

This paper presents a Brain-Computer Interface (BCI) system that enables people to drive a robotic wheelchair without performing any muscular movement, but solely based in the mental activity. Through specific mental tasks, subjects can control their electroencephalographic (EEG) signals, which are analyzed and processed by the BCI system in order to generate navigation commands. The control paradigm relies on only two mental tasks but it allows subjects to choose among four different commands; this way, the classification error is kept to its minimum, what makes the system safer. An experiment was carried out in which a subject participated in a training session, a virtual navigation task, and finally a navigation session with the real wheelchair.