

MYEONGKYU LEE

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RESEARCH INTERESTS

Human-Computer Interaction (domain: driving), Driver Trust, Behavior, Intention Prediction & Modeling

EDUCATION

- Ph.D.** **Purdue University**, West Lafayette, IN 2023 – Present
 Industrial Engineering
 • Advisor: Dr. Brandon J. Pitts (NHanCE Laboratory)
- M.S.** **Kookmin University**, Seoul, KOREA 2021 – 2023
 Automobile and IT convergence
 • GPA: 4.0/4.0 (Graduated 1st out of 36)
 • Advisor: Dr. Ji Hyun Yang (Humans and Vehicle Automation Laboratory)
 • Merit-based full tuition for all two years
- B.S.** **Kookmin University**, Seoul, KOREA 2015 – 2021
 Automotive Engineering
 • GPA: 3.98/4.0 (Graduated 1st out of 166)
 • Merit-based full tuition for all four years

PUBLICATIONS

JOURNALS

- [5] **Lee, M.**, & Pitts, B.J. (under review). “The effects of automated vehicle reliability, self-estimated confidence, and repeated exposures on drivers’ trust and takeover decisions”. *Behaviour and Information Technology*
- [4] **Lee, M.**, Ahn, C. & Yang, J. (under review). “Human-Centric Validation Framework for Monitoring Systems Embedded in Partially Automated Vehicles”. *Cognition, Technology & Work*
- [3] **Lee, M.**, Choi, J., Kim, S., & Yang, J. (2025). “Analysis of Drivers’ Reactions to Simulated Jaywalking and Application of AI Classifiers to Predict Accidents”. *International Journal of Automotive Technology*. [\[link\]](#)
- [2] **Lee, M.**, Lee, S., Hwang, S., Lim, S., & Yang, J. (2023). “Effect of Emotion on Galvanic Skin Response and Vehicle Control Data During Simulated Driving”. *Transportation Research Part F: Traffic Psychology and Behaviour*. [\[link\]](#)
- [1] **Lee, M.**, Kim, S., Kim, J., & Yang, J. (2022). “Simulator Study on the Response Time and Defensive Behavior of Drivers in a Cut-in Situation”. *International Journal of Automotive Technology*. [\[link\]](#)

PROCEEDINGS

- [10] **Lee, M.**, & Pitts, B.J. (under review). “Identifying Preferred Driving Styles of Automated Vehicles through Drivers’ Feedback”. *Proceedings of the Human Factors and Ergonomics Society Annual meeting 2025*.
- [9] **Lee, M.**, & Pitts, B.J. (accepted). “Finding Preferred Automated Vehicle Driving Styles via Exposure to Various Types of Vehicle Behavior”. *Institute of Industrial and System Engineers (IISE) Annual Meeting 2025*.
- [8] **Lee, M.**, & Pitts, B.J. (2024). “The Effects of System Confidence and Reliability on Drivers’ Decision-Making in Conditionally Automated Vehicles”. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, Phoenix, AZ, September 2024. **Two best student paper awards** [\[link\]](#).
- [7] Dong, J., Nadri, C., Alvarez, I., Diel, C., **Lee, M.**, ... & Jeon, M. (2023). ““Play Your Anger”: A report on the empathic in-vehicle interface workshop”. *Automotive UI'23*, Ingolstadt, Germany, September 2023. [\[link\]](#)
- [6] Park, J., **Lee, M.**, Maeng, J., & Yang, J. (2023). “Development of the Driver's HOD (Hands On/Off Detection) Method using Conductor inside the Steering wheel”. *2023 Spring Conference of ESK*, Anseong, Korea, May 2023. [\[link\]](#)

