Reviewer’s report

Title: Predicting life expectancy with a long short-term memory recurrent neural network using electronic medical records

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Reviewer: Mohammad Reza Daliri

Reviewer's report:

The authors have proposed a method for Predicting life expectancy using a supervised machine learning approach. As mentioned by the authors "Life expectancy is one of the most important factors in determining the right moment to start Advance Care Planning" and "Physicians however tend to overestimate life-expectancy" but in my opinion the authors results is not enough and much better than the Physicians (based on the results reported in the tables in the results section).

In addition the logic behind using different part of the model is not clear. There are many approaches in Machine learning which can be used for prediction and why the authors have used long short-term memory recurrent neural network? Maybe other statistical learning approaches (like different Bayesian approaches) might work better in this context.

The evaluation has been done on a small sample of the data (1234) which might not be easily generalized. In addition the way of evaluation and selecting the test data might not be a good one. The three-way of split the data is proper (train-validation-test) but the this should be repeated many times over the whole data. It seems that the authors have selected the 10% of the test data once (the 10% most recent patients from health care facilities). This should be shuffled over the whole database similar to what has been done for the train and validation set. (the average and standard deviation of the results then can be reported)

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.

Yes
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 am able to assess the statistics

Quality of written English
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Acceptable

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