

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, Heebyung 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)

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**, 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