

Review of: "Artifact Subspace Reconstruction (ASR) for electroencephalography artifact removal must be optimized for each unique dataset"

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The manuscript reports on the importance of ASR algorithm optimization in EEG data recorded following cognitive tasks. In general, the manuscript is easy to follow and provides useful information for interested readers. There are some minor comments and suggestions as follows:

Introduction:

- The author developed the problem very well. However, it might be useful for the readers to briefly explain some basic definitions like SD. Moreover, it is worth noting that there is a big difference between ASR and ICA. ICA is considered a stationary method in which only one spatial filter is applied throughout the data; whereas ASR is good at removing non-stationary, non-stereotyped, and large-scale noise (herein, preprocessing and filtering criteria that a user selects are important). Therefore, combining ASR and ICA is advantageous and increases SNR. One final note for the introduction is to i) explain the difference between artifact correction and rejection within the context of the algorithm and ii) the importance of removing bad channels before preprocessing.
- The last paragraph: "the lower" has been repeated two times.

Method:

- I did not get the point of downsampling the data (the author reported that they did so to minimize model order; so, is there a suggested cut-off for the sampling rate?)
- Was there any baseline correction? I assume that since the baseline is long, and the high-pass filter was applied, the author did not perform the baseline correction.
- Can you please report the percentage of the removed channels and their locations?
- So, noise correction was not active and the author used the artifact rejection option?
- I got confused about removing the line noise; the applied filter, was it at 60 or 50 Hz?
- Can the author report the percentage of the removed ICs?
- I did not find information on the criteria for the "hand rejection" section.

Results:

- For the tables, it might be a good idea to report the same number of significant figures for all values.

Discussion:

- It is true that the ASR algorithm does not follow the “one size fits all” condition. So, I suggest the author elaborate more on the limitation of this algorithm since the author mentioned the effectiveness of this algorithm in different tasks and this is the title of the paper (and even its application in EEG datasets recorded from specific populations and not necessarily healthy individuals).