Risk and Trust in artificial intelligence technologies: A case study of Autonomous Vehicles

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Abstract	This study investigates how risk influences users' trust before and after interactions with technologies such as autonomous vehicles (AVs'). Also, the psychophysiological correlates of users' trust from users? eletrodermal activity responses. Eighteen (18) carefully selected participants embark on a hypothetical trip playing an autonomous vehicle driving game. In order to stay safe, throughout the drive experience under four risk conditions (very high risk, high risk, low risk and no risk) that are based on automotive safety and integrity levels (ASIL D, C, B, A), participants exhibit either high or low trust by evaluating the AVs' to be highly or less trustworthy and consequently relying on the Artificial intelligence or the joystick to control the vehicle. The result of the experiment shows that there is significant increase in users' trust and user's delegation of controls to AVs' as risk decreases and vice-versa. In addition, there was a significant difference between user's initial trust before and after interacting with AVs' under varying risk conditions. Finally, there was a significant correlation in users' psychophysiological responses (electrodermal activity) when exhibiting higher and lower trust levels towards AVs'. The implications of these results and future research opportunities are discussed.
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