

Head-Mounted Displays for HCI Validations While Driving

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Abstract : To provide reliable and valid findings when evaluating innovative in-car devices in the automotive context highly realistic driving environments are recommended. Nowadays, in-car devices are mostly evaluated due to driving simulator studies followed by real car driving experiments. Driving simulators are characterized by high internal validity, but weak regarding ecological validity. Real car driving experiments are ecologically valid, but difficult to standardize, more time-robbing and costly. One economizing suggestion is to implement more immersive driving environments when applying driving simulator studies. This paper presents research comparing non-immersive standard PC conditions with mobile and highly immersive Oculus Rift conditions while performing the Lane Change Task (LCT). Subjective data with twenty participants show advantages regarding presence and immersion experience when performing the LCT with the Oculus Rift, but affect adversely cognitive workload and simulator sickness, compared to non-immersive PC condition.

Keywords : immersion, oculus rift, presence, situation awareness

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