Review of: "Deep Learning Modeling for Prediction of Cognitive Task Related Features from Resting-state fMRI Data"

Roberta Passiatore[1]

1 University of Bari

Potential competing interests: No potential competing interests to declare.

This is an interesting article showing a deep learning technique for predicting cognitive scores from resting-state fMRI data. The article is meticulously composed, and it thoroughly elucidates all its facets. Conceptually, it presents an intriguing advancement in methodology that has the potential to be a valuable addition to the filed, particularly in areas where similar approaches have fallen short. Nevertheless, several noteworthy considerations have arisen during my evaluation.

Firstly, the authors have opted to focus exclusively on a specific sub-test that assesses a particular facet of intelligence, specifically spatial visualization ability and motor skills. My primary concern in this regard pertains to the specificity of this cognitive domain, which, while useful for the targeted ability, may not adequately capture the broader spectrum of intelligence. The IQ score here calculated falls considerably short of encapsulating the multifaceted construct of intelligence. Therefore, the authors should at least acknowledge this limitation when interpreting their findings and perhaps explore the possibility of training their model on additional sub-tests or composite scores related to intelligence.

Secondly, although the article demonstrates promising results with this novel prediction method, a critical analysis that includes comparisons with existing methodologies is conspicuously absent. I believe this is fundamental given the study's objectives, as such an analysis would elucidate the strengths and weaknesses of the proposed method relative to previously employed approaches.

In conclusion, I think this article serves as an excellent technical foundation for the proposed application. However, some adjustments are warranted to enhance its effectiveness in practice.