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Can invariant translation wavelet be improved with ICA and filters to denoise EEG signals?

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Electroencephalogram (EEG) serves as an extremely valuable tool for clinicians and researchers to study the activity of the brain in a non-invasive manner. It has long been used for the diagnosis of brain damage, for categorizing sleep stages and various central nervous system disorders like seizures and epilepsy. The EEG source signals are mixed however with other signals such as electrooculogram (EOG) and electromyogram (EMG) called artifacts, which increase the difficulty in analyzing the pure EEG and obtaining the clinical information. Since the 1980's, independent component analysis has been a technique used in removing these artifacts, however of late wavelet transform is considered an effective technique. In this paper I utilize one of the newer wavelet transform approaches: Translation invariant. Here I answer the question if its performance can be improved with the merger of ICA and filters. Comparison shows that the modification performs more accurately.

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