# MYEONGKYU LEE

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## RESEARCH INTERESTS

Human-Machine Interaction, Human Factors Engineering, Driver's Emotion, Vehicle/Driver Safety, Driver's Behavior

## EDUCATION

**PURDUE UNIVERSITY**                                                                                   **West Lafayette, IN, US**

*Ph.D. Student in Industrial Engineering*                                                              *Aug. 2023 – Present*
- Research Assistant
- Advisor: Dr. Brandon Pitts
- *N*HanCE Laboratory

**KOOKMIN UNIVERSITY**                                                                                          **SEOUL, KOREA**

*Master Candidate of Automobile and IT convergence*                                         *Mar. 2021 – Feb. 2023*
- GPA: 4.0/4.0, Advisor: Prof. Ji Hyun Yang
- Thesis: "A study on the Analysis of Driving Data and Suggestion of Emotion Group by Driver's Emotion Using Driving Simulator"
- SUNGKOK Scholarship (Merit based, Full tuition for all two years)
- Graduated 1st out of 36 students

*Bachelor of Automotive Engineering*                                                                    *Mar. 2015– Feb. 2021*
- GPA: 3.98/4.0, 4.41/4.5
- Graduation Scholarship (Graduated 1st out of 166 students) & Academic Excellence Scholarship (for all four years)

## PUBLICATIONS AND PROCEEDINGS

**M. Lee**, J. Choi, S. Kim, and J. Yang, "Analysis of drivers' reactions to simulated jaywalking and application of AI classifiers to predict accidents", under review, *International Journal of Automotive Technology*. SCIE.

J. Dong, C. Nadri, I. Alvarez, C. Diel, **M. Lee**, … & M. Jeon, ""Play Your Anger": A report on the empathic in-vehicle interface workshop.", *Automotive UI'23*, Ingolstadt, Germany, September 18-21, 2023.

**M. Lee**, S. Lee, S. Hwang, S. Lim, and J. Yang, "Effect of emotion on galvanic skin response and vehicle control data during simulated driving", 93, pp. 90-105, *Transportation Research Part F: Traffic Psychology and Behaviour*. SSCI.

J. Park, **M. Lee**, J. Maeng, C. Ahn, and J. Yang, "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.

**M. Lee**, S. Lee, S. Hwang, S. Lim, and J. Yang, "A Study to Acquire the Driving Characteristic Data According to Driver Emotions and to Propose Emotion Groups in the Driving Context", *3rd IEEE International Conference on Human-Machine Systems*, Florida, US, November 17-19, 2022.

**M. Lee**, S. Kim, D. Jung, H. Lee, H. Park, H. Han, and J. Yang, "Simulator-Based Study of the Response Time and Defensive Behavior of Drivers in Unexpected Dangers at an Intersection", *Automotive UI'22*, Seoul, Korea, September 17-20, 2022.

**M. Lee**, S. Kim, J. Kim, and J. Yang, "Simulator Study on the Response Time and Defensive Behavior of Drivers in a Cut-in Situation", *International Journal of Automotive Technology*, Vol. 23, No. 3, pp. 813–823, June 2022. SCIE.

H. Pyeon, H. Kim, Y. Bae, **M. Lee**, H. Zhu, J. Yang, and S. Lim, "Development of method to acquire Hands on/off answer value", *Proceedings of 2022 Spring Conference of KSAE*, Seoul, 2-3, June, 2022.

**M. Lee**, H. Shim, S. Kim, J. Choi, and J. Yang, "Study of driver's response time in cut-in situation with driving simulator", *Proceedings of 2021 Spring Conference of ESK*, Seoul, 17-18, June, 2021.

## PATENTS

J. Yang, S. Lim, **M. Lee**, H. Zhu, H. Pyeon, and Y. Bae, "Method for Providing a Plurality of Driving Modes Based on Whether a Driver grips Steering Wheel or Not", Korean Patent, 10-2527171

J. Yang, S. Lim, **M. Lee**, H. Zhu, H. Pyeon, and Y. Bae, "Method for Controlling Steering Wheel Based on Whether a Driver grips Steering Wheel or Not", Korean Patent (filed), 10-2022-0086241

J. Yang, **M. Lee**, J. Park, and J. Maeng, "Device and Method for Detecting Driver's Steering Wheel Grip", Korean Patent, 10-2527164

## RESEARCH EXPERIENCE

**Cognitive Autonomy for Human CPS: Turning Novices into Experts**　　　　　　　　　**West Lafayette, US**
*Graduate Research Assistant, Purdue University*　　　　　　　　　　　　　　　　　　*Aug. 2023 – present*

**Study on the Model Development for the Driver Emotion Recognition**　　　　　　　　**Seoul, Korea**
*Graduate Research Assistant, Kookmin University*　　　　　　　　　　　　　　　　　　*Oct. 2022 – Jul. 2023*

**Artificial Intelligence Adaptation on the Steering Wheel System**　　　　　　　　　　**Seoul, Korea**
*Graduate Research Assistant, Kookmin University*　　　　　　　　　　　　　　　　　　*Sep. 2021 – Aug. 2022*

**Study on the Driver's Mental Model and Behavior in Take-over Situation**　　　　　　**Seoul, Korea**
*Graduate Research Assistant, Kookmin University*　　　　　　　　　　　　　　　　　　*May 2021 – May 2022*

**Study on the Vehicle Control Data/Physiological Data According to the Emotions**　　**Seoul, Korea**
*Graduate Research Assistant, Kookmin University*　　　　　　　　　　　　　　　　　　*Mar. 2020 – Nov. 2021*

**Study on the Driver Behavior Characteristics in Four Dangerous Situations**　　　　　**Seoul, Korea**
*Undergraduate Research Assistant, Kookmin University*　　　　　　　　　　　　　　　*Mar. 2020 – Nov. 2020*

**Undetectable Communications for Drone Applications**　　　　　　　　　　　　　　　**Irvine, United States**
*Undergraduate Research Assistant, University of California, Irvine*　　　　　　　　　*Dec. 2019 – Feb. 2020*

## AWARDS AND HONORS

- Graduation: 1st graduation out of 36 students, Graduate School of Automotive Engineering, Kookmin University, 2023.
- Competition of creating Intellectual Property Rights based on paper, 3rd award, Kookmin University, 2022.
- Poster competition of Brain Korea 21 program, 2nd out of 38 students, Kookmin University, 2022.
- Graduation: 1st graduation out of 166 students, College of Automotive Engineering, Kookmin University, 2021.
- Rubber-powered automotive manufacturing competition, 1st out of 6 teams, Kookmin University, 2015.

## INVITED TALKS

- "Characterizing the effects of system confidence presentation and exposure bias on drivers' behavior", NSF Site-Visit, (Purdue University, Nov. 2023)
- "Acquiring Driving Characteristic Data According to Driver Emotions and Proposing Emotion Groups in the Driving Context", BK 21Performance Sharing Contest (Kookmin University, Dec. 2022)

## ADDITIONAL INFORMATION

- ***Computer/Programming/Technical Skills***: MATLAB/SIMULINK, Python, SPSS, R, HTML, CSS, JavaScript, C, C++, LaTeX, SCANeR Studio, Carmaker, MS office (all advanced)
- ***Tools***: Driving Simulator, Eye Tracker, Physiological Acquisition (GSR, HR, Brain wave etc.)
- ***Committee Experience***: AUTO UI 2022 local chair (2022, Seoul, Korea)
- ***Teaching Assistant***: Mentoring/Tutoring – mathematics, physics (2018 – 2021, Kookmin University)
- ***Military Service***: Sergeant (2016 – 2017, Republic of Korea Army)
- ***Languages***: Korean (native fluency), English (full professional proficiency)