



Predicting Driver Takeover Performance and Designing Alert Displays in Conditionally Automated Driving

Wednesday, January 20, 2021

12:00 – 1:00 PM

Zoom Meeting

<https://zoom.us/j/99137246286?pwd=NHB3dUliaTVIZFVXYWttTzNIekc5Zz09>

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Abstract: Automated vehicles have the potential to provide our society with safer, more comfortable and fuel-efficient driving. In conditionally automated vehicles, drivers serve as a fallback for the vehicle and need to take over control of the vehicle when the automation fails. This raises safety concerns because the automated driving puts drivers out-of-the-loop and increases the difficulty of takeovers when requested. To address this problem, I systematically investigate how drivers' emotions, cognitive load, vehicle capability, and driving environments influence their behavioral and physiological responses to takeover requests using human-subject experiments. Next, I develop machine learning models to predict drivers' takeover performance using their physiological data and environment data. Furthermore, I design and evaluate in-vehicle alert displays based on the framework of situational awareness to help drivers improve takeover performance in conditionally automated driving. I will conclude my talk with an overview of other on-going projects that lie at the intersection of human-automation interaction, computational modeling, and human-centered design.

Biography: Na Du is currently a Ph.D. candidate in the Industrial & Operations Engineering at the University of Michigan. Her research aims to improve human performance and safety by applying human factors and data science to the analysis, design, and evaluation of technologies. Her research interests include human factors, computational modeling of human behaviors, human-computer/automation interaction, and human-centered design. She is a recipient of several awards and fellowships, including HFE Women Rising Star Award, HFES Student Member with Honors Award, and Rackham Predoctoral Fellowship.