

# Heimin Kang

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## Research Interests

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Digital Mental Health; Health Systems Transformation; Data-enabled Design; Participatory Design; Human-AI Interaction; AI Policy & Regulation.

## Education

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### Delft University of Technology (TU Delft)

*MSc in Strategic Product Design, Medesign Specialisation (GPA 8.21/10)*

- Thesis: Transforming the Mental Health Referral System through AI
- Supervisors: Prof. Dr. Judith Rietjens (TU Delft, Erasmus Medical Center), Dr. ir. Jiwon Jung (TU Delft, Erasmus Medical Center)

**Delft, Netherlands**

*Sep 2023 - Aug 2025*

### Ulsan National Institute of Science and Technology (UNIST)

*MSc in Creative Design Engineering (PMD-E) (GPA 4.08/4.3)*

- Thesis: Mitigating Negative Emotions in Anxious Attachment
- Advisor: Prof. Dr. Chajoong Kim (Department of Design, UNIST; Department Head),
- Thesis Committee: Dr. KyungHo Lee (Department of Design, UNIST), Dr. Dooyoung Jung (Department of Biomedical Engineering, UNIST; Director of UNIST Healthcare Center)

**Ulsan, South Korea**

*Aug 2018 - Feb 2021*

### Chung-Ang University (CAU)

*BA in Advertising & Public Relations, Interdisciplinary Major in Entrepreneurship (GPA 3.75/4.5)*

**Seoul, South Korea**

*Mar 2014 - Aug 2018*

## Publications

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### Journal

- [1] **Kang, H.**, Yoon, J., & Kim, C. (2024). Mitigating Negative Emotions in Anxious Attachment through an Interactive Device. *International Journal of Design*, 18(2), 17-35.

*Under Review / In Preparation*

Quijada-Fernandez, D., **Kang, H.**, Jung, J., Kleinsmann, M., van Os, H. (In preparation) The Impact of AI-Supported Digital Health on Efficiency in Mental Health Services: A Scoping Review. *Target Journal: JMIR*.

Perk, B., Simonse, L., **Kang, H.** (In preparation) How Future Visions are Received: Connecting Future Making to Commonplace Values. *Target Journal: Design Issues*.

### Conference

- [2] **Kang, H.**, Lee, K., Jung, D., Kim, C., & Yoon, J. (2021). Exploring Design Opportunities for Mitigating Anxious Attachment. In *Congress of the International Association of Societies of Design Research* (pp. 810-832). Singapore: Springer Nature Singapore.

- [3] **Kang, H.**, & Kim, C. (2019). Improving User's Well-being Through Leveraging Attachment to Interactive Products. In *Congress of the International Association of Societies of Design Research*. Manchester, UK.

*Under Review / In Preparation*

**Kang, H.**, & Jung, J. (In preparation) Bridging Innovation and Regulation: An Exploratory Study on Regulatory Mapping Approach to Designing Digital Mental Health Interventions. *Target Conference: DESIGN 2026*.

## Extended Abstract

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### Oral Presentation

- [1] **Kang, H.**, Rietjens, J., Jung, J. (Aug, 2025). *Transforming the Mental Health Referral System for Community-Centered Care: A Strategic Design Approach Integrating AI*. Oral presentation at Europe-Korea Conference on Science and Technology (EKC 2025), Vienna, Austria.

### Poster Exhibition

- [2] **Kang, H.** (Nov, 2025). *Transforming the Mental Health Referral System through AI*. Poster exhibition at Healthcare in Shape Symposium 2025, Delft, Netherlands.
- [3] **Kang, H.**, Jung, J. (Nov, 2024). *Exploring the Relationship between EU Regulations and E-Mental Health Interventions*. Poster exhibition at Mobile Healthcare Festival 2024, Den Bosch, Netherlands.

## Technical & Industrial Patents

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- [1] **Kang, H.**, et al. (2021). *Play-learning Tool*. KR 30-2021-0019289(M001), issued 2021. Co-inventor. Design Patent, Granted.
- [2] **Kang, H.**, et al. (2020). *Cushion*. KR 30-2020-0004191(M001), issued 2020. Co-inventor. Design Patent, Granted.
- [3] **Kang, H.**, et al. (2020). *Apparatus and Method for Providing Contents*. KR 10-2020-0011677, issued 2020. Co-inventor. Utility Model Patent, Granted.
- [4] **Kang, H.**, et al. (2019). *Sound Reproducing Apparatus*. KR 10-2019-0102413, issued 2019. Co-inventor. Utility Model Patent, Granted.
- [5] **Kang, H.**, et al. (2018). *Medical Sound Reproducing Device*. KR 30-2018-0059543(M001), issued 2018. Co-inventor. Design Patent, Granted (Expired).

## Honors & Awards

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### International Design Workshop Scholarship

May 2024

TU Delft

- Competitively selected as one of five MSc students from TU Delft to receive a travel and participation scholarship for *Design for Well-being*, a joint healthcare design workshop co-hosted by Politecnico di Milano, Aalto University, and TU Delft.

### Graduate Scholarship

Aug 2019 - Feb 2021

Korea Institute of Design Promotion (KIDP)

- Received tuition, living, and research support funded by KIDP as part of a national graduate education program in design at UNIST, covering the full duration of the master's program.

### Professional Concept Finalist – 2019 Spark: Health

Nov 2019

SPARK Awards - International Design Competition

- Selected as a finalist for *Sound Cushion for Dementia: Empowering memory recall through ambient sound triggers*, a research-driven project funded by UNIST.

