

# Smart phones spot tired drivers

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Credit: Peter Griffin/Public Domain

An electronic accelerometer of the kind found in most smart phones that let the device determine its orientation and respond to movement, could also be used to save lives on our roads, according to research to be published in the International Journal of Vehicle Safety.

Samuel Lawoyin, Ding-Yu Fei and Ou Bai of Virginia Commonwealth University, in Richmond, Virginia, USA and Xin Liu of Harbin Institute of Technology, Harbin, China, have shown how an [accelerometer](#) can

accurately detect when a driver is becoming drowsy, 8 times out of ten. Used in combination with other detection methods, the system could be used to significantly reduce the number of accidents caused by [driver fatigue](#) among commercial and long-distance drivers and others.

The team reports that each year there are thousands of avoidable accidents that take place on our roads because of driver fatigue, with an estimated 76000 injuries and 1200 deaths in the USA alone. Some observers suggest that driver drowsiness on long journeys is just as hazardous as alcohol consumption. Technology that can monitor deviations in the movement of the vehicle's [steering wheel](#) when the driver begins to nod off is prohibitively expensive and difficult to implement. Likewise, monitoring systems that measure either the electrical activity in the driver's heart or brain have their own problems while eyelid monitoring is also difficult to implement in a real-world driving scenario.

However, microelectronic accelerometers are a widely available device found in [smart phones](#) and other gadgets that can detect movement and so the researchers suggest they might be used to construct a simple, wearable device for a driving hat, headband, or attachment for spectacles or sunglasses that would trigger an alarm when the driver's head movements indicate that they are becoming drowsy. It might even be possible to exploit the accelerometer in the driver's phone for the same application. In the current tests, however, the team has used an accelerometer unobtrusively attached steering wheel itself to provide a simple means to detecting the kind of unusual steering adjustments that are commonly seen being made by drowsy [drivers](#) as they slip in and out of full wakefulness.

"Because the number of highway fatalities due to drowsy driving continues to show consistently high annual figures year after year, the necessity for a practical and inexpensive means of drowsy driving

monitoring is becoming especially apparent," the team concludes." This study shows that the implementation of an accelerometer-based method for [drowsy driving](#) detection will be effective and yield high accuracy classifications of a driver's drowsy state which has the potential to save lives."

**More information:** "Evaluating the efficacy of an accelerometer-based method for drowsy driving detection." *Int. J. of Vehicle Safety*, 2015 Vol.8, No.2, pp.165 - 179 [DOI: 10.1504/IJVS.2015.068691](https://doi.org/10.1504/IJVS.2015.068691)

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