

## Capturing attention and enabling collaboration: In-cabin monitoring key in the next wave of ADAS technologies

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Distracted, drowsy and impaired driving remain significant contributors to death and serious injury on our roads and are long standing issues in road safety strategies around the world. We have known for several decades that capturing driver attention is the best way to measure driver state. Yet only recently, with the evolution and transformation of eye tracking technology into driver monitoring systems, has measuring driver state in real-time become a reality. These technological developments, coupled with regulatory and NCAP policies emerging from Europe, with the US poised to follow, have been catalysts for the explosion in the demand for driver monitoring systems within the automotive industry. This is particularly the case for in-vehicle camera-based systems that can be used to assess well established driver states including distraction and drowsiness, whilst also capturing emerging driver states, such as “engagement” as vehicles with increasing levels of driver assistance appear on our roads.

This presentation will explore the scientific basis of camera-based systems and their advantage over early attention assist-based systems. The discussion will address some of the key research and issues driving the recent and on-going advances in in-cabin monitoring. Several key requirements exist in order to realise the significant safety benefits that this technology can offer. One is leveraging a deep and sophisticated understanding of the complexity of human behaviour. Second is ensuring that the technology is robust enough to perform across a spectrum of individual differences. Making it all work in a car, and not a laboratory, is a feat in itself and presents new opportunities for future research. The presentation will address how these key requirements are being met to ensure that in-cabin monitoring approaches deliver the projected safety benefits that we all seek, making progress to our end goal of zero transport fatalities.