- [5] Park, J., **Lee, M.**, Maeng, J., Ahn, C., & Yang, J. (2022). "A Study for STPA-based Identification of Safety Requirements from the Perspective of Drivers in Take-Over Request Situation". *3rd IEEE International Conference on Human-Machine Systems*, Florida, US, November 2022. [\[link\]](#)
- [4] **Lee, M.**, Lee, S., Hwang, S., Lim, S., & Yang, J. (2022). "Acquiring Driving Characteristic Data According to Driver Emotions and to Proposing Emotion Groups in the Driving Context". *3rd IEEE International Conference on Human-Machine Systems*, Florida, US, November 2022. [\[link\]](#)
- [3] **Lee, M.**, Kim, S., Jung, D., Lee, H., ... & Yang, J. (2022). "Simulator-Based Study of the Response Time and Defensive Behavior of Drivers in Unexpected Dangers at an Intersection". *Automotive UI 22'*, Seoul, Korea, September 2022. [\[link\]](#)
- [2] Pyeon, H., Kim, H., Bae, Y., **Lee, M.**, Zhu, H., Yang, J., & Lim, S. (2022). "Establishment of a Data Collection System for Developing a Deep Learning Model Detecting Driver's Hands On/Off". *2022 Spring Conference of KSAE*, Seoul, Korea, June 2022. [\[link\]](#)
- [1] **Lee, M.**, Shim, H., Kim, S., Choi, J., & Yang, J. (2021). "Study of driver's response time in cut-in situation with driving simulator". *2021 Spring Conference of ESK*, Seoul, Korea, June 2021. [\[link\]](#)

PUBLICATIONS IN EDIT

- [3] Zang, J., **Lee, M.**, Li, G., & Pitts, B.J. "Challenges of older adults that influence automated vehicle adoption".
- [2] **Lee, M.**, Luster, M., Oishi, M., & Pitts, B.J. "Predicting obstacle types with machine learning based on driver behavioral and physiological data".
- [1] **Lee, M.**, & Pitts, B.J. "The Impact of Information Accuracy and Repetitive Exposures on Driver Behavior and Physiological Response in Highly Reliable Automated Vehicles".

PATENTS

- [3] **Lee, M.**, Yang, J., Lim, S., Zhu, H., Pyeon, H., & Bae, Y. (*Korean Patent, 10-2527164*). "Method for Providing a Plurality of Driving Modes Based on Whether a Driver grips Steering Wheel or Not"
- [2] **Lee, M.**, Yang, J., Lim, S., Zhu, H., Pyeon, H., & Bae, Y. (*Korean Patent, 10-2620416*). "Method for Controlling Steering Wheel Based on Whether a Driver grips Steering Wheel or Not"
- [1] **Lee, M.**, Yang, J., Park, J., & Maeng, J. (*Korean Patent, 10-2527171*). "Device and Method for Detecting Driver's Steering Wheel Grip"

PRESENTATIONS/INVITED TALKS

- [12] **Lee, M. (presenter)**, & Pitts, B.J. "An investigation into how vehicle reliability, confidence information, and repeated exposure affect trust in automated vehicles". Transportation Research Board Annual Meeting, *Washington D.C., Jan. 2025*
- [11] **Lee, M. (presenter)** "An investigation into how vehicle reliability, confidence information, and repeated exposure affect trust in automated vehicles". Kookmin University BK 21 Seminar, *Seoul, Korea., Dec. 2024*
- [10] **Lee, M. (presenter)**, & Pitts, B.J. "Bi-directional human-to-vehicle communication about driving style preferences". NSF Site-Visit, *Purdue University, Nov. 2024*
- [9] **Lee, M. (presenter)**, & Pitts, B.J. "The Effect of System Reliability and Confidence Information on Drivers' Behavior in Automated Vehicles". 4th Next Generation Transportation System Conference, *Purdue University, Sep. 2024*
- [8] **Lee, M. (presenter)**, & Pitts, B.J. "The Effects of System Confidence and Reliability on Drivers' Decision-Making in Conditionally Automated Vehicles". Human Factors and Ergonomics Society Annual Meeting, *AZ, Sep. 2024*
- [7] Zang, J., **Lee, M. (co-presenter)**, Li, G., & Pitts, B.J. "Challenges of Older Adults in Adopting Automated Vehicles: A Systematic Review". Human Factors and Ergonomics Society Annual Meeting, *AZ, Sep. 2024*
- [6] **Lee, M. (presenter)**, & Pitts, B.J. "Bias in Driver-AV interactions: Starting the Conversation about Closing-the-loop". NSF Retreat, *University of New Mexico, May 2024*
- [5] **Lee, M. (presenter)**, & Pitts, B.J. "Characterizing the effects of system confidence presentation and exposure bias on drivers' behavior". NSF Site-Visit, *Purdue University, Nov. 2023*

