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Trust in automation: An on-road study of trust in advanced driver assistance systems

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Appropriate user trust is critical in ensuring the acceptance and safe use of Advanced Driver Assistance Systems (ADAS). Despite the prevalence of ADAS on-road today, there is a limited understanding of how trust is affected by a user's first contact with the system on-road. Ten participants without prior experience were introduced to a level 2 system and completed an on-road test drive session. Utilizing a mixed-methods approach including the Trust in Automation (TiA) questionnaire, verbal trust scores and Facial Emotion Recognition (FER), trust in the system was measured at key milestones. TiA scores increased in a majority of participants, and a significant shift in the factor Reliability/Competence ($p=0.02$) was observed post-drive. According to FER scores, participants with a gain in TiA post-drive and those with a loss in TiA post-drive, more frequently displayed the emotions happy and angry, respectively. Results indicate that trust increases after a user's first experience with ADAS and further that FER may be predictive of user trust in automation.

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