Alertness Monitoring: A Perceptual Chronometer Device and Method for Measuring Fitness-For-Duty (FFD)

Published date: Oct. 19, 2010

Technology description

Market

Medical residents, pilots, soldiers, truck drivers and others frequently work long shifts which lead to sleep-deprivation.Excessive sleep deprivation or other mental incapacitation, including alcohol use, can lead to poor decision making which in turn may result in avoidable accidents.For commercial motor carriers with a 2% profit margin, a $25,000 accident can cost a company $1.2 million in profits (USDOT).Almost 5,000 fatalities and 85,000 injuries were reported in 2003 for accidents involving large trucks, while more than 17,000 alcohol-related vehicle fatalities occurred in 2003 nationwide.

Competitors and Current Problems

Currently, the only available methods for assessing alertness, or fitness for duty (FFD), measure brain activity using electroencephalography or ocular measures that require using eye trackers.These methods have limited usefulness because they require expensive equipment, large time windows, and are generally not well received by subjects.Given the cumbersome nature of the available techniques for measuring fitness for duty, it would be desirable to have a rapid technique for measuring fatigue and other types of physical or mental impairment that gives a rapid assessment, with no need for highly specialized and expensive equipment.

The Technology

Researchers and The University of Texas Health Science Center atHoustonhave developed a novel device and method to measure the ability to perceive a letter or number sequence.The device is portable, comprising a simple LED display and a keypad for subject input. The reported sequence is compared to the displayed sequence to detect changes in the speed of human visual perception. This is a highly informative measurement for determining operator changes due to fatigue, excessive stress, alcohol or drugs.

Advantages

Some of the advantages of the present device and method include speed of measurement, portability, cost to manufacture, and acceptability.The threshold of the device can be tuned to the specific application, to a specific age group, or can be set to an average baseline.

Institution

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Inventors

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