Real Time Implementation for Monitoring Drowsiness Condition of a Train Driver using Brain Wave Sensor

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Abstract

Driver fatigue and lack of sleep of drivers especially those who drive for a longer period of time as train accidents are a longer standing problem. It has been observed that each year numerous train accidents and fatalities may occur around the world due to driver falling asleep while driving the train. There are various traditional methods that may facilitate to detect drowsiness state of the driver to warn in such a manner, so that such accidents may be prevented to large extent. In this implementation, a system for determining drowsiness state of a driver to avoid an accident is disclosed. In one aspect, the system comprises a brainwave sensor, a microcontroller, and an alarm unit. The sensor which is the Brain Computer Interface (BCI) may be attached to one or more touch points for sensing a brainwave emitted by neurons in a brain of the driver. The microcontroller, coupled with the sensor, configured to analyze the mind in order to determine a category of the brainwaves. The brainwave may be categorized into the category based upon a predefined frequency range associated with the brainwave of types Delta, Theta, Alpha and Beta. The in-built Bluetooth will be paired up with the microcontroller to start messaging regarding the status of the driver through the GSM modem,
and soon after it will alarm in the motor or in nearby station if required.

References


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Index Terms

Computer Science  Signal Processing

Keywords

Brain wave sensor (BCI), Railway derailment accident, EEG signal processing.