Reviewer’s report

Title: Machine Learning Analysis of Motor Evoked Potential Time Series to Predict Disability Progression in Multiple Sclerosis

Version: 2 Date: 08 Nov 2019

Reviewer: Manuel Vázquez-Marrufo

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NURL-D-19-00203R2
Machine Learning Analysis of Motor Evoked Potential Time Series to Predict Disability Progression in Multiple Sclerosis

After reading the answers from the authors, I still have some concerns about this manuscript:

1. If I have understood well, the main goal of the present study is to improve the possibility of prognostic value using EPTS (specifically MEP) and machine learning. Considering that authors refer to "time series" I expect some intervals of points and not only latency or peak to peak measures. Indeed, in the abstract section authors stated "We perform a machine learning analysis of motor EP that uses the whole time series..". Checking the figure 1 it is not marked or defined intervals that are included in the measurement. I would suggest a more clear definition of what is analyzed in this study and included as data for machine learning algorithms.

2. About noise, this point is highly relevant. The main concern is if authors have used discrete points of measurement (latency or amplitude of peaks) or collection of data in a specific interval. In the second case, noise could be determinant for the results of the application of any algorithm. Signal-noise ratio is one measurement that can help to value the cleanness of the MEPs. Another possibility is to present a grand average of MEP from all subjects just to see the baseline and the MEP wave compared to that. In any case, specific details of the recording are also missed, for instance, system employed for the study, digitizing rate, time interval used, and so on.

3. Lastly, I still found the discussion and conclusions far away to be directly applied in the neurology field. As an example, figures that probably are representing diverse results of the algorithms, they do not help in my opinion to understand the potential application in the MS prognostics. My recommendation to the authors is to make a special effort to explain in a more clear way the benefits of their methods for the neurologist.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

No

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.
No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review

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Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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