A Novel Approach for the Detection of Drunken Driving using the Power Spectral Density Analysis of EEG

Abstract

In today’s scenario, more and more people are required to travel back and forth to various places. With the increasing vehicular population and their movements on the roads, accidents are also steadily increasing. It has become a nightmare for the authorities to prevent /reduce such fatal accidents on the roads. But the authorities’ efforts are in vain. It is shocking to know
the study results that around 50% of the road accidents are owing to drunken driving all over the world[1][2]. Any mechanism or device to reduce such deaths will be of great help. Drunken driving and its subsequent catastrophe can be avoided by monitoring the EEG of the driver. The power of the EEG signal in frontal region decreases with the increase in the amount of alcohol intake, and the power of the EEG signal in central, occipital region increases. Therefore, power spectral density can be used as a parameter to differentiate EEG of alcoholic from non-alcoholic, thereby reducing drunken driving. Results are presented to support this approach.

Reference


**Index Terms**

Computer Science  
Image Processing

**Key words**

Electroencephalography  
alpha wave  
theta wave

power spectral density