

# Hyunsoo Lee

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

Research Assistant Professor at

KAIST School of Computing and Graduate School of Information Security

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## RESEARCH INTERESTS

- Usable Security & Privacy
- AI Safety
- Human-AI Interaction
- 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

[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, Heebyeon 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

<b>Human-Centered System Design for User Security and Privacy in the Era of Multimodal Sensing</b>	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	
<b>An Empirical Study on LLM-Driven Privacy Attacks and Assessing Privacy Risks</b>	Feb 2025
■ Multi-Modal AI Safety Benchmark Workshop, IEEE BigComp'25	
• Introduced privacy threats in LLM interactions and interface implications for user trust	
<b>User-Friendly Privacy Design in Ubiquitous Computing</b>	Jun 2024
■ PhD Forum, KCC'24	
• Discussed human-centered privacy design for context-aware computing	
<b>Supporting User Data Privacy in Digital Healthcare Systems</b>	Apr 2024
■ Graduate School of Information Science, Yonsei University	
• Shared technological strategies for user empowerment in health-related data privacy	
<b>Enhancing UX in Security &amp; Privacy for Multi-Modal Environment</b>	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**, 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* (2024-2025)
- *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