- [4] **Lee, M. (presenter)**, & Yang, J. "Acquiring Driving Characteristic Data According to Driver Emotions and Proposing Emotion Groups in the Driving Context". BK 21 Performance Sharing Conference, *Kookmin University*, Dec. 2022
- [3] **Lee, M. (presenter)**, Lee, S., Hwang, S., Lim, S., & Yang, J. "Acquiring Driving Characteristic Data According to Driver Emotions and Proposing Emotion Groups in the Driving Context". 3rd IEEE International Conference on Human-Machine Systems, *Florida, US*, Nov. 2022
- [2] **Lee, M. (presenter)**, Kim, S., Jung, D., Lee, H., ... & Yang, J. "Simulator-Based Study of the Response Time and Defensive Behavior of Drivers in Unexpected Dangers at an Intersection". 14th International ACM Conference on Automotive User Interfaces and Interactive Vehicular Applications, *Seoul, Korea*, Sep. 2022
- [1] **Lee, M. (presenter)**, Shim, H., Kim, S., Choi, J., & Yang, J. (2021). "Study of driver's response time in cut-in situation with driving simulator". Proceedings of 2021 Spring Conference of ESK, *Seoul, Korea*, Jun. 2021

RESEARCH EXPERIENCE

- [7] **Cognitive Autonomy for Human CPS: Turning Novices into Experts**
 - Role: Graduate Research Assistant, Purdue University
 - Period: Aug. 2023 – present
 - Sponsor: National Science Foundation, US
- [6] **Study on the Model Development for the Driver Emotion Recognition**
 - Role: Graduate Research Assistant, Kookmin University
 - Period: Oct. 2022 – Jul. 2023
 - Sponsor: Hyundai Motor Company, Korea
- [5] **Artificial Intelligence Adaptation on the Steering Wheel System**
 - Role: Graduate Research Assistant, Kookmin University
 - Period: Sep. 2021 – Aug. 2022
 - Sponsor: Hyundai Motor Company, Korea
- [4] **Study on the Driver's Mental Model and Behavior in Take-over Situation**
 - Role: Graduate Research Assistant, Kookmin University
 - Period: May 2021 – May 2022
 - Sponsor: Hyundai Motor Company, Korea
- [3] **Study on the Vehicle Control Data/Physiological Data According to Emotions**
 - Role: Graduate Research Assistant, Kookmin University
 - Period: Mar. 2020 – Nov. 2021
 - Sponsor: Hyundai Motor Company, Korea
- [2] **Study on the Driver Behavior Characteristics in Four Dangerous Situations**
 - Role: Undergraduate Research Assistant, Kookmin University
 - Period: Mar. 2020 – Nov. 2020
 - Sponsor: National Forensic Service, Korea
- [1] **Undetectable Communications for Drone Applications**
 - Role: Undergraduate Research Assistant, University of California, Irvine
 - Period: Dec. 2019 – Feb. 2020
 - Sponsor: Kookmin University, Korea

AWARDS AND HONORS

- Best Student Paper Award (*Surface Transportation Technical Group, HFES, 2024*)
- Best Student Paper Award (\$200 – *Korean HFES Affinity Group, HFES, 2024*)
- Travel Grant (\$500 – *HFES, 2024*)
- Graduation with honors (grad class rank: 1/36) (\$800 – *Kookmin University, 2023*)
- Merit-based Scholarship (masters, all semesters) (\$20,000 – *Kookmin University, 2021-2022*)
- Best Paper Award (*Korea Electronics Association, 2022*)
- Competition of creating Intellectual Property Rights, 3rd award (\$350 – *Kookmin University, 2022*)

- Poster competition of Brain Korea 21 program, 2nd out of 38 students (\$500 - *Kookmin University, 2022*)
- Graduation with honors (undergrad class rank: 1/166) (\$350 - *Kookmin University, 2021*)
- Merit-based Scholarship (undergrad, all semesters) (\$21,000 - *Kookmin University, 2015-2021*)

SERVICE

Committee Experience

- Human Factors and Ergonomics Society Annual Meeting: Session Co-Chair (*Phoenix, AZ, 2024*)
- Automotive UI 2022: Local chair (*Seoul, Korea, 2022*)

Journal Reviewer

- International Journal of Automotive Technology
- Transportation Research Part F: Traffic Psychology and Behaviour
- Applied Ergonomics

Conference Proceedings Reviewer

- Human Factors and Ergonomics Society Annual Meeting (2024)