World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:14, No:12, 2020

Electroencephalogram Signals Controlling a Parallax Boe-Bot Robot

Authors : Nema M. Salem, Hanan A. Altukhaifi, Amal Mukhtar, Reemaz K. Hetaimish

Abstract : Recently, BCI field of research has gained a lot of interest. Apart from motor neuroprosthetics, many studies showed the possibility of controlling a virtual environment of a videogame using the acquired electroencephalogram signals (EEG) from the gamer. In addition, another study had successfully moved a farm tractor using the human's EEG signals. This article utilizes the use of EEG signals, as a source of technology, in controlling a Parallax Boe-Bot robot. The commercial Emotive Epoc headset has been used in acquiring the EEG signals from rested subjects. Because the human's visual cortex can successfully differentiate between different colors, the red and green colors are used as visual stimuli for generating EEG signals using the Epoc. Arduino and Labview are used to translate the virtually pressed keys into instructions controlling the motion and rotation of the robot. Optimistic results have been achieved except for minor delay and accuracy in the robot's response.

Keywords : BCI, Emotiv Epoc headset, EEG, Labview, Arduino applications, robot
Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development
Conference Location : Chicago, United States
Conference Dates : December 12-13, 2020