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Available Technologies

Determining if a Person Operating Equipment is Experiencing an Elevated Cognitive Load

SUMMARY

Detecting and measuring driver distraction is a major challenge. Onboard technologies for identifying and measuring driver impairment are notoriously difficult and often require complicated in-vehicle equipment. Although standard behavioral countermeasures including laws, enforcement, and sanctions are having some success, the practice of texting while driving continues to be a major cause of injury, death, and property damage on our nation's roads and highways. Researchers at Pacific Northwest National Laboratory invented a novel and accurate means of measuring driver distraction using an algorithm that enables commercial cell phones to autonomously recognize when a texter is driving. The results of this demonstration project can be extended to other forms of cognitive impairment.

It is well established that when people drive and text their reaction times and driving ability are impaired. The PNNL scientists discovered that there is an associated and unique change in texting patterns; keystrokes become erratic as we constantly shift focus between driving and texting. The relevant changes in texting are quantifiable, can be measured on-board the cell phone, are very reliable—more than 99 percent accurate, and are capable of distinguishing drivers from passengers. This approach could allow software developers to create a cell phone app that could provide feedback to drivers to alert them of their impaired reaction times—much like speedometers are used to provide operational feedback to vehicle drivers.

This invention can be extended to other types of interaction with the phone. The data being measured never needs to leave the person's phone, is language independent, and does not require explicit knowledge of any communication. Potential markets are parents for their children, employers wishing to enforce company policies or mitigate liability, and insurance companies for their pay-for-use programs.

ADVANTAGES

- * Vehicle independent; no additional phone or vehicle hardware required
- * Will not interfere with passenger's use of a cell phone
- * No need to send data from phone; language and text message independent
- * Applicable for alternative device input – swipe, speech, etc.
- * Useful in detecting other forms of impairment – alcohol, drugs, fatigue, change in medical condition, etc.



Technology Portfolio(s)

- » Electronics
- » Biological Sensors
- » Physical Sensors
- » Customizable Management Tools
- » Information Analytics and Visualization

Potential Industry Applications

- » Aerospace & Defense
- » Automotive & Transportation
- » Communications & Media
- » Computers & Electronics
- » Consumer Products
- » Education
- » Healthcare, Pharma, Biotech & Medical
- » Manufacturing & Warehousing
- » Security

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