

***Abstract: Performance Predictor uUsing the Neuro-Physiological Factors of an ERD-B based Brain Computer Interface***

Minkyu. Ahn, Hohyun. Cho, Sangtae. Ahn and, Sung. Chan. Jun\*  
*School of Information and Communications, Gwangju Institute of Science and  
Technology,  
Gwangju, South Korea 500712  
scjun@gist.ac.kr*

**Abstract**

The bBrain computer interface (BCI) has been gaining more attention since for its it is broadly applicationsble in a variety of fields such as rehabilitation, education, entertainment, smart IT technologies, and so on. One of reasons that why the most widely used ERD (event- related de-synchronization (ERD) based BCI is hard to move forward to the public market is the BCI illiteracy of a significant number of users. Thus, it is of great use to predict BCI performance with a simple test prior to conducting time-consuming BCI experiments. In this work, we seek new neurophysiological factors which that enable us to predict the user's performance of ERD- based BCI. With 52 motor imagery EEG datasets, it iswe found that theta and gamma powers are negatively correlated with offline accuracy, while alpha and beta powers are positively correlated with itoffline accuracy. Using such findings, we propose thea new factor (P-factor) to predict a user's BCI performance. It is shown tTheat P-factor estimation from a one-minute long resting state could predicted BCI performance reasonably well, presenting a 0.709 of correlation value with offline accuracy.

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