Electrocorticography based motor imagery movements classification using long short–term memory (LSTM) based on deep learning approach

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ABSTRACT

Brain–computer interface (BCI) is an important alternative for disabled people that enables the innovative communication pathway among individual thoughts and different assistive appliances. In order to make an efficient BCI system, different physiological signals from the brain have been utilized for instances, steady-state visual evoked potential, motor imagery, P300, movement-related potential and error-related potential. Among these physiological signals, motor imagery is widely used in almost all BCI applications. In this paper, Electrocorticography (ECoG) based motor imagery signal has been classified using long short-term memory (LSTM). ECoG based motor imagery data has been taken from BCI competition III, dataset I. The proposed LSTM approach has achieved the classification accuracy of 99.64%, which is the utmost accuracy in comparison with other state-of-art methods that have employed the same data set.

KEYWORDS

Electrocorticography (ECoG); Motor imagery (MI); Long short-term memory (LSTM); Brain computer interfaces (BCI); Deep learning

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