# 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 (*N*HanCE 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 Drivers' Preferred Driving Styles through Drivers' Feedback in Automated Vehicles". *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.**, and 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 9-13, 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 18-21, 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". *Proceedings of 2023 Spring Conference of ESK*, Anseong, Korea, May 17-20, 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 17-19, 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 17-19, 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". *14th International ACM Conference on Automotive User Interfaces and Interactive Vehicular Applications*, Seoul, Korea, September 17-20, 2022. [link]

[2] Pyeon, H., Kim, H., Bae, Y., **Lee, M.**, Zhu, H., Yang, J., & Lim, S. (2022). "Development of method to acquire Hands on/off answer value". *Proceedings of 2022 Spring Conference of KSAE*, Seoul, Korea, June 2-3, 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". *Proceedings of 2021 Spring Conference of ESK*, Seoul, Korea, June 17-18, 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 21Performance 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
- Oct. 2022 – Jul. 2023
- Sponsor: Hyundai Motor Company

[5]  **Artificial Intelligence Adaptation on the Steering Wheel System**
- Role: Graduate Research Assistant, Kookmin University
- 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

## 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)


Updated Feb. 2025