Accepted Manuscript

Title: Data-driven re-referencing of intracranial EEG based on independent component analysis (ICA)

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PII: S0165-0270(18)30199-7
DOI: https://doi.org/10.1016/j.jneumeth.2018.06.021
Reference: NSM 8043

To appear in: *Journal of Neuroscience Methods*

Received date: 17-1-2018
Revised date: 7-6-2018
Accepted date: 25-6-2018

Please cite this article as: Michelmann S, Treder MS, Griffiths B, Kerrén C, Roux F, Wimber M, Rollings D, Sawlani V, Chelvarajah R, Gollwitzer S, Kreiselmeyer G, Hamer H, Bowman H, Staresina B, Hanslmayr S, Data-driven re-referencing of intracranial EEG based on independent component analysis (ICA), *Journal of Neuroscience Methods* (2018), https://doi.org/10.1016/j.jneumeth.2018.06.021

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ACCEPTED MANUSCRIPT

Data-driven re-referencing of intracranial EEG based on independent component analysis (ICA)

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Highlights

- Independent Component Analysis (ICA) can be used to re-reference stereotactic EEG
- In simulations, ICA outperforms bipolar reference in sensitivity and specificity
- ICA is better suited to perform the very task that bipolar referencing pursues

Abstract

-Background

Intracranial recordings from patients implanted with depth electrodes are a valuable source of information in neuroscience. They allow for the unique opportunity to record brain activity with high spatial and temporal resolution. A common pre-processing choice in stereotactic EEG (S-EEG) is to re-reference the data with a bipolar montage. In this, each channel is subtracted from its neighbor, to reduce commonalities between channels and isolate activity that is spatially confined.

-New Method

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