

Publication: The Times Of India Chennai;Date: Jan 16, 2014;Section: Times City;Page: 4



IIT-M's WAKE-UP CALL FOR TIRED DRIVERS

Team Designs Tool To Detect Fatigue, Set Off Alarm In Vehicle

Pushpa Narayan | TNN

The next lot of cars that rolls off assembly lines could have an additional safety feature — a mechanism to alert sleepy drivers. IIT-M scientists have designed a tool that can detect driver fatigue and set off an alarm. The alarm could be a flashing light or siren on the dashboard or even an order to shut down the engine and immobilise the car.

Researchers from the Department of Engineering Design at Indian Institute of Technology Madras (IIT-M) have developed a tool to evaluate driver performance based on multiple parameters such as muscle activity, brain activity and body pressure distribution.

“Our tools identify these parameters. When the muscles of a fatigued driver tire, the body redistributes the work to ease the tired muscles. These changes are picked up by our tools to alert the driver. After testing the tool in the lab and on the road, we are confident of its performance,” said principal investigator and IIT-M professor Venkatesh Balasubramanian. The sensors could be embedded in the seat, the steering wheel or other points of contact that the driver has with the vehicle. A series of studies conducted on various modes of transport has been published in various scientific journals.

Driver fatigue is usually brought on by monotony on the highway, sleep deprivation, medication or alcohol. It is estimated that driver fatigue kills 1,500 people and leaves 71,000 injured on US roads every year. In Australia, 20% of fatal road accidents and 30% of severe crashes involve driver fatigue.

India's National Crime Records Bureau does not record accidents caused by tired drivers but senior police officers say that a number of accidents are caused by people dropping off behind the wheel. “Many drivers don't realise they are sleepy. Sometimes they cause major accidents within seconds of dozing off,” said a police officer.

Drivers think rolling down the windows, listening to music or drinking coffee or tea will help them overcome sleepiness. “This never works. There is no substitute for sleep. We need a sustained awareness campaign and plenty of rest areas on highways to avoid accidents,” said sleep expert Dr N Ramakrishnan of Nithra Institute of Sleep Sciences. On an average, he sees 10 drowsy drivers who have had an accident or a near miss every month.

Medication that induces sleep is another reason for accidents. “Some drivers take prescription drugs but are unaware of the side effects. Dozing for 10 seconds behind the wheel is enough to have an accident that causes grievous injuries,” he said.

IIT-M has filed patents for its new tools and is planning to commercialise the technology. “The cost to the customer will depend on various factors such as scale of manufacturing, positioning and market pricing. Mass production will reduce the cost,” said Balasubramanian.

Graphic: Varghese Kallada

STAYING AWAKE

Fatigue or tiredness impairs performance and increases reaction time while driving. It occurs due to lack of sleep and monotony on the road. A fatigued driver has higher chances of causing fatal accidents. IIT-M has designed a tool to warn drivers of fatigue

SETTING OFF AN ALARM

- ▶ Tool measures the changes in muscle and brain activity
- ▶ When this happens, there are changes in body pressure
- ▶ When a person is fatigued, the muscles become weak
- ▶ Changes captured by sensors on seat, steering wheel
- ▶ The brain attempts to ease tired muscles by shifting work to other muscles
- ▶ Once the machine identifies fatigue, it sets off an alarm to alert the driver

DRIVER CHECKLIST

Precautions to take before setting off on a road trip



Sleep well before you get behind the wheel



Eat healthy. Skipping meals or eating at irregular times can make you tired



Measuring changes in brain activity



Sensing fatigued muscles

The automobile manufacturer can decide how the alarm should be designed. Options include flashing lights, sirens or shutting down engine

“We have tested the tool in the lab and on the road. We are confident of its performance

V Balasubramanian
PROFESSOR, IIT-M

REMEMBER, THERE IS NO SUBSTITUTE FOR SLEEP. SMOKING, TURNING UP THE RADIO, DRINKING COFFEE OR OPENING THE WINDOW WILL NOT KEEP YOU AWAKE



To beat the monotony on highways, take short

naps of 15 to 45 minutes every five or six hours

Some medicines induce sleep so check the side-effects of your medication before you hit the road



Stop if you are yawning frequently, eyes get heavy or if your vision blurs