## Academic Service

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### Reviewer

International Association of Societies of Design Research (IASDR 2023)

- Served as a peer reviewer for manuscripts addressing the role of design in enabling social, organizational, and policy transformation.

## Funded Research Projects

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### **Designing Play Equipment for Long-Term Pediatric Hospitalization**

*Jan 2021 - Feb 2021*

*Funded by the National Research Foundation of Korea (NRF), conducted at UNIST*

- Designed therapeutic play-based interventions to enhance the emotional wellbeing of long-term hospitalized children, integrating insights from developmental psychology and pediatric care practices.
- Conducted user-centered field research, including observations and interviews with children and caregivers, translating emotional and behavioral insights into design opportunities for therapeutic and supportive interactions.

### **Designing interior/product of mobile clinic module for COVID-19 patients**

*Dec 2020 - Feb 2021*

*Funded by KAIST (Korea Advanced Institute of Science and Technology), conducted at UNIST*

- Designed an ASMR-inspired ambient lighting system to alleviate patient anxiety and support emotional regulation in mobile healthcare settings.
- Identified psychological and environmental stressors, proposing sensory interaction strategies (light, sound) for adaptive and human-centered medical spaces.

### **Designing IoT products for dementia**

*Sep 2018 - Dec 2020*

*Funded by the Excellent Research Idea Discovery Project, conducted at UNIST*

- Developed interactive IoT concepts to promote emotional and cognitive well-being in people with dementia; one concept was recognized as a finalist in an international design competition and led to five registered patents.
- Conducted user research and sensory exploration to identify cognitive-emotional triggers (hand movement and sound) and translated findings into interactive design opportunities for mental support.

## Industry Experience

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### **Professional Experience**

#### **Korea Institute of Industrial Technology (KITECH)**

*Research Assistant, AI Robot Research Lab*

**Ansan, Korea**  
*Mar 2022 - Aug 2022*

- Researched human factors and user experience in AI-based companion robots to support mental health and emotional wellbeing.
- Collaborated with robotics engineers to translate qualitative user insights into design specifications for human-AI interaction and care system innovation.

#### **HAHEHO, Inc.**

*Service Designer*

**Seoul, Korea**  
*Aug 2021 - Feb 2022*

- Conducted field research and co-design sessions with healthcare staff and patients at a major hospital to identify system barriers in care delivery.
- Developed service blueprints and workflow redesign proposals to improve staff autonomy, efficiency, and patient experience in clinical environments.

#### **NAVER, Inc.**

*Intern, Marketing Team*

**Sungnam, Korea**  
*Jan 2015 - Feb 2015*

- Conducted user studies on emotional and behavioral patterns in digital interaction among young adults.
- Contributed to early-stage concept validation and beta testing for an online social support service.

## Other Industry Experience

### H/H Start-up Team, UNIST

Team Member

Ulsan, South Korea

Oct 2018 - Mar 2019

- Led commercialization planning and partner outreach for sound-based dementia-care concepts originating from a UNIST research project.
- Selected by the UNIST Entrepreneurship Center for startup incubation (secured an office at UNISpark); awarded team travel funding through an international field-exploration program for a Denmark field visit (company visits and partnership meetings).

### NOOM, Inc.

Short-term Visiting Contributor; Data Management Team

New York, USA

Jul 2015 - Aug 2015

- Maintained and standardized a nutrition database for a CBT-based digital health app (data entry, normalization, QA).
- Assisted translation of behavioral insights into internal communications and product messaging.

## Teaching Experience

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### Teaching Assistant

Jan 2025 - May 2025

Tech-Enabled Innovation Studio (Master Course), TU Delft

- Co-developed course materials with Prof. Jiwon Jung for a newly introduced master course with 60+ students, including project examples and design guidelines used for student learning.
- Conducted market and case analyses on AI use in design practice, exploring emerging tools and their implications for innovative design processes.

### Teaching Assistant

Nov 2024 - Jan 2025

Research Methods for Strategic Design (Master Course), TU Delft

- Assisted Prof. Éva Kalmár in coordinating a mandatory research course for 100+ MSc students.
- Designed and facilitated workshops on qualitative and quantitative research methods, providing feedback and guidance on student research projects.

## Skills & Tools

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### Research & Analysis

- Qualitative research: interviews, observations, co-creation workshops, thematic analysis
- Quantitative research: survey & experiment design; data analysis; statistical modeling (SPSS)
- Mixed & computational methods: Computationally augmented qualitative analysis using community/online data and NLP (e.g., sentiment analysis, topic modeling)

### Programming

- Data analysis & modeling: Python (sentiment & topic modeling), SPSS (statistical modeling)
- Prototyping: Arduino (interactive products), React Native (mobile interfaces)

### Design & Communication

- CAD & Prototyping: Onshape (cloud-based collaboration), Rhino, Keyshot
- Systems & Strategic Design: system, stakeholder, and journey mapping; framework development; roadmapping
- Visualization & concept communication: Figma; Onshape; Adobe Photoshop, Illustrator, Premiere Pro

## Referees

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**Prof. Dr. Judith Rietjens** [J.A.C.Rietjens@tudelft.nl](mailto:J.A.C.Rietjens@tudelft.nl)

Professor | Faculty of Industrial Design Engineering (IDE), TU Delft & Department of Public Health, Erasmus University Medical Center (Erasmus MC)

**Prof. Dr. ir. Chajoong Kim** [cjkim@unist.ac.kr](mailto:cjkim@unist.ac.kr)

Professor and Department Head | Department of Design, UNIST