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姓名：林彥姩

題目：Multiple Signal Classification using a Random
Linear-Signal-Combining and De-noising Method

參考文獻：

1. Kevric, J. and Subasi, A. (2017). Comparison of signal decomposition methods in classification of EEG signals for motor-imagery BCI system. *Biomedical Signal Processing and Control*, 31: 398-406.
2. Aminghafari, M., Cheze, N., and Poggi, J. M. (2006). Multivariate denoising using wavelets and principal component analysis. *Computational Statistics & Data Analysis*, 50(9): 2381-2398.

摘要：

This study proposes a method to improve the accuracy of multiple signal classification through a random linear-signal-combining and de-noising process. The implementation of multiple signal classifications is important in the fields of medicine, industry, and sports science. The experts in each field usually suggest some useful signals for classification based on their domain knowledge. The random linear-signal-combining step is employed to create the opportunities for exploring more data features. The de-noising step is capable of improving classification accuracy if the collected data are contaminated. The analysis results in our simulation study and in the application of multi-channel EEG data indicate that the proposed method has satisfactory classification performances.

Keywords: de-noising, multiple signals, principal component analysis

指導教授簽名：甘士峰