SooYeon Kim

Madison, Wisconsin, USA

kim2246@wisc.edu | linkedin.com/in/kim2246/ | SooYeon Kim | 608-960-0224

Research Statement

I am a Human Factors engineer specializing in human-computer interaction (HCI) and User Experience (UX) research through rigorous mixed-methods approaches. My expertise lies in modeling user behavior, cognition, physiological responses, and well-being during system interactions, with particular focus on transportation domains and driver behavior in dynamic traffic environments. I design research questions and experiments utilizing Unity, PsychoPy, psychophysiological and psychometric measurements to develop evidence-based insights that enhance system usability, interfaces, and user experience.

Education

University of Wisconsin-Madison — *Wisconsin, US*

Ph.D. in Industrial and Systems Engineering (Expected Graduation: June, 2026) — *September 2022 - Current*

- Cognitive Systems Lab (Advisor: Professor John D Lee)
- Ph.D. Minor in Computational Human Behavior

Seoul National University — *Seoul, KR*

M.S. in Industrial and Systems Engineering — *January 2020 - May 2022*

Yonsei University — *Seoul, South Korea*

B.S. in Creative Technology and Management — *March 2015 - August 2019*

Research Experience

University of Wisconsin-Madison — *Wisconsin, US*

Graduate Research Assistant — *September 2022 - Current*

- Conducting **longitudinal experiments** exploring how prosocial traffic scenarios and journaling interventions affect driver well-being using physiological and behavioral analysis modeling (Paper 14)
- **Defined prosocial behavior in traffic** through simulated scenarios and behavioral and contextual analysis (Paper 1)
- **Developed dynamic traffic scenarios in Unity** simulations to investigate their influence on driver well-being and cognition (Paper 1, 11-14)
- Created statistical models assessing **interdependence between driver well-being, cognition, and performance** (Paper 3, 12-13)
- Evaluated persuasive strategies using social norms to reduce **inappropriate driver overrides in Autonomous Vehicles** (Paper 4)

North Carolina State University — *North Carolina, US*

Visiting Scholar — *October 2021 - April 2022*

- Evaluated the **usability** of AI-based biomarker identification and brain modulation system using User-centered design framework
- Statistically analyzed **neuroimaging data** to identify significant patterns and relationships

Seoul National University — *Seoul, KR*

Graduate Research Assistant — *January 2020 - June 2022*

- Applied machine learning to **analyze driver sentiment** on electric vehicle sound using naturalistic Think-aloud protocol data (Paper 5, 6)
- Developed **ergonomic design standards** for accessible home appliances, with specialized focus on elderly and disabled users (Paper 9)

Yonsei University — *Seoul, KR*

Undergraduate Research Assistant — *September 2018 - December 2019*

- Designed and evaluated **Humanoid Companion Robot interfaces** tailored for elderly through comprehensive user experiments, analyzing tactile and visual interaction preferences (Paper 10)

Skills

Experiment Design Psychophysics paradigms (PsychPy, MATLAB), Experiment Scenario Development (Unity), Cognitive task development (Unity, PsychoPy), Behavioral assessments, Longitudinal study design, Cross-cultural experimental adaptation (Qualtrics, Prolific, MTurk)

Technical Proficiencies Programming languages (R, Python, MATLAB, Tableau), Specialized research software (PsychoPy, Unity), Hardware/equipment expertise (Driving Simulator, Eye-tracking, EEG, ECG, VR)

Data Analysis Statistical modeling (ANOVA, GLM, mixed-effects models, SEM, HLM), Accumulation models (Drift Diffusion, Linear Ballistic Accumulator, Race models), State-trait analysis and latent variable modeling, Machine learning (regression, classification, clustering), Multivariate analysis (factor analysis, PCA, discriminant analysis), Bayesian inference and probabilistic modeling, Time-series and longitudinal data analysis

Publications

Published or Accepted Papers

1 **SooYeon Kim**, Shashank Mehrotra, Kumar Akash, Kevin Salubre, and John D. Lee. "Defining Prosocial Behavior in Traffic: Linking Behavior to Perception." In *In Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, vol. 69. Sage CA: Los Angeles, CA: SAGE Publications, 2025.

2 **SooYeon Kim**, Shashank Mehrotra, Kumar Akash, Teruhisa Misu, and John D. Lee. "Prosociality Matters: How Does Prosocial Behavior in Interdependent Situations Influence the Well-being and Cognition of Road Users?." In *Proceedings of the 16th International Conference on Automotive User Interfaces and Interactive Vehicular Applications*, pp. 395-404. 2024.

3 **SooYeon Kim**, Shashank Mehrotra, Kumar Akash, Teruhisa Misu, and John D. Lee. "Does Prosocial Automation Increase Driver's Well-being?." In *In Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, vol. 68, no. 1, pp. 1420-1424. Sage CA: Los Angeles, CA: SAGE Publications, 2024.

4 Lee, Joonbum, Boyoung Kim, Hansol Rheem, Amudha V. Kamaraj, **SooYeon Kim**, Joshua E. Domeyer, John D. Lee, and Heishiro Toyoda. "Towards directive driving automation: Nudging driver's away from overriding using social norms." In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, vol. 67, no. 1, pp. 1184-1190. Sage CA: Los Angeles, CA: SAGE Publications, 2023.

5 Wang, Cai, **SooYeon Kim**, Yein Song, Sungho Kim, Minsik Choi, Donghoon Seu, and Myung Hwan Yun. "Text Mining for Exploring UX Issues of Qualitative Think Aloud Data on EV Sound." In *2022 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM)*, pp. 0200-0203. IEEE, 2022.

6 Song, Yein, Myung Hwan Yun, **SooYeon Kim**, Chang S. Nam, and Joong Hee Lee. "A Study on the Driver-Vehicle Interaction System in Autonomous Vehicles Considering Driver's Attention Status." In *2022 IEEE International Conference on Systems, Man, and Cybernetics (SMC)*, pp. 3360-3366. IEEE, 2022.

7 Wilfred, Adriance, Minjee Kim, Sungho Kim, Chan Hyeok Yun, NamWoo Cho, Jane Lee, **SooYeon Kim**, Joong Hee Lee, Kyung-Jun Lee, and Myung Hwan Yun. "User Experience Factor Investigation of a Voice User Interface (VUI) for the Elderly." *Proceedings of the HCI KOREA* (2021): 619-624.

8 **SooYeon Kim**, Seijun Chung, Adriance Wilfred, Joong Hee Lee, and Myung Hwan Yun. "User sentiment analysis by Electric Vehicle based on Aspect-Based Sentiment Analysis." In *Proceedings of the Ergonomics Society of Korea* (2020): 29-29.

9 Lee, Seungyeon, Chan Hyeok Yun, Gee Won Shin, **SooYeon Kim**, and Myung Hwan Yun. "Evaluating User Experience Using Physiological Data from Conversational Interfaces for Interactive TV." In *Proceedings of the Ergonomics Society of Korea* (2020): 81-84.

10 **SooYeon Kim**, Young Hoon Oh, and Da Young Ju. "A Study on the Design of Companion Robots Preferred by the Elderly." In *Advances in Human Factors in Robots and Unmanned Systems: Proceedings of the AHFE 2019 International Conference on Human Factors in Robots and Unmanned Systems*, July 24-28, 2019, Washington DC, USA 10, pp. 104-115. Springer International Publishing, 2020.

Papers Under Review

11 **SooYeon Kim** and John D. Lee, "Well-being in Hybrid Societies: A Systematic Review of Well-being in Automation, Transportation, and Road Users", Under Review, *Human Factors*, 2025

Papers Under Preparation

12 **SooYeon Kim**, Shashank Mehrotra, Kumar Akash, Teruhisa Misu, and John D Lee, "Factors affecting drivers' well-being, cognitive attention, and behaviors under interdependent road situations", 2025

13 **SooYeon Kim**, Shashank Mehrotra, Kumar Akash, Teruhisa Misu, and John D Lee, "Modeling interdependence in micromobility-pedestrian encounters and its implications for vehicle automation", 2025

14 **SooYeon Kim**, Jahinaya Parker, Shashank Mehrotra, Kumar Akash, and John D. Lee, "Shifting Focus from Self to Others: How Gratitude and Grace Journaling Intervention Shapes Prosocial Driving Cognition", Under Review, *CHI conference*, 2025

Achievements

2022 **HFES Student Chapter Award**, Human Factors and Ergonomics Society
2022 **Chancellor's Opportunity Award**, University of Wisconsin-Madison
2021 **High-Potential Individuals Global Training Program Fellowship**, Institute for Information & Communication Technology Planning
2020 **Brain Korea 21 Plus Program Scholarship**, National Research Foundation of Korea

Presentations

Invited Talks

1 **SooYeon Kim**, Shashank Mehrotra, Kumar Akash, Teruhisa Misu, and John D. Lee, "Prosociality Matters: How Does Prosocial Behavior in Interdependent Situations Influence the Well-being and Cognition of Road Users?," *16th International Conference on Automotive User Interfaces and Interactive Vehicular Applications*, Palo Alto, CA, 2024

2 **SooYeon Kim**, Shashank Mehrotra, Kumar Akash, Teruhisa Misu, and John D. Lee, "Does Prosocial Automation Increase Driver's Well-being?," *Human Factors and Ergonomics Society Annual Meeting*, Phoenix, AZ, 2024

3 **SooYeon Kim**, Seijun Chung, Adriance Wilfred, Joong Hee Lee, and Myung Hwan Yun, "User sentiment analysis by Electric Vehicle based on Aspect-Based Sentiment Analysis," *Proceedings of the Ergonomics Society of Korea*, Seoul, Korea, 2020

4 **SooYeon Kim**, Young Hoon Oh, and Da Young Ju, "A Study on the Design of Companion Robots Preferred by the Elderly," *AHFE International Conference on Human Factors in Robots and Unmanned Systems*, Washington DC, 2019

Teaching Experience

406.304_001: Human Factors Engineering *Seoul National University, KR*
Teaching Assistant *Fall 2020*
- Class size: 80 undergraduate and graduate students
- Led 3 weekly lab sessions (50 mins each), weekly office hours, assisted in homework and exam design, graded student assignments and projects

406.427A_001: Human Interface Design *Seoul National University, KR*
Teaching Assistant *Spring 2020*
- Class size: 60 undergraduate and graduate students
- Taught 3 weekly lab sessions (40 mins each), held weekly office hours, assisted in homework and exam design, graded student assignments and projects

406.305A_001: Human Factors Engineering Experiment and Practice *Seoul National University, KR*
Teaching Assistant *Fall 2020, Fall 2021*
- Class size: 80 undergraduate and graduate students
- Guided students through experimental protocols and data collection
- Supervised laboratory equipment (Driving simulator, sensors, and physiology device) and experimental setup

CTM3015-01-00: Technovation *Yonsei University, KR*
Teaching Assistant *Spring 2018*
- Class size: 20 undergraduate students
- Facilitated innovation workshops and team projects
- Assisted with course logistics and student evaluations

CTM3017-01-00: IT Business Model Analysis & Development IoT Foundation *Yonsei University, KR*
Teaching Assistant *Spring 2018*
- Class size: 25 undergraduate students
- Supported business model development projects and designed class materials
- Assisted with course logistics and student evaluations

Leadership & Reviewer Experience

The Human Factors and Ergonomics Society Conference
Reviewer *2025*

Human Factors and Ergonomics Society *Wisconsin, US*
Finance Chair, UW-Madison Student Chapter *Fall 2022 - Summer 2023*

Yonsei Habitat for Humanity *Seoul, KR*
Vice President, Habitat for Humanity *Fall 2015 - Summer 2017*