MYEONGKYU LEE

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RESEARCH INTERESTS

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

EDUCATION

Purdue University, West Lafayette, IN, US — *Aug. 2023 – Present*
Ph.D. Student in Industrial Engineering
Advisor: Dr. Brandon Pitts (*N*HanCE Laboratory)

KOOKMIN UNIVERSITY, SEOUL, KOREA
Master of Automobile and IT convergence (GPA: 4.0/4.0, graduated 1st out of 36) — *Mar. 2021 – Feb. 2023*
Advisor: Dr. Ji Hyun Yang (Human and Vehicle Automation laboratory)
SUNGKOK Scholarship (Merit based, Full tuition for all two years)

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

JOURNALS

[4] Human-Centric Validation Framework for Monitoring Systems Embedded in Partially Automated Vehicles
M. Lee, C. Ahn, and J. Yang
Transportation Research Part F: Traffic Psychology and Behaviour. *(under review).*

[3] Analysis of drivers' reactions to simulated jaywalking and application of AI classifiers to predict accidents
M. Lee, J. Choi, S. Kim, and J. Yang
International Journal of Automotive Technology. *(accepted in 2024).*

[2] Effect of emotion on galvanic skin response and vehicle control data during simulated driving
M. Lee, S. Lee, S. Hwang, S. Lim, and J. Yang
Transportation Research Part F: Traffic Psychology and Behaviour, 2023. [link]

[1] Simulator Study on the Response Time and Defensive Behavior of Drivers in a Cut-in Situation
M. Lee, S. Kim, J. Kim, and J. Yang
International Journal of Automotive Technology, 2022. [link]

PROCEEDINGS

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

[6] Development of the Driver's HOD (Hands On/Off Detection) Method using Conductor inside the Steering wheel
J. Park, **M. Lee**, J. Maeng, and J. Yang
Proceedings of 2023 Spring Conference of ESK, Anseong, Korea, June 17-18, 2021. [link]

[5] A Study for STPA-based Identification of Safety Requirements from the Perspective of Drivers in Take-Over Request Situation
J. Park, **M. Lee**, J. Maeng, C. Ahn, and J. Yang
3rd IEEE International Conference on Human-Machine Systems, Florida, US, November 17-19, 2022. [link]

[4] Acquiring Driving Characteristic Data According to Driver Emotions and to Proposing Emotion Groups in the Driving Context
M. Lee, S. Lee, S. Hwang, S. Lim, and J. Yang
3rd IEEE International Conference on Human-Machine Systems, Florida, US, November 17-19, 2022. [link]

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

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

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

PATENTS

[3] Method for Providing a Plurality of Driving Modes Based on Whether a Driver grips Steering Wheel or Not
J. Yang, S. Lim, **M. Lee**, H. Zhu, H. Pyeon, and Y. Bae, *Korean Patent, 10-2527164*

[2] Method for Controlling Steering Wheel Based on Whether a Driver grips Steering Wheel or Not
J. Yang, S. Lim, **M. Lee**, H. Zhu, H. Pyeon, and Y. Bae, *Korean Patent, 10-2620416*

[1] Device and Method for Detecting Driver's Steering Wheel Grip
J. Yang, **M. Lee**, J. Park, and J. Maeng, *Korean Patent, 10-2527171*

RESEARCH EXPERIENCE

Cognitive Autonomy for Human CPS: Turning Novices into Experts — **West Lafayette, IN, 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, CA, US**
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.

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)