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CONTENT BY UNIVERSITY OF TECHNOLOGY SYDNEY

How to alert drivers to fatigue

by Melinda Ham

FRANK BLACK IS A PROFESSIONAL TRUCK DRIVER, HAVING CLOCKED UP NEARLY THREE DECADES TRAVELLING THE BREADTH OF AUSTRALIA. BUT EVERY TIME HE GETS INTO HIS CAB, BLACK THINKS ABOUT DRIVER FATIGUE; OVER THE YEARS HE HAS LOST SEVERAL MATES IN FATAL, AVOIDABLE CRASHES.

Fatigue in professional and recreational drivers leads to twice as many crashes as drink-driving. It's also a deadly issue for train, plane and military operators.

Around the world, researchers are working with car makers to develop in-built video cameras, seat and steering-wheel sensors and polycarbonate glasses, to alert drivers to fatigue.

Associate Professor Sara Lal, of the School of Life Sciences at the University of Technology Sydney (UTS), is an expert in driver fatigue, and she and her team of industry-linked collaborators are close to producing a drowsiness-

detecting system. They don't rely on one detector but combine several on-body and in-vehicle devices and use complex algorithms for higher prediction success.

"With our hybrid system, we are hoping for accurate driver fatigue predictions of 90 per cent or more, which would be really ideal, without alerting the driver falsely," Dr Lal says.

"Our system will also focus on their physiological signs, using devices such as a wristband that can monitor cardiac action, video cameras and seat and steering-wheel sensors."

Awake to the signs

Many of the devices researched or already available concentrate on how the car is behaving (whether it is veering over the dividing line or decelerating) and the driver's physical signs – whether they are closing their eyes, or nodding their head, rather than more direct and predictable indicators such as muscle activity and heart rate.

"We want to alert drivers about fatigue before it happens," says Dr Lal. "If you're nodding off, it's already too late."

Over several years, Dr Lal has collaborated with Compumedics Ltd,

which develops and commercialises IT-based medical products and with Professor Thomas Penzel from Charité University Hospital in Berlin.

"What we are doing now is embedding intelligent software into devices and keeping the expense of the device low, so they are affordable," says Dr Eugene Zilberg from Compumedics.

Already the combined UTS and Compumedics team has conducted multiple driver fatigue-related projects, and is working on the final stages to validate the algorithms before their hybrid detector is marketed for production.

Dr Lal says she will be thrilled if these hybrid devices become compulsory in all vehicles, as airbags are, and not an optional extra.

Such technology also has the potential to measure other health parameters, such as heart attacks, which might help prevent tragedies such as the 2003 Waterfall train crash in NSW. **U**

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