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Paper Title:	Development of a Tongue Motor Imagery Method for EEG-based Brain-Computer Interface in Wheelchair Control
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#### Abstract

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Brain-computer interface (BCI) plays an essential role in assistive technology. Brain-controlled wheelchairs based on electroencephalography (EEG) signals are prevalent for motor enhancement in paralyzed patients. The work proposes a motor imagery (MI) paradigm involving four imagined tongue movements to elicit a motor cortex response. The EPOC X neuroheadset with 14 electrodes was used to record EEG signals. Ten healthy volunteers participated in the experiment to explore brain responses and verify the proposed feature extraction and classification algorithm. The beta ERD feature with artificial neural network (ANN) classifier and beta ERD feature with linear discriminant analysis (LDA) for all command classifications achieved a maximum mean average accuracy of 73.3%. The proposed tongue motor imagery can be used for EEG-based BCI for wheelchair control. We will further implement and verify the proposed tongue motor imagery for a practical BCI-controlled wheelchair.

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