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K.L.E. Society's
B. V. Bhoomaraddi College of Engineering & Technology, Hubli-31
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Project Report on

Brain Computer Interface (BCI) : An Assistive Tool for the Paralyzed with an Android Application.

Under the Guidance of

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Abstract

In this project,we propose a wireless electroencephalogram (EEG) based brain-computer interface (BCI) to control a wheelchair for paralyzed patients. Paralytic patients cannot move freely and use wheelchairs in their daily life, especially people getting motor neuron disease (MND) can only use their eyes and brain to access their willpower. Therefore, real-time EEG and eye blinking signal can help these patients e ectively. To help di erently abled people, we create a tool for home automation, wheelchair control and an android application for the same.

To demonstrate the proposed idea a NeuroSky MindWave sensor is used. It assists to capture the data from brain. MindWave sensor gives parameters such as alpha, beta, delta, theta, attention, meditation and eye blink values. Beta waves generated are ltered in the Fourier domain using FIR lters. The ltered Fourier coe cients are used as features to distin-guish di erent tasks using Clustering. We demonstrate proposed tools using MindWave on di erent set of people. The attention level, eye blink and raw EEG data are used to control the wheelchair. To achieve the movement of the wheelchair, a CAD model is built to control the joystick of the wheelchair by an external mechanism comprising of an assembly of servo motors and hence the front, back, left and right movements are accomplished depending on the thinking of the person.

We can also use a brain-smartphone interface to control a wheelchair through a myndplay headset which will communicate with the android appli-cation designed by the user. This application will have arrow key for front, back, left right and di erent functions necessary for the disabled in their day to day life.