

3rd International Conference on Driver Distraction and Inattention

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Co-organisers: SAFER and UNSW

KEYNOTE SPEAKER ABSTRACT 2:

Title:

Visual guidance, anticipation, and distraction in car driving

Keynote Speaker:

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Abstract: To keep in lane and maintain sufficient safety margins drivers have to anticipate the future path and potential obstacles ahead. At low-radius curves on rural roads they appear to fixate on the future path 1-2 s ahead and to make, whenever possible, anticipatory look-ahead fixations further over the curves in the approach phase. Cognitive load however reduces these anticipatory glances. In straight road sections, and even more on wider roads, drivers have more tolerance in steering. This allows them to share time and visual attention between roadway and in-car tasks and targets. With practice drivers learn to use ambient (peripheral) vision to keep the car in lane, also when they glance away from road. However, driving experience does not facilitate the peripheral perception of slow or decelerating vehicles or other obstacles ahead. This discrepancy may easily deceive an experienced driver.

Learning to use ambient vision for lane keeping obviously supports time sharing between the roadway and in-car targets. Both on-road and simulator studies indeed show that novices fail more often than experienced drivers in returning the gaze back to road safely, within a reasonable time. (And so do older drivers and even more those with mild Alzheimer or frontal brain damage.) Very interestingly, however, recent simulator studies suggest that this experience effect in time sharing disappears when the target (a billboard) is outside the vehicle. Experienced drivers appear to do overlong glances as often as novices at targets located in the allocentric world coordination, in contrast to in-vehicle targets that are located in the egocentric car coordination which does not support lane keeping similarly. This condition again presumably deceives the experienced drivers: they are at risk of missing hazards in the peripheral vision.

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