Review of: "Prediction and Analysis of Structural Brain Health Indicators Using Deep Learning Models with Functional Brain Images as Input"

Yanlu Wang[1]

1 Karolinska Institute

Potential competing interests: No potential competing interests to declare.

The authors using a deep learning CNN approach to classifly resting-state fMRI data to correlate with morphological (GM) health indices in relation to aging.

Generally speaking I think the article is well-written with a clear purpose and methods are sufficiently details from a technical perspective to allow reproducible results.

This is more subjective, but I do have a couple of comments regarding results and discussion:

Over-fitting due to the application of a single dataset (from a single scanner type) aside, it seems to be the model is slightly underfitting. tail distribution performance is should be weighted more in the training process since for this purpose, it is clearly the more interesting datapoints when aging is concerned.

Would be nice to see summary statsitics of the model itself and more detailed computational requirements (I suspect the model is quite large as is…). If the model can be expanded to use voxel-based data instead of ROIs (which is, by definition, “arbitrary”), the model can utilize availble information more instead of prior binning. I suspect this also contributes to the “poor” fit, and eliminating the need for ROI priors will improve results.

Finally I would like to comment on the fact that is work is written as a part of your masters education, and would like to applaud the high standards of this work in regards to that.