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, Heepyung 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-centerd privacy design for context-aware computing

Supporting User Data Privacy in Digital Healthcare Systems — *Apr 2024*

- Graduate Scool 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
- 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 – Present | 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 Interaction

■ **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