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Controlling Automobiles During Unconsciousness of the Driver using Brainwaves

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Abstract

Introduction: Controlling Automobiles during unconsciousness of the driver using Brainwaves. Brainwave based accident avoidance system is an effective way to prevent accident caused due to drowsy driving. Every year number of road mishaps are caused by drowsy driving. The proposed idea brainwave based accident avoidance system is to avoid this kind of accident using Electroencephalography (EEG) of human brain and speed control in automobiles. Human brain consists of millions of interconnected neurons. The patterns of interaction between these neurons are represented as thoughts and emotional states. According to the human thoughts, this pattern will be changing which in turn produce different electrical waves. A muscle contraction will also generate a unique electrical signal. All these electrical waves will be sensed by the brain wave sensor and it will convert the data into packets and transmit through Bluetooth medium. Level analyzer unit (LAU) will receive the brainwave raw data and it will extract and process the signal using MATLAB platform. Then the control commands will be transmitted to the motor to process. With this entire system, we can control / stop the vehicle according to human thoughts. Electroencephalography (EEG) is the fundamental idea utilized as a part of this framework. Neurosky mind wave sensor is utilized as primitive segment to examine the Brainwave signals. In this way by controlling vehicles it can spare numerous mishaps and can spare numerous lives. Among these bands, theta and alpha are the signals which represent drowsiness to relaxed sleep. Methods: In a brain controlled vehicle, controller is based on Brain Computer Interface (BCI). BCIs are systems that can bypass conventional channels of communication to provide direct communication and control between the human brain and physical devices by translating different patterns of brain activity into commands in real time. With these commands a vehicle can be controlled. The intention of this work is to design and develop a system that can assist the person during their unhealthy condition to avoid the accident on the road. Results: Brainwave based accident avoidance system for unhealthy condition of the drivers which predict the signals and system in engaging with processing of signals to alert the drivers unconscious situation. The biggest challenge about the system is that to determine the signal from the headset. Proper identification is needed for the signals so that wrong signal does not trigger the routine even when driver is not unconscious. Every person is different and every person has different thoughts and emotions so they might have slightly different brainwave signals. So before adapting this system, the interface should be configured according to the brain activity of the driver. Discussion: The research and development of brainwave controlled vehicle during unconsciousness of the driver has received a great deal of attention because they can help to avoid the accident on the road. Improving the BCI system performance to make brainwave controlled vehicles usable in real-world situations. Keywords: Brain Computer Interface (BCI), Brain Wave Sensor, EEG, Bluetooth