligence Systems**
  - \* *National IT Industry Promotion Agency (NIPA) | Oct 2025 – Present \**
  - Development of an integrated safety operation system for collaborative intelligence based on multimodal situational awareness and safety multi-agent frameworks
- **Development of Digital Innovative Element Technologies for the Early Prediction of Complex Diseases and the Expansion of Telemedicine**
  - \* *Institute for ICT Planning & Evaluation (IITP) | Apr 2025 – Present | Collaborator*
  - Designing and simulating attack scenarios in multi-agent environments for mental healthcare
  - Developing a security framework for multi-agent system attacks
- **Constructing Multimodal Benchmark Dataset for AI Safety**
  - \* *Telecommunications Technology Association (TTA), KAKAO | Oct 2024 – Dec 2024 \**
  - Developed a privacy-aware framework for curating multimodal datasets
  - Developed security protocols and risk assessment guidelines for ethical dataset construction

### 📁 Digital Healthcare & Human-Centered Informatics

- **Mental Health Measurement and Preemptive Care Technology Research in Smart Homes**
  - \* *LG Electronics | Mar 2024 – May 2025 | Collaborator*
  - Participated in the development of *LifePensieve*, a domestic health informatics tool for mental healthcare
  - Analyzed smart home behavioral data and its correlation with emotional wellbeing
- **Smarthome Technology to Support Healthy Family Life**
  - \* *Hanssem Co., Ltd. (Home appliances and Furniture), Apr 2021 – Mar 2024 \**
  - Built a living lab-based IoT data pipeline for real-world sensing at home
  - Designed and developed *FamilyScope*, a sensor-based family informatics system that enables reflection of a family's affective states and social interactions
  - Co-designed *SELaD*, a system that supports children's social-emotional learning

### ■ **Non-Face-to-Face Treatment Platform for the Depression Management**

\* Ministry of Science and ICT | Apr 2021 – Dec 2021 | Collaborator

- Designed and developed *PriviAware*, a mobile app supporting contextual consent and interactive data exploration to enhance user privacy awareness
- Focused on balancing usability and privacy in digital healthcare platforms

### ■ **Privacy-Enhancing Interactions & System Design**

### ■ **Developing User-Driven Interpersonal Data Management Systems Supporting Group-Based User Privacy for Multimodal Sensor-Based Digital Healthcare Services**

\* National Research Foundation of Korea (NRF) / New York University (NYU) | Sep 2023 – Present \*

- Conducted user research on group-based privacy expectations in shared healthcare settings
- Introduced *OurData*, a data-sharing framework enabling collaborative privacy control

### ■ **Positive Computing & Persuasive Interaction**

### ■ **Development of Contextual Big Data Collection Technology based on Crowdsourcing and Large-Scale Public Datasets**

\* National Research Foundation of Korea (NRF) | Oct 2019 – Mar 2021 \*

- Designed privacy-preserving persuasive interfaces for data contribution
- Conducted in-the-wild user study (N=100) to explore users' privacy concerns

### ■ **Development of Persuasive Interaction SW Source Technology and Platform for Positive Computing**

\* National Research Foundation of Korea (NRF) | Oct 2018 – Jun 2021 | Collaborator

- Participated in the development of *GoldenTime*, a persuasive mobile system for timeboxing and mindful device use
- Contributed to *LocknType*, a proactive intervention prompting task-based lockout for app avoidance

## ACTIVITIES

### Academic Service

#### ■ **Reviewer:**

- *ECSCW* (2025)
- *ACM Transactions on Computing for Healthcare* (2025)
- *ACM HRI* (2025)
- *ACM CHI* (2021-2025)
- *ACM UbiComp* (2024-2026)
- *ACM UbiComp/ISWC* - Poster/Demo Track Committee member (2025)
- *ACM CSCW* (2023-2024)
- *Human-Computer Interaction Journal* (2022)
- *ACM MobileHCI* (2020)

■ **Session Chair:** *ACM CHI 2024 - Privacy in Real Contexts*

### Community & Committee Involvement

■ **Contributor:** *AIAAIC* (AI, Algorithmic and Automation Incidents and Controversies) (Jun 2024 - Current)

■ **Committee:** *HCI@KAIST* (2022)

## **SKILLS**

### **Research Methods**

- Usability Testing, User Studies, Qualitative Analysis (e.g., thematic coding), Statistical Analysis (SPSS, R)

### **Programming & Data Analytics**

- Python, R, Prompt engineering (for LLM)

### **Design**

- Figma