We apply independent component analysis as well as source imaging to surface electromyographic (sEMG) data collected from a whole arm electrode array. Three theoretical benefits over classical bipolar recordings:

- **Source signals are separated to a greater degree**
- **i.e. less cross-talk**
- **Signals are cleaner due to source separating effects of the spatial filter**
- **No expert knowledge required for electrode placement**

These could potentially combine to increase recording quality for deep muscles especially without invasive needle electrodes.

Electroencephalographic (EEG) research employs many sophisticated processing and analysis techniques such as:

- Independent component analysis (ICA)
- High-resolution source imaging
- Connectivity analysis

EEG source imaging also has the following benefits:

- **Non-invasive**
- **No expert knowledge for electrode placement**

EMG research typically uses a small set of methods. Ordinarily, surface EMG recording uses a bipolar electrode pair placed above each muscle of interest, requiring domain knowledge for adequate placement. The resulting signal suffers, particularly when placement is suboptimal. In an attempt to increase the quality of non-invasive, combined EEG/EMG analysis, we do the following:

- **Collect EMG using a whole-arm electrode array**
- **Apply ICA decomposition**
- **Locate independent component (IC) EMG sources to determine source origins**

Electromyographic (EMG) research employs a small set of methods. Surface EMG recording uses bipolar electrode pair derivation, generating a signal that is a linear combination of the muscle potentials. The model of net surface dipoles are not incompatible for comparison. These model sources are separated to a greater degree, i.e. less cross-talk.